Towards Improving Cross-Cultural Dialogue and Learning with Maps

By

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MASTER OF NATURAL RESOURCE
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ABSTRACT

This research focused on consulting with the O-Pipon-Na-Piwin Cree Nation (OPCN) people of South Indian Lake, Manitoba to assess whether existing mapping practices could be improved to promote cross-cultural dialogue and learning. In this regard, two existing maps of the OPCN registered trapline area were reviewed to probe perceptions of the maps' adequacy in representing Cree space and for uncovering lessons to represent that space in a more culturally appropriate way.

Research results indicated that there are many deficiencies inherent in the typical cartographic representation of Cree space, particularly in the realms of map content, construction and the message that maps purvey. Seventeen map elements evolved out of research findings that, when implemented in mapping, would improve the conditions for cross-cultural dialogue and learning.

These map elements were then compared to existing mapping practice in environmental assessment (EA) from the Wuskwatim Clean Environment hearings to uncover any methodological deficits in EA mapping. Findings indicated there was notable room for improvement in this regard.

Supplementary study is recommended to further refine these research findings to improve mapping practice in EA.

We are entering what the early explorers described on ancient maps as "terra incognita," an unknown land…While these were unknown lands for the early explorers, this was not true for the original people who served as guides for the newcomers…. Perhaps in our search for technical solutions, we have lost sight of the spirit needed to guide us in our search, and we need to turn to our ancient guides once again.

Jean Lafrance and Betty Bastien

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LIST OF ACRONYMS

BCR	Band Council Resolution
CASIL	Community Association of South Indian Lake
CEAA	Canadian Environmental Assessment Act
CEAA	Canadian Environmental Assessment Agency
CEC	Clean Environment Commission
CGND	Canadian Geographical Names Database
CRD	Churchill River Diversion
EIA	Environmental Impact Assessment; also known as EA (Environmental Assessment)
EIS	Environmental Impact Statement
GIS	Geographic Information Systems
NCGIA	National Center for Geographic Information Analysis
NCN	Nisichawayasihk Cree Nation
NTS	National Topographic Service
NTDB	National Topographic Database
OPCN	O-Pipon-Na-Piwin Cree Nation
PPGIS	Public Participation Geographic Information Systems; also known as PGIS (participatory GIS)
RMA	Resource Management Area
RTL	Registered Traplines
TLE	Treaty Land Entitlement
USGS	United States Geological Service

TOWARDS IMPROVING CROSS-CULTURAL DIALOGUE AND LEARNING WITH MAPS

CHAPTER 1: INTRODUCTION

1.0 FRAMING THE RESEARCH

This study explored the interface of cross-cultural public dialogue and learning using maps. The emphasis of this research was primarily to explore how Cree interpret maps, how maps can be constructed to stimulate more deliberative interactions and whether new mapping techniques can be applied to improve dialogue and learning in environmental assessment in Manitoba.

An exploration of the applied and conceptual importance of participation in resource management decisions is a logical place to begin. The following section contains a review of historic approaches to participation in resource decision making, illustrates the need for more appropriate participatory approaches and explains why participation is becoming a more prominent research agenda.

1.0.1 Participation in Resource Decision Making

Traditional decision-making has been conducted as a "Decide, Announce, Defend" process (Webler 1995 p. 449), to the exclusion of

many stakeholder groups (Glicken 1999) favouring the 'expert' opinion of the proponent.

Using this technocratic approach, it might be tempting for a project proponent to quietly push a project through approval processes. In light of expensive, involved, conflict-ridden, and time consuming public participation processes, a proponent may want to avoid discussion and deliberation on the project. Furthermore, public participation may be viewed as unnecessary because the public does not have the technical expertise to meaningfully contribute to project deliberations (Bocking 2004). This top-down approach, however, does not guarantee that a project will be implemented quickly nor without additional costs.

Shepherd and Bowler (1997) argued that excluding the public does not necessarily ensure expediency of project implementation: "Alienated citizens become skeptical citizens and, once citizens begin to lose trust in a project proponent, it is difficult, if not impossible, for the project proponent to regain citizens' trust" (p.726). Kakoyannis & Schindler (2001) suggested that when citizens do not feel that management plans adequately incorporate their concerns, the public will resort to "other means" (courts, legislators, and the media) to demand

representation in proponent decisions [U.S. Forest Service in this case].

As a consequence of poor or absent participatory processes, "public groups and land management agencies have become mired in costly litigation and emotional discourse over public land management decisions" (Kakoyannis & Schindler 2001, p.1). Without public participation, costs of litigation, delayed project implementation and angry publics are incurred. The public response is to demand better representation.

Increasing demands by more sophisticated citizenry to be involved in decisions that affect them (Smith & McDonough 2001, Parkins & Mitchell 2005) has put pressure on decision makers to engage in a competent process to secure legitimacy in the eyes of the public (Webler 1995). Risks of alienated publics, litigation, poor press are increasingly weighed against generating a more inclusive participation process. As a result, contemporary approaches to participation are incorporating concepts of learning and dialogue.

1.0.2 Learning and Dialogue

Many authors have advocated the role of transformative learning for empowerment to meet social and political justice objectives (Freire 1972, Habermas 1979, Banduras 2002, Renn, Webler & Kastenholz 1995, Smith & McDonough 2001, Maarleveld & Dangbegnon 1999, Shepherd & Bowler 1997) and in environmental assessment (Webler 1995, Fitzpatrick & Sinclair 2003, Sims & Sinclair 2006, Glicken 1999, Diduck & Sinclair 1997, Diduck 1999, Parkins & Mitchell 2005, Smith 1982). This learning perspective is grounded in Habermas' *communicative rationality* where problems and questions are identified through dialogue and new understandings evolve:

> This concept of *communicative rationality* carries with it connotations based ultimately on the central experience of the unconstrained, unifying, consensus bringing force of argumentative speech, in which different participants overcome their merely subjective views and, owing to the mutuality of rationally motivated conviction, assure themselves of both the unity of the objective world and the intersubjectivity of their lifeworld (Habermas 1984 p.10).

Habermas (1984) emphasized the role of unrestrained discourse when defining rationality. In its ideal form, communicative rationality "can be a guide in realizing an interaction in which all who feel the need are free and have equal chances to express their views, and that they do so in an understandable, legitimate, and truthful manner" (Maarleveld & Dangbegnon 1999 p. 268).

The central themes of communicative rationality are argumentative speech (discourse) and accessibility and development of unified objectives are echoed in much environmental assessment literature (Smith 1982 p. 25 on Public Inquiries, Gamble 1978, Daniels 1996, Usher 2003); the purpose of which is to generate more open and transparent decisions (Diduck and Sinclair 2002). These themes also build the foundation for developing intercultural competence (the ability to communicate across cultures).

1.0.3 Learning Across Cultures

Despite growing recognition of the plurality of worldviews, Irwin *et al.* (1999) argued that marginalization of Aboriginal peoples continues to persist and that such "marginalization is not necessarily deliberate, but results when norms which are culturally specific to the dominant society are mistakenly thought to apply also to other societies" (p.199). Therefore, a pre-requisite to culturally appropriate actions is to become culturally *aware*. By engaging in dialogue and learning, we can develop the sensitivity to recognize the existence and characteristics of the lenses by which others view the world (Freire 1972, Cranton 2006, Lin 2006, Hanvey 1982). Cognizance of 'ways of

knowing' implores us to explore our own underlying assumptions and those of others and also the processes by which we learn.

1.0.4 Learning and Maps

Maps have long been an engaging communication tool in environmental assessment. GIS, geomatics and geography professionals are increasingly aware of adult learning theory as applied to their fields (Crampton and Krygier 2006, Krygier 2002, Esnard *et. al.* 2000, Johnson et al 2006). For example, "spatial planning and public participation have recently begun to be thought of in an integrated fashion[;]...a unique opportunity for enhanced citizen involvement in public policy and planning issues." (Schlossberg and Shuford 2005 p.16). The applicability of adult learning theory is further underscored by Obermeyer and Pinto's (1994) assertion that "all forms of data [including maps] are only as useful as their interpretation" (p. 179) whereby identification of variances in interpretation is vital to genuine communication and participation.

The use of maps necessitates, however, acknowledgement that maps are not value free (Johnson et al 2006, Wood 1992, International Forum on Indigenous Mapping 2004). Consequently, it is necessary to

critically evaluate the construction, use *and interpretation* of maps in resource decision making processes.

People trust maps. However, maps are political tools that contain inherent and entrenched agendas depending on the context of the artist who crafted it. As a result, Monmonier (1996) states that "naïve citizens willingly accept as truth maps based on biased and sometimes fraudulent selection of facts" (p.87). Sieber (2003) warns that despite widespread assumptions that geographic information systems (GIS) and its' output, maps, can be used as a participatory tool supporting democratic processes, "GIS [has a] propensity towards privileging technocratic expertise...and Western views on quantifying knowledge and experience" (p.54). Harley (1998) posited that the iconography used in maps served to promote the political goals of the powerful such that "seeing was believing in relation to the territorial hierarchies expressed in maps" (p.285). Similarly, Smith (1999) stated that:

> "[t]here is a very specific spatial vocabulary of colonialism which can be assembled around three concepts: (1) the line, (2) the centre, and (3) the outside. The 'line' is important because it was used to map territory, to survey land, to establish boundaries and to mark the limits of colonial power. The 'centre' is important because orientation to the centre was an orientation to the system of power. The 'outside' is important because it positioned territory and people in an oppositional relation to the colonial centre; for indigenous Australians to be in an 'empty space' was to 'not exist' (p.52-53).

Selected examples of colonial language are described in Table 1 which corresponds to how feature elements are represented on maps: the line, the point and the polygon.

Table 1: SPATIAL VOCABULARY OF 19TH CENTURY COLONIALISM

The Line	The Centre	The Outside
Maps	Mother country	Empty land
Charts	Parliament	Terra nullius
Roads	Church	Uninhabited
Boundaries	Europe	Unoccupied
Surveys	Magistrate's residence	Uncharted
Claims	Store	Reserves
Perimeters	Port	Hinterland

(selected vocabulary from Smith 1999 p. 53)

The very structure of map elements, therefore, can be interpreted as a reinforcement of colonial power.

It is no surprise then that some people perceive maps as thoroughly positivistic and that maps fail on many levels to generate democratic solutions as they are not, in themselves, objective value-free documents. This underscores the paradox of communicating messages with maps independent of feedback loops because cultural assumptions are not identified and therefore not discussed; there is no deliberative discourse.

If maps could be constructed to reflect values that meet the needs of two cultures, perhaps they could be used to improve dialogue and

learning. However, maps remain untested in this capacity in a cross-cultural setting. Given increased public pressure for more inclusive participation mechanisms, discussed in section 1.0.1, exploring cross-cultural interpretations of maps will likely yield insights into how maps could be constructed to improve cross-cultural communication and participation.

1.1 RESEARCH PURPOSE

The purpose of this research was to explore how Cree people make meaning from maps and, if maps could be made more meaningful to Cree people, perhaps the maps could provide insights into ways to improve cross-cultural dialogue and learning.

1.2 RESEARCH OBJECTIVES

1. To gain insights on how Cree people make meaning from maps;

2. To identify culturally appropriate methods for map content (what is on the map), map construction (map elements make sense) and map message (what the map is telling the user), and;

3. To find ways to improve dialogic interaction and learning in the EIA process in Manitoba through the use of maps.

1.3 SIGNIFICANCE OF THE RESEARCH

This research is interdisciplinary. The theoretical framework for this research will be derived from the broad areas of education, natural

resource management, Native studies, science and technology studies (STS), geography, geomatics, and GIS, political science, and to a lesser degree, anthropology and psychology. Through this research, unique and substantive contributions to scholarly knowledge were sought by combining disciplinary knowledges with 'ways of knowing' in an innovative way.

Methods to democratize the construction of maps were sought by exploring to expose epistemologies that affect interpretations of maps. As an outcome of this research, recommendations to improve cross-cultural competencies in EA in Manitoba were developed.

This approach has been unique, however, to the majority of the literature available on the diverging fields of learning, mapping / GIS, and cross-cultural communication (see section 2.6.2 for literature synopsis on Public Participation GIS (PPGIS)). Unlike PPGIS, this research studies the interpretations of maps created in an environment in which little community ownership or participation was encouraged; maps that emerge from a 'black box'.

These maps are powerful; "More Indigenous territory has been claimed by maps than by guns" as Stone (1998) stated "and more Indigenous

territory can be reclaimed and defended by maps than guns" (p.1).

Wood (1992) iterates "a graphic is not only a drawing; it is a

responsibility, sometimes a weighty one, in decision-making" (p. 188).

This research develops out of a personal deep-seated concern that we

are often passive recipients of 'truth' as represented by maps, without

developing a critical evaluation of the content, construction, and

message purveyed by maps, especially when communicating intra-

culturally.

1.4 ORGANIZATION OF THE THESIS

This thesis is organized into seven chapters. The first chapter provides

the project rationale, purpose and objectives. The second chapter is a

literature review, including: 1) a description of meaningful public

decision-making; 2) a review of cross-cultural and learning concepts;

3) a review of the primary goals of participation and inclusion of

stakeholders in environmental assessment in Canada and Manitoba;

and, 4) an examination of the power of maps. The third chapter

outlines methods used and the fourth chapter presents the community

context that framed this research.   The fifth chapter describes results

and discussion of the results occurs in the sixth chapter. The last

chapter provides conclusions and recommendations for future work of

this nature.

CHAPTER 2: PARTICIPATION, CULTURE, LEARNING, ENVIRONMENTAL ASSESSEMENT AND MAPS

2.0 INTRODUCTION

This chapter draws relationships between the theoretical frameworks of 1) public participation (2.1); 2) cross-cultural communication (2.2), 3) Learning in the context of public decision-making (2.3) and; 4) preconditions for deliberative dialogue (2.4). Environmental assessment goals (2.5) are introduced next supporting how the integration of public participation, cross-cultural considerations and learning can support more democratic decision making. Lastly, maps are presented as a tool to aid in dialogic interactions to support democratic processes in the interface of the three areas of study above (2.6). A summary is presented in section 2.7.

2.1 THE MEANING OF MEANINGFUL PUBLIC DECISION-MAKING

Arnstein (1969) defined citizen participation as a redistribution of power that enables have-not citizens to engage in planning their future- analogous to *citizen power*. Her ascending eight step typology called the ladder of citizen participation (Figure 1) is categorized into three degrees of power distribution: nonparticipation to tokenism to authentic citizen power. These three degrees of power distribution will be described in turn.

Citizen control	
Delegated Power	} Degrees of Citizen Power
Partnership	
Placation	
Consultation	} Degrees of Tokenism
Informing	
Therapy	
Manipulation	} Non-Participation
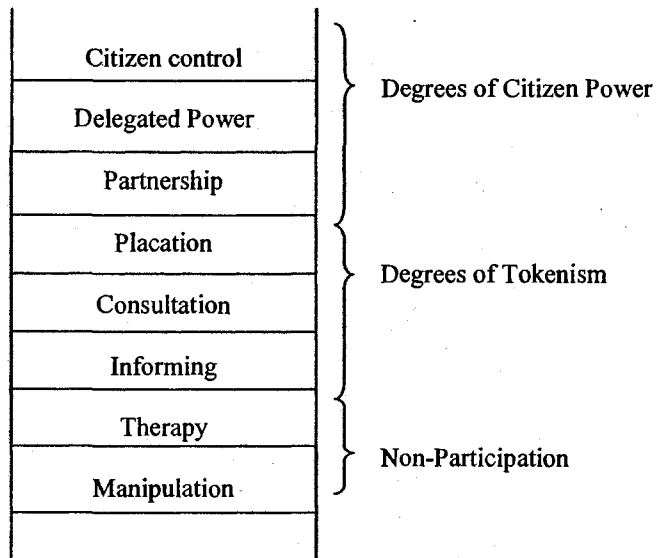
Figure 1: ARNSTEIN'S EIGHT RUNGS ON A LADDER OF PARTICIPATION *(1969 p.217)*

Non-participation is characterized by one-way communication designed to educate the citizenry in what Glicken (1999) refers to as the *paternalistic* model whereby technical experts rule in position of dominant political and economic institutions.

Arnstein's tokenism occurs when the procedure employed for informing the public is "information out" activities (Mitchell 1997) such as news media, pamphlets, posters, and meetings where superficial information or irrelevant answers are dispensed (Arnstein 1969). Arnstein (1969) also identifies 'consultation*' (characterized by activities such as

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* The term "public consultation" is couched in a rhetoric that may not involve authentic dialogueic interaction. Therefore, when referring to the goal of true public hegemony in decision making, I will refer to this process as "public participation".

attitude surveys, public meetings and hearing) as tokenism as usually "it offers no assurance that citizen concerns and ideas will be taken into account" (p.219). In this regard, Diduck and Sinclair (2002) identify a major structural barrier to public involvement as the perceived deficient impact the public has on ultimate decisions.

Mechanically going through the motions of a public participation process does not guarantee success beyond tokenism. Smith & McDonough (2001) elaborate that "people's satisfaction with decisions and support for authorities largely rests on whether or not they feel they have been treated fairly and/or received fair outcomes" (i.e. conditions for procedural justice[†] have been met). Thibault and Walker (1975) theorized a condition for achieving procedural justice required the opportunity for direct citizen participation in the decision and the opportunity to voice one's opinion as key principles by which people judge the fairness of a process. Providing the public with the role of information provider, 'engenders greater commitment to the decision and increases the likelihood that it will be honored through social action" (Glicken, 1999, p.304).

[†] Procedural justice is defined by the concepts of fairness and competence of a process as perceived by the public (Webler 1995). It is related to the *process* of decision making versus the *outcome* of the decision making (i.e. distributive justice)

Authentic public participation at Arnstein's (1969) rungs of partnership, delegated power, and citizen control involve appropriate application of both procedural and distributive justice. Both the process and outcomes are viewed by all as 'fair' and 'good'[‡] versus the neoclassical economic goal of 'efficient'. The systemic consideration of economic, ecological and human development serves as an impetus for meaningful public participation as an integral element of decision making (Fitzpatrick & Sinclair 2003), generates competent, legitimate decisions (Sinclair & Diduck 1995, Shepherd & Bowler 1997) and reduced conflict (Diduck & Sinclair 1997, Sims & Sinclair 2006, Parkins & Mitchell 2005).

At the authentic public participation level, the participation process is not boiled down to the boolean logic of a win / loose proposition, a 'binary opposition' described by Diduck & Sinclair (1997 p.298) from which one must emerge victorious, but is situated in the context of transactional dialogic interaction. This dialogue serves to facilitate a critical approach to education.

Adding to the complexity of understanding and learning from each other, are the perspectives we derive from our diverse cultural

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[‡] no one disagrees to the decision and how it made though not everyone may endorse it.

backgrounds (see Ellsworth 1989 for discussion). Without recognition of other epistemological groundings, assumptions go unchecked against other worldview definitions. Therefore, it is necessary to review the impact of culture on the ability to engage in meaningful participation.

2.2 CROSS CULTURAL COMMUNICATION

2.2.1 Culture and Worldview

Culture refers to the shared ways and thinking that is the outcome of similar group experiences and is passed from one generation to the next (Erik de Man, 2003). Culture shapes what people think ought to be, and therefore, problem definition and problem solutions are shaped to a certain extent on cultural values.

Worldview, shaped by culture, is defined by Hewitt (2000) as "a set of concepts that relate individuals within any culture to the natural universe and to other humans who comprise their social reality" (p. 111). It is through this constructed reality that we interpret the world, events, and the conditions that shape our lives.

Evidence of differing worldviews is often apparent in the linguistic structure of different cultures. Jacobson (1996) offered that "learned

systems are mediated primarily through language, which is itself interpreted through culture-specific conceptual frameworks of meaning and values" (p. 16). For example, Irwin *et al.*'s (1999) research with Aboriginal peoples in Canada, Taiwan and Australia exemplifies that these orally-based cultures have strong traditions of deep responsibility towards the land with no conception of land ownership (see also Hewitt 2000), though point is thoroughly debated (Rigsby 1999).

Hanvey (1982) refers to awareness of worldview as 'perspective consciousness' which is "recognition...on the part of the individual that he or she has a view of the world that is not universally shared...and that others have views of the world that are profoundly different from one's own" (p.162).

2.2.2 Cultural Characteristics of Dialogue

We also should be aware of some of the pitfalls involved in attempting to stimulate dialogic interaction across cultures. Parkins (2005) suggested that cultural factors prevent speaking out (see also Lin 2006).

Language barriers, and therefore, translations may also generate misunderstandings (Nichols *et al.* 2004, Irwin et al. 1999). For example, Nichols *et al.* (2004) experienced difficulties resolving the scientific terminology for ice and the equivalent Inuit definition; a "pressure ridge" was translated to "where you pull your sled over" (p.78). Dialogue, therefore, can be impaired through sociolinguistic variations that vary by social (therefore cultural) networks (Kenneth 2002 p.41).

Western scientific arguments may also exclude other forms of knowledge (Parkins 2005) (also see Berkes & Jolly 2001 for a Traditional Knowledge approach) such as other forms of communication, for example, story telling, dance, or oral based culture transmissions (Sparke 1998). To address this, Young (2000) suggests "expansion of allowable modes of communication; that is beyond rational/logical forms of public argument and debate to dynamic, cross-cultural forms of greeting, rhetoric and narrative" (p.57).

Recognizing that different worldviews exist and that modes of communication may be diverse is the first step in developing intercultural competence (the ability to communicate across cultures).

Secondly, the role of learning should be considered as a potential

bridge for cross-cultural communication and dialogue.

2.3 LEARNING IN THE CONTEXT OF PUBLIC DECISION MAKING

Transformative learning, introduced by Mezirow in 1978, like the

phrase suggests, is an impetus for change in the individual and is

initiated when individuals are confronted with a disorienting dilemma

(Mezirow 2000). In turn, Mezirow (2000) postulates that nine

additional steps take place culminating in a change in which an

individual views the world and their place in it, though not necessarily

sequentially (Table 2).

Table 2: MEZIROW'S 10 STEPS OF TRANSFORMATIVE LEARNING

1.	A disorienting dilemma
2.	Self-examination with feelings of fear, anger, guilt, or shame
3.	A critical assessment of assumptions
4.	Recognition that one's discontent and the process of transformation are shared
5.	Exploration of options for new roles, relationships, and actions
6.	Planning a course of action
7.	Acquiring knowledge and skills for implementing one's plans
8.	Provisional trying of new roles
9.	Building competence and self-confidence in new roles and relationships
10	A reintegration into one's life on the basis of conditions dictated by one's new perspective

Source: Mezirow (2000) p. 22.

Through this ten step process, individuals adapt their frame of

reference, comprised of two dimensions: *habits of mind* (habitual ways

of thinking) and a *point of view* (normative beliefs and attitudes) to a

new perspective that is more "inclusive, discriminating, self-reflecting and integrative of experience" (Mezirow 1997 p.5). Through transformative learning, the filtering lens by which we view the world is changed (Baumgartner 2001).

Mezirow (1997) describes transformative learning as the essence of adult education as it allows the individual to become "a more autonomous thinker by learning to negotiate his or her own values, meanings, and purposes rather than to uncritically act on those of others" (p. 11). Others have described the function of transformative learning as: "a transformation of a person's personality or worldview" (Courtnay 1998) and that transformational learning "produces more far-reaching changes in the learners that does learning in general, and...these changes have a significant impact on the learner's subsequent experiences" (Clark 1993, p.47).

Mezirow also (1991, 2000) focused on individual cognitive development as both a precondition for *and* an outcome of transformative learning (see also Merriam 2004). As we become adults, we build capacity in three critical areas according to Mezirow (1997) including: 1) critically assessing assumptions, 2) recognizing paradigms and their alternatives, and; 3) working collectively with

others on problems and problem-solving approaches. On an individual

level, transformative learning enables the learner to have his / her

own design (Taylor 2000) and at a societal level, to develop personal

autonomy to become "agents for change" (Diduck 1999, p.92).

Bandura's (2002) Social Cognitive theory assesses the individual as an

agent that must embark on a socially interdependent effort to secure

"knowledge, skills, and resources, provide mutual support, form

alliances and work together to secure what they cannot accomplish on

their own" (p.270). Banduras (2002) views the individual as an

adaptive and fluid agent that can act on three different levels:

individually; by proxy (influence others to act on their behalf), and;

more importantly, collectively. Banduras (2002) believes that "some

excesses of individualism are prompting a resurgence of efforts to

restore a sense of community and social responsibility in individualistic

cultures" (p.7).

Freire (1972) also viewed adult learning as an emancipatory process

that liberates groups of people to act against social forces that impede

their goals. Freire critiqued the common method of education as

"banking" of passive knowledge without stimulating critical thought or

conscientization. He asserted that "education as the exercise of

domination stimulates the credulity of students, with the ideological

intent (often not perceived by educators) of indoctrinating them to

adapt to the world of oppression" (p.65). Subsequently, Freire (1972)

postulated "to surmount the situation of oppression, men must first

critically recognize its causes, so that through transforming action they

can create a new situation, one which makes possible the pursuit of a

fuller humanity" (p.31-32). Through transformative learning, a person

learns to become an "autonomous, socially responsible thinker"

(Mezirow 1997 p.8) by a process of praxis (Diduck 1999).

Therefore, the *what* (facts) we learn are not as critical as the *how* of

learning which enables us to learn transformatively (Baumgartner,

2001). Feinstein (2004) identifies two processes required for

transformative learning including reflective discourse and critical

reflection. In reflective discourse, active dialogue enables us to

understand from the perspective of others, and integrate all interests

into a tentative best judgment (Mezirow, 2000). Critical reflection

refers to reflecting upon experience unveiling what Brookfield (2000)

calls "paradigmatic, structuring assumptions" (p. 126) as well as

power dynamics and relationships. Reflective discourse enables a

clearer understanding of other's paradigms and critical reflection leads

us to a better understanding of underlying assumptions of the

information we are exposed to. Employing these two elements to a decision-making process increases the likelihood for genuine dialogic interaction and legitimates the process itself as discussed in section 2.1. An appropriate decision-making process should therefore employ a dialogic process that enables reflective discourse and critical reflection.

Webler (1995) describes a participatory process for siting a municipal waste disposal facility which includes both the reflective discourse and critical reflection elements of transformative learning. Citizens were given the opportunity to co-design the education process[§] through committee work where one citizen, when asked about the meetings, responded "When I first came here I saw the other people as opponents. But over time I began to feel more like we were a unified panel, rather than enemies" (Webler 1995, p.456). This process maintained a climate of unrestrained dialogue and active critical engagement thereby validating the decision making process, also known as deliberative democracy.

[§] This case employed the Delphi method which was established by the RAND Corporation in 1969 as a group decision-making process. In this case, decision making starts with identifying stakeholders, building a value tree, then organizing citizens into panels, which in turn, shape the process.

Carolan (2006) reflects on the concept of deliberative democracy as it relates to fairness as a process (versus an outcome) by which "participants must be willing to take in the views and positions of others and be open to the possibility of their own views being transformed" (p. 347). Over the period of an honest and open decision-making process that employs the concepts of deliberative democracy and citizen participation, transformative learning can occur, thereby lending legitimacy to the process. Transformative learning, therefore, is integral to a competent decision making process.

Not all adults achieve the ability to think dialectically and engage fully in rational discourse and critical reflection. According to Bee (2000), only fifty percent (p.145) achieve dialectic thinking. Merriam (2004) cautioned that rational discourse and critical reflection can only be undertaken by those who have developed the capacity to do so. Merriam (2004) maintains that to engage in reflective discourse with others "assumes the ability to examine alternative perspectives, withhold premature judgment, and basically to think dialectically, a characteristic of mature cognitive development" (Merriam 2004 p. 61). Studies suggest that we move from dualistic[**] to dialectic[††] thinking

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[**] Sometimes referred to as Aristotelian logic which polarizes different perspectives into dualistic modes such as "right and wrong", "good and bad" etc. (Peng 1999)

from adolescence to adulthood (Meacham 1999) and the ability to think reflectively correlates to age and education (King & Kitchener 1994). Others authors suggest that dialectic thinking is more prevalent in different cultures than others (Asian culture versus Western culture) (Peng, 1999).

Merizow (2004) responded to Merriam's concerns that not all adults have the capability to engage in rational discourse and critical reflection by emphasizing the role of adult education should be to *empower* adults *to engage* in the critical reflection and rational discourse elements of transformative learning. Therefore, for any decision-making process, education *on the process itself* should be valued equally with education on the substantive elements of the decision. Diduck and Sinclair (1997), in the context of environmental assessment (EA), provide the following perspective: "Taken together, education *about* EA and education *though* EA compose critical EA education, whose main goal should be empowerment and social action" (p. 299, emphasis added).

To summarize, adult learning theory considers the connections between learning and empowerment that leads to social change.

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†† Dialectic thinking is defined here as acceptance of inherent ambiguities and contradictions and different worldviews (Merriam 2004).

Freire and Mezirow have made significant contributions vis-à-vis

Freire's concept of praxis (iterative process of reflection on one's

assumptions, action, and reflection again) creating an empowered

student unaccepting of passive 'banking' of information (Freire 1972).

Mezirows' focus on individual cognitive development results in a

transformative experience for the individual resulting in changing

frames of references that are "inclusive, discriminating, self-reflective,

and integrative of experience" (Mezirow, 1997, p. 5). Habermas

advocates unrestrained dialogue (as discussed in section 1.0.2) while

Banduras' individual creates alliances for social change.

The common thread linking the works of Mezirow, Freire, Banduras

and Habermas is the presence of unrestrained dialogue for learning,

which, in turn, leads to individual and societal change. As discussed in

section 2.2 on cross-cultural communication, some additional

considerations should be applied to learning when it is intercultural.

Therefore, some procedural steps to encourage cross-cultural dialogue

and learning should be considered next.

2.4 PRECONDITIONS FOR DELIBERATIVE DIALOGUE

2.4.1 Trust

Earning a trusting relationship is contingent on open and meaningful communication with stakeholders. The term 'Authenticity[‡‡]' is used by Cranton (2004) to describe 'being genuine, showing consistency between values and actions, relating to others... to encourage their authenticity, and living a critical life" (p. 7) (see also Cranton 2006). Cranton's (2004) fundamental premise:

> "meaningful communication rests on the premise that those involved are speaking genuinely and honestly rather than with an intent to manipulate or deceive. To be able to express the genuine self, people need to know who that self is" (p.7).

To be authentic, we need to know ourselves in the context of other views of the world, be critical to our own assumptions and those of others, and also be respectful of other cultural viewpoints.

2.4.2 Acknowledging Differences

We should also recognize that these cultural viewpoints, originating from a specific culture, are in themselves, heterogeneous phenomena. Cranton (2006) warns of the pitfalls of grouping a culture: "we have the problem of being essentialist in grouping together all individuals from one culture and saying they are alike in some fundamental way

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[‡‡] Arnsteins' top two levels of participation are also referred to as 'authentic'.

or ignoring broader socio-cultural perspectives" (p.85). Each

individual has unique experiences that contribute to their

understanding of the world. Therefore, knowledge is constructed

through individual experiences, collective experiences *and* cultural

background.

Acknowledging differences in worldviews can generate dialogues in

project planning and development. Carroll and Hendrix (1992) offer

the following advice:

> Planners and managers must take time to step beyond
> formal roles and titles and come to know all groups of local
> people and to understand their values, language, and
> worldviews. Also, planners must adopt open, two-way
> communication with all concerned. If planners can achieve
> such a dialogue leading to a reasonable degree of
> responsiveness to local concerns, residents can develop a
> sense of genuine ownership in the planning process, even
> though they may not get everything they want (p.353).

Local ownership in the planning process has significant impacts on the

degree to which people participate and their subsequent satisfaction

with the process. Through the solicitation of local input and

acknowledgement of differing cultural perspectives, we begin to

engage in a process of mutual learning (as discussed in section 2.3)

through deliberative democracy. This diversity of 'ways of knowing'

implores us to explore our own underlying assumptions and those of

others and also the processes by which we learn.

Local input is therefore mandatory to a genuine public participation process; however, problem definition and the related timing of inputs also have significant impacts on how people participate.

2.4.3 Problem Identification

Adams *et al.* (2003) warned that "problem identification is critical to the process of making policy, yet its role is rarely scrutinized" (p.1915). Without a clear problem definition, we are at risk of generating unexpected outcomes. We approach complex problems with our own epistemological assumptions based on prior education, culture, religion, political affiliation, experience and social interactions. Without recognizing our assumptions (and those of others), we are at risk of framing a problem that appears self-evident to ourselves but does not capture the crux of an issue to others. Therefore, constructing goals and objectives together for a participatory process leads to better problem framing.

2.4.4 Timing

On timing of participation, Shepherd & Bowler (1997) critiqued that:

> "[P]ublic participation usually occurs too late in the decision-making process to influence the selection of alternatives or key project variables, such as type, size or location. When public participation finally does take place,

the project proponent typically has already conceived of, and become attached to, a particular project" (p.727).

Carroll & Hendrix (1992) advocated that gaining local acceptance of a plan *early* in the process is essential to planning success.

The concepts of trust, difference, timing and problem identification contribute to both the quality and quantity of deliberative dialogue surrounding a project. They affect the learning outcome of cross-cultural competence in project planning.

2.5 ENVIRONMENTAL ASSESSMENT IN CANADA & MANITOBA

2.5.1 Environmental Assessment Explained

Environmental Impact Assessment (EIA[§§]) evaluates "the potential ecological effects of proposed projects" through impact metrics of development projects before they are implemented (Mueller and McChesney 1994 p.30). EIA in Canada is typically carried out separately at both the federal and provincial levels[***]. The federal EIA process' purpose, objectives and capacity for public participation, will be described in the next section, followed by the provincial EIA legislation.

[§§] Acronym EA is synonymously used.
[***] The Wuskwatim Environmental Assessment was the first to be reviewed under a joint federal / provincial assessment based on the Canada-Manitoba Agreement on Environmental Assessment Cooperation (Clean Environment Commission 2002)

2.5.2 The Canadian Environmental Assessment Act

The 1995 Canadian Environmental Assessment Act's (CEAA) purpose described by Sadler (1996) is to:

- Ensure that the environmental effects receive careful consideration before responsible authorities take actions in connection with them,
- Encourage responsible authorities to take actions that promote sustainable development and thereby achieve or maintain a healthy environment and healthy economy,
- Ensure that projects that are to be carried out in Canada or on federal lands that do not cause significant adverse environmental effects outside the jurisdictions in which the projects are carried out, and
- Ensure that there be an opportunity for public participation in the environmental impact assessment process (p.15).

Currently, federal environmental impact assessment legislation, namely the CEAA, provides very little in the way of First Nations involvement (Paci *et al.* 2002), though the importance of cross-cultural communication is formally recognized:

> Early and meaningful engagement of the public is generally seen as a key element in achieving quality environmental analysis. It supports and enhances environmental assessment by: incorporating local and traditional knowledge, which may bring to light new perspectives that would not have otherwise been available (CEAA, 2006 p. 8).

Learning principles are also valued by the CEAA (2006, Minister's Message):

> [T]he Agency reaffirms its commitment to high-quality environmental assessment and continuous learning and

improvement. By learning from past successes and
failures, and embracing innovative approaches for
addressing new and existing challenges, I am confident
that the Agency will continue to lead efforts to ensure that
Canada has a progressive and robust federal
environmental assessment framework well into the future.

Evidence supporting the development of cross-cultural learning

opportunities to inform environmental assessment are present in the

Royal Commission on Aboriginal People (RCAP 1997) final report which

stated that Aboriginal people's resource "management data included

not only immediate observation of variation and theories of cause and

effect but also the accumulated knowledge of countless generations of

harvesters" which has the potential to inform and legitimate EIA (Paci

et al. 2002).

Collectively, the messages above generate both a powerful and

convincing argument for Aboriginal involvement in EIA. Scholars

iterate that effective public participation in the environmental impact

assessment process is vital to ensure appropriate discussion and

feedback is received surrounding a proposed project. Ensuing

dialogue legitimates the EIA process itself and promotes more

responsible decision making (Sinclair & Diduck 1995, Diduck & Sinclair

1997, Shepherd & Bowler, 1997).

2.5.3 The Manitoba Environment Act

The Clean Environment Commission is established under The Environment Act (1998) to provide a process through which the public can participate in decision making processes regarding the environment in Manitoba (Manitoba Conservation 1997). As part of the environmental assessment process in Manitoba, the public is invited to submit comments and/or objections via the public registry (Manitoba Conservation 1997) and through Clean Environment Commission (CEC) public hearings if a project is considered to be of "general interest to a large number of Manitobans" (Manitoba Conservation- Environmental Approvals Branch 2007).

Manitoba Conservations' Public Participation guidelines encourage respect for all participants through "honouring diverse cultures, perspectives, values and interests" (as discussed in section 2.4.2), "maintaining a constructive, problem solving process" (as discussed in section 2.4.3), and "sharing information early..." (as discussed in section 2.4.4) (Manitoba Conservation 1997, p.1).

2.5.4 Participation in Environmental Assessment and Linkages to Maps

As discussed in the sections above, both the Manitoba Environment Act and the Canadian Environmental Assessment Agency (CEAA) have participatory goals mandated. Section 2(2) of the Manitoba Environment Act supports "the establishment and maintenance of an effective method of public involvement in environmental decision making" (Queen's Printer Statutory Publications, 1988). The CEAA identifies that "a continuing challenge [exists]... to find new ways to engage the public and address their concerns while meeting proponents' desire for expeditious processes" (Canadian Environmental Assessment Agency, 2001). Maps are potentially a 'new way' to engage diverse publics in discourse surrounding potential development projects.

2.6 THE POWER OF MAPS

Although maps can be drawn in sand, on cave walls, on paper, and visualized in one's mind, they are most often produced by geographic information systems (GIS). A *GIS is a system of hardware, software and procedures to facilitate the management, manipulation, analysis, modeling, representation and display of georeferenced data to solve complex problems regarding planning and management of resources* (National Center For Geographic Information & Analysis, NCGIA 1990).

One of the main outputs of a GIS is maps therefore, reference to the term "GIS" will be used here synonymously with maps[†††]. This section is organized into usages of maps for cross-cultural communication (2.6.1), socio-political dimensions of maps (2.6.2) and finally maps as a communication tool for promoting dialogue in public discourse (2.6.3).

2.6.1 Map Usage for Cross-Cultural Communication

Freeman (1976) developed a technique to map land use and occupancy of Aboriginal groups in the 1970's to include archeological and anthropological records of both historic and contemporary land use, now known as Land Use and Occupancy studies. Tobias (2000) made further methodological contributions to Land Use and Occupancy studies. This technique can be classified under Seiber's (2003) 'strategic activities' for using maps for recognition of "land rights, demarcation and protection of traditional territories, gathering and guarding traditional knowledge, management of traditional lands and resources and community awareness mobilization and conflict resolution" (p.50-51) (see also Chapin et al. 2005).

[†††] This author recognizes that GIS is a digital tool with many dynamic applications not limited to maps. Increasing live applications such as website digital spatial information decision support systems serving spatial data, the view and manipulation of which, are more frequently managed by the user. However, in the context of environmental assessment projects, static hardcopy maps are more frequently used, hence the synonymous use of the terms "GIS" and "maps".

Sparke (1998) refers to this technique of remapping to destabilize colonial cartography as 'contrapunal cartographies' (p.467); an emancipatory process whereby maps are used as an anti-colonial tool to "edify and educate an audience about the power relations of culture" (p.467). This technique was also used in the now famous, ground breaking court ruling of *Delgamuukw v. the Queen* in which the Wet'suwet'en and Gitksan people used "the Map that Roared[+++]" to legitimate their ongoing sovereignty in British Columbia in a way that a Canadian court might understand.

Sparke (1998) eloquently refers to the map that roared as "cartography's roaring refusal of the orientation systems, the trap lines, the property lines, the electricity lines, the pipelines, the logging roads, the clear-cuts, and all the other accoutrements of Canadian colonialism on native land" (p.468). Maps, used in this way, become cultural translations of space and serve as a valuable pedagogical tool to contravene in decision making. However, if maps can serve as an anti-colonial tool, it is logical to predict that they can also do the opposite.

[+++] Dubbed by the Honourable Judge McEachern, this map was entitled "Map 22: Gitksan and Wet'suwet'en Jurisdiction: Fishing Sites, an san honhl (Gitksan) tok'k'et (Wet'suwet'en)" which depicted community toponyms, fishing sites and territory of Houses.

2.6.2 Socio-Political Implications

Maps are political tools that contain inherent and entrenched agendas depending on the context of the artist who crafted it (Crampton and Krygier, 2006). Socio-political implications can be examined on three different levels: theoretical, institutional and applications levels.

On a theoretical level, Sieber (2003) warned that despite widespread assumptions that maps can be used as a participatory tool supporting democratic processes, "GIS [has a] propensity towards privileging technocratic expertise...and Western views on quantifying knowledge and experience" (p.54). Poore (2003) indicated that "GIS theories assume a technology-driven, top-down perspective...[and these] formalist theories tend to overlook the role of end-users in knowledge creation in favour of abstract mental models derived from philosophy and cognitive science and based on idealized users" (p.63). This statement illuminates the entrenched positivist notion that empirical spatial data and its output, maps, are neutral, objective entities that can generate solutions or communicate a message in the absence of feedback from end-users.

GIS best incorporates knowledge that is quantitative and visual (Elwood 2006) conceptualizing space by points, lines, polygons and surfaces (Crampton and Krygier 2006) with descriptive attributes

neatly and consistently organized in related database tables. On the

other hand, local knowledge often includes "non-linear notions of

space, references to stories, myths and different taxonomies" (Brodnig

and Schonberger 2000 p2). By virtue of its organization, GIS, it is

thought, will be "at best only a partial solution to incorporating ways of

knowing" (Esnard and MacDougall 1997 p.59) and, at worst, "a tool for

epistemological assimilation" (Rundstrom 1995, p.45).

These arguments are moderated by Elwood (2006) who stated that the

"epistemologies and representational practices of GIS are not fixed,

but may be adapted in ways that redress some of these limits"

(p.199). Kyem (2000) notes the paradox surrounding the call to

abandon GIS by virtue that it empowers the powerful because *at the*

same time, abandonment would also undermine those who use it to

emancipate. Weiner *et. al.* (2000) cite the work of Laituri with New

Zealand Aboriginals and Bond with Cherokees in Oklahoma in which

both researchers map culturally relevant information for natural

resource management and thereby "challenge the epistemological

limits of conventional GIS" (p.7). Goodchild *et. al.* (2000) also lend

support (from an arguably positivist perspective) for "extending the

analytic power of spatial analysis to the social sciences would return

immense long-term benefits in the form of scientific progress" (p.141).

Furthermore, Schuurman (2002) cites a growing cohort of GIS researchers that "seeks [sic] to explicate its epistemological lineage and define a brand of realism that accounts for human cognition..." (p.75), also described as "a rise of research in cognitive cartography" (Crampton 2001 p. 237) to expose "multiple realities" (Harris and Weiner, 1998 p.70). Scholars are increasingly examining the applications of GIS / maps to emancipate marginalized groups and improve communication in planning processes (see Harris and Weiner 1998, Poole 1995, Bird 1995, Stone 1998).

Therefore, the proposed abandonment of GIS undermines the agency of those, especially Aboriginal groups, who use GIS for empowerment using Seiber's (2003) 'strategic activities' noted above and also for 'counter mapping' (control of mapped representations of selves) (Johnson et. al. 2006 p. 87) as in the Delgamuukw case.

On an institutional level, maps have been the domain of the powerful elites for hundreds of years (Crampton and Krygier 2006) with cartography dubbed "the science of princes" (Chapin 2005 p.622). Pickles (1995) refers to maps as "the gameboard upon which human destinies are played out, where winning or losing determines the survival of ideas, cultures, and sometimes entire civilizations" (p. 20).

At an applications level, Monmonier (1996) stated that toponyms, for example, displayed on maps "offer strong suggestions about a region's character or ethnic allegiances" (p. 110) by which "skillful propagandists... altered map viewer's impressions of multiethnic cultural landscapes by suppressing the toponymic influence of one group and inflating that of another" (p. 111). Gersmehl (1985) warns misunderstandings resulting from taxonomic classifications, where Histols displayed on his map, in this case, were comprised of undelineated peat (a good energy resource) and muck (which is not) can have costly implications when one tries to develop an energy industry mistakenly in mucky areas.

Scale is also used for manipulation, Warren (1995) warns as a "cultural weapon to hide sensitive locational data such as archeological sites or wildlife habitats by collecting it at a large [detailed] scale but releasing it to the public only at small [coarse] scales" (p.76).

Omissions also preclude full disclosures such as removing all nuclear waste disposal sites from USGS topographic maps (Harley 1998), a procedure that Esnard and MacDougal (1997) and other authors such as Monmonier (1996) refers to as 'cartographic censorship' (i.e. deliberate misrepresentation of map features designed to mislead map users).

As a response to the concerns presented above regarding map 'positivism', much attention has been proffered to Public Participation GIS (PPGIS) over the past fifteen years. PPGIS is an emerging field, "in which concerned parties can participate in decisions in all stages of the project, from initial system design and geographic information handling to analysis and outcome" (Sieber 2000/2001 p.2). Often PPGIS projects are community-based and involve community members in full project development from problem definition, data collection and analysis, to final cartographic design work (see Sieber 2000/2001, 2003, Kyem 2000, 2004, Elwood 2004, Esnard 2006, Harris and Weiner 1998, Wood 2005, Weiner et. al. 2002, Brodnig et. al. 2000, Laituri 2002). PPGIS aims at self-empowerment.

As demonstrated in this section, maps can be used as a tool for both empowerment and marginalization which is usually simultaneous (Sieber 2000, Sieber 2003, Weiner et al. 2002, Erik de Man 2003, Kyem 2000, Harvey 2000). The disciplinary divide between the 'GIS positivists' and 'social theorists' (see Schuurman 2000 for a comprehensive overview), raises many lively discourses, and, at times conflict, about the use, utility, and value of GIS and maps (Shepard and Bowler 1997, Elwood 2006, Harris and Weiner 1998, Weiner et. al. 2002, Esnard et. al. 2000, Pickles 1995, Openshaw 1991).

The salient fact remains, however, that maps will continue to purvey

messages in the public arena (Openshaw 1991, Schuurman 2000). I

would like to direct our attention, therefore, to a more productive

endeavor of using maps not to lie, omit, misrepresent or hide

information but to use them as effective tools for public discourse and

engagement.

2.6.3 Maps as a Communication Tool

Kyem (2004) considered the role of GIS maps as useful for stimulating

dialogue and learning that inevitably exposes underlying value

systems:

> Consider a mediation process where parties represent the
> objects contained in GIS maps prepared for the
> discussions. In these instances, the parties would be
> making decisions that are influenced by values that dictate
> their positions in the conflict. Questioning stakeholders'
> opinions about conditions represented in the maps
> therefore taps into their beliefs and can consequently
> reveal the values underlying the positions they have taken
> (p.47).

Subsequently, the information gathered from examining maps

collectively could be used to help disputants understand the conflict in

new ways to find solutions. Through this process, individuals undergo

a transformative learning process (described in section 2.3). As

Crampton and Krygier (2006) state: "maps are active; they actively

construct knowledge, they exercise power and the can be a powerful

means of promoting social change" (p.15).

Pickles (1995), in reference to GIS and informatics, refers to these

fields as "foundational for the reemergence of a civic culture, a

community of dialogue, and a global village...a potential source for

counterhegemonic social action" (p.10). Linkages clearly exist for

maps as learning tools and tools that are capable of stimulating

dialogue, which leads to learning, which in turn leads to more informed

decision making.

In a cross-cultural context, maps are also useful as intercultural

communication tools for knowledge sharing. According to Bird (1995):

> Now that environmental contamination is at a critical level.
> First Nations Elders and medicine people are finally being
> consulted to assist in correcting the errors of previous
> development and planning efforts...When examining the
> relationship among traditional beliefs, environmental
> contaminants and holistic heath, indigenous communities
> will have the ability to incorporate new technologies to
> their advantage. EAGLE is exploring new ground with
> maps which plots information that demand attention
> (p.24).

Learning opportunities using maps are also documented *intra-*

culturally such as research undertaken in five South American

countries by Smith (1995) identified that "when...maps were produced

at the community level, they became instruments for community

discussion..." (p. 3). Poole (1995) notes a similar experience identifying that the collection of traditional knowledge for a GIS "engaged all generations in the process" (p. 2).

2.7 SUMMARY

As demonstrated in section 2.6, maps are powerful texts, actively constructing knowledge, creating realities when they purport only to represent them. Maps can be used to empower, to marginalize, promote interests, share knowledge, elevate dialogue and bring social change; though, we often accept them uncritically as truth. But whose truth is that? When maps emerge from the 'black box', we'll not know the source or interpretation of the truth unless we talk about them.

As discussed in the sections on culture above, reconciling worldview and multiple realities depends primarily on acknowledging differences, building trust and accepting different modes of communication. Maps are potential tools that can bridge cultural divides and aid in necessary learning.

Through the dialogue stimulated by maps, we learn. This process of transformative learning, after the works of Habermas, Freire, Banduas and Mezirow, in turn, enable individuals and groups to become more

critically reflective, socially responsible thinkers through praxis. We

build a new social reality through more informed decision making.

Therefore, exploring the construction, content and messages of maps

through these frameworks may develop new insights into how we can

build cross-cultural competencies and improve EIA in Manitoba.

CHAPTER 3: METHODS / APPROACH

3.0 INTRODUCTION

This chapter outlines the methods utilized for this research project. In this chapter, naturalistic inquiry is described and justified in the context of this study (3.1), the case study is described (3.2), map selection is described in section 3.3, and in section 3.4, the research approach is explained.

3.1 NATURALISTIC INQUIRY

Naturalistic inquiry, which is a post-positivistic paradigm that is also referred to as a qualitative research design, is based on the assumption that reality is relative rather than objective and absolute (Creswell 1994). Naturalistic inquiry is a suitable paradigm for this research since the central question of this research focuses on cultural specific interpretations of space.

Qualitative methods are also more appropriate for this research due to their adaptability to multiple realities and value patterns that will shape research outcomes. Grounded theory is particularly suitable because of few pre-existing studies of this nature; therefore, theory must emerge from the data given the focus on context, which cannot be pre-determined (Neuman 2003).

3.2 CASE STUDY SELECTION

This research focused on working with Cree people from the O-Pipon-Na-Piwin Cree Nation (OPCN) residing in South Indian Lake. This study was limited to examination of selected maps of the Treaty Land Entitlement (TLE) and Northern Flood Agreement (NFA) land selections in the OPCN registered trapline area; selection of any other geographic regions would have became more of an academic versus a grounded exercise.

This case was also selected, in part, because I have a continuing relationship with the OPCN people in South Indian Lake as I have been mapping their land base for the past seven years and I have developed a trusting relationship with many people in the community.

3.3 MAP SELECTION

Two maps were used during interviews (phase 1), both displaying the OPCN trapline zone (all registered traplines) for OPCN. The first is entitled "O-Pipon-Na-Piwin Cree Nation Treaty Land Entitlement Selections, 1992 CASIL Settlement Land Selections and Traditional Fish Camps prior to the Churchill River Diversion" which displays the three types of land selections (final) entitled to the OPCN people. This map will be referred to as the "Selections" map (Appendix A). This

map was used to communicate final land selections to the community and was submitted to Manitoba Hydro and various provincial and federal departments for treaty land and compensation claims[§§§]. The second map, "Land Capability, Use and Selection Study" displays various layers relevant to natural resource use such as mining leases, greenstone belts, eskers, Registered Traplines (RTL's), sand and gravel deposits, lakes, rivers, and preliminary selections. This map will be referred to as the "Capability" map (Appendix B). Collectively, the two maps used will be referred to as the "OPCN maps".

Initially the research design included selected maps from the Wuskwatim CEC hearings but this was abandoned following discussion with Chief Chris Baker of OPCN (Section 5.2 for discussion). Therefore, in the absence of directly reviewing maps produced by the EA process with study participants, a post-research comparison between the map elements that were changed as a result of the findings of this study were compared to existing EA maps to determine whether improvements could be made in EA mapping (Section 4.10).

[§§§] Upon separation from the NCN, the OPCN was entitled to a per capita share of Treaty Land Entitlement (Treaty 5) of 2000 acres in the NCN NFA Implementation Settlement Agreement and 8500 acres pursuant to the 1992 CASIL Settlement Agreement to establish independent (from NCN) reserve lands (NCN 2003). The fish camps were to be replaced and / or paid for by Manitoba Hydro following the CRD (Robson 1993 p.114-115)

3.4 RESEARCH APPROACH

The research approach was divided into two phases of data collection and analysis and evolved through several adaptations and modifications. This involved a journey for me and a series of "disorientating dilemmas", which in turn, greatly affected my own 'worldview' in favour of a more integrative perspective. From these new understandings, I am implored to share some reflections on research methodologies (3.4.1) prior to describing the research approach in depth.

Following these reflections, I will describe the required research approval processes in section 3.4.2. Phase one involved individual qualitative interviews described in section 3.4.3. Participant selection methodology is outlined in section 3.4.4. Data handling, management and analysis techniques for phase one are described in 3.4.5. A focus group was planned for phase two though it was adapted upon arrival in South Indian Lake the second time. A modified approach is described in section 3.4.6. Section 3.4.7 explains data management and analysis of the second visit to the community.

3.4.1 Reflections on Cross-Cultural Aboriginal Research

Bell (1978) noted that social research tends to be conducted "*on* the relatively powerless *for* the relatively powerful" (p.25). It is with this

in mind that Smith (1999 p.1) writes on the Aboriginal perspective on research:

> When mentioned in many indigenous contexts, it [research] stirs up silence, it conjures up bad memories, it raises a smile that is knowing and distrustful. It is so powerful that indigenous people even write poetry about research.

As a result, researchers have had to review their research design and approaches to move from positivistic to post-positivistic and participatory research paradigms (Castleden 1992) thereby attempting to reduce complicity in behavior that represses others (Rose 1986). Researchers therefore, are seeking more collaborative approaches to cross-cultural research with integral power-sharing opportunities and benefits for all parties (Rose 1986). This redesign process necessitates reflection on the researcher's attitudes, behaviour and question how research designed is affected by ones' own cultural lens.

Through this awareness, Berardi (2007 p.850) states that by using a participatory research approach, "meaningful information can be gathered in a short period of time...by listening carefully and remaining flexible and opportunistic". After information is collected, it is also vital that the results in the thesis text are moderated culturally by (re)presenting them back to participants to prevent any misrepresentation of their views (Gibbs 2007).

As a result of the concepts presented above, this research design has been adapted to incorporate specific research approaches such as collaborative inquiry and focus groups to share research results and verify results (discussed in Sections 3.4.6). Research 'products' include new 'improved' map sets for the community.

3.4.2 Required Research Approvals

Because this research involved gaining access to visit a First Nation community, and is affiliated with the University of Manitoba, two distinct external approval processes were necessary to conduct this research, discussed in turn. A third approval requires informed consent from each interview participant.

The first approval was required to gain permission to enter the community and work with the people of South Indian Lake. As I had worked for OPCN in a mapping capacity, I was able to set up a meeting in Winnipeg with the Chief to outline the research plan and to personally give him a short written proposal. He suggested some research modifications (see 5.2) to which I responded with a revised proposal. Following a Band Council meeting, I was granted written permission in May 2007 to conduct research in South Indian Lake; a practice that varies from community to community where some

communities require the more formal Band Council Resolution (BCR) to acknowledge and provide consent for a researcher to enter the community (Stevenson 2001 p.43).

The second approval was obtained from the University of Manitoba through the Joint Faculty Research Ethics Board (JFREB) in early May 2007 whose ethics approval process is congruent with the Tri-Council (MRC, NSERC, & SSHRC) Policy Statement on conducting ethical research involving humans (University of Manitoba 1999).

The third approval comes from individual participants through the process of informed consent. Prior to proceeding with interviews, all study participants reviewed with me an oral research consent form (Appendix C) which is preferred to a written consent form in cross-cultural research, especially by Elders (Stevenson 2001).

3.4.3 Phase 1: Qualitative Interviews

Twenty two semi-structured qualitative interviews were conducted to probe different interpretations of the maps presented (interview schedule: Appendix D). Five women were interviewed and 17 men including two male elders. The participants ranged in age from 32 to 72. Thirteen people had elementary school education and three had completed high school. Four and two people completed college and

university respectively. All interviewees were OPCN Band members excepting 3 who remained NCN members.

An interview pretest was also conducted prior to field work to ensure appropriateness of the interview questions and interview flow.

Interviews were open-ended and the interview schedule was rarely followed because people volunteered automatically many of the responses to interview questions without prompt just by reviewing the maps. I would revert to one or two interview questions when the discourse left the subject of the map for an extended amount of time. Having patience, however, paid off as many people told stories that, at first, did not seem to relate to research objectives, but their stories ultimately tied back to the task at hand if they were not interrupted.

I brought many copies of the OPCN maps to South Indian Lake and encouraged people to record any information that they wished to see maps. Several people added local place names, trails and portages that they had used, cabins, and ATV roads to Tadoule Lake and to Big Sands Lake Lodge.

3.4.4 Population Sampling Method

Participant selection was conducted using a snowball sampling approach that was opportunistic. The first people who were interviewed were community leaders, who, given their knowledge of the people in the community, recommended others that would be willing and able to contribute to this study. They recommended commercial fishermen, resource users such as trappers and hunters with experience on the land. Other community members were also recommended because they held positions such as members of the Trappers Association of South Indian Lake or were people involved in the Community Association of South Indian Lake (CASIL), guides that had worked at the Big Sands Lake Lodge, the Natural Resources Officer and people employed in the Debris Management Program funded by Hydro. This sampling selection method resulted in over and under-sampled populations; however, participants were primarily selected for their understanding of the land.

However, extra measures to include segments of the population were taken in the case to speak to elders who are highly respected for their wisdom and perspectives. Some elders speak only Cree or limited English. An interpreter was hired from the community. The interpreter was selected on advice from community leaders and the decision was based on their fluency in Cree, their credibility in the

community, and their understanding of the necessity of translating as close to verbatim as possible. Only two elders were interviewed in phase 1 and this portion of the study would likely have benefited from additional participants. However, the elders had been evacuated out of the community at the time of this study due to thick forest fire smoke. An additional five elders participated in phase 2 of the research which improved representation of this group.

Also, as a female researcher, I was interested in female perspectives and think that since women represent 50% of any population, they should be included in all qualitative research despite the fact that they were not generally recommended as primary resource users.

3.4.5 Phase 1: Data Management, Analysis and Verification

Interviews were tape-recorded (if permission granted) or, alternatively, recorded by hand onto field notes. Tapes and / or interview notes were later transcribed. Most people preferred not to be audio taped (16 of 22).

Nvivo software (Muhr, 1997) was used to select and code data segments and build grouping of codes to uncover common themes. I had originally built a code list of 45 themes, an activity that was

concurrent with the interviews, which emerged from the research as a first pass through the results. After all the interviews were complete, I then grouped them in to a hierarchical tree structure, grouping interrelated ideas, for the purposes of organizing the results to address each of my research objectives. At that time, I revised some of the groupings by merging codes (nodes in NVIVO) and delineating others that were distinct ideas.

I then reviewed the data to see if some cross-sectional groupings could be made by reviewing peoples' primary activities such as trapping, commercial fishing, guiding, community leadership, or community support work and gender, age and education level. The outcome was a systematic approach to uncovering peoples' perceptions of the maps presented. Results are represented by direct quotations from interviews and as summaries in chapters four and five in this text and embodied in the map products that I returned to the community with in phase 2.

3.4.6 Phase 2: Focus Groups

Approximately one month's time elapsed between Phase 1 and Phase 2 which was intended to provide time for critical reflection and to encourage conditions for praxis as discussed in section 2.3. New maps

(see description section 4.5) were created based on suggestions from participants in phase one and I returned to the community with the intent of holding group sessions. The initial plan for Phase 2 was a focus group approach intended to be a participatory action exercise (after Glicken 1999, Diduck and Sinclair 2002, Fitzpatrick and Sinclair 2003, Webler 1995) but I had to quickly adapt this method because people felt uncomfortable participating together. One of the women clarified for me by saying "Oh, I came at 1:00 but I saw Joe [not his real name] in there and I thought that he wouldn't think that I had anything important to say about maps". Therefore, I changed the consultation process to involve people who were alone, in pairs, or groups of three to visit at the OPCN board room. I maintained an open door policy which resulted in feedback from 30 people, 21 of which had not participated in the study previously in order to broaden feedback on the new maps. Of the 22 original participants, 9 participated again in phase 2 (for a total of 43 people involved in the study).

The data collection method for phase two involved note-taking exclusively. Since people expressed discomfort at formal group sessions, the open door policy resulted in more informal consultation and discussion on maps. I briefly and orally summed up the changes

that people had requested in the construction, content and message of the new maps. I also explained that I was unable to incorporate some of the elements that people had suggested (such as the Debris Management Crew GPS waypoints of Southern Indian Lake navigational hazards discussed in the next chapter). I told participants my intent was to see if "I got it right" or whether there was additional work I could do to improve the maps. People did recommend further revisions to the maps which refined and also further explained the rationale for the changes requested. Participants also affirmed the implementation of some of the new representations that were formerly suggested, lending validity to phase 1 findings.

People were also probed in regards to their comfort level in dialoging around the new maps versus the old and asked what they viewed as potential uses for the new maps both intra and cross-culturally. They were asked four questions:

1. Do you feel more comfortable talking about the land with the new map? Why or Why not?

2. What could you use this new map for? Inside or outside the community?

3. Would this new map help talking and understanding across cultures?

4. Did you learn anything new about maps or communicating across cultures?

This phase was also executed to provide answers to objective 3 of this study: to improve dialogic interaction and learning in the EIA process in Manitoba through the use of maps. Although the maps used in this study were not ones directly used in EIA in order to respect local wishes, the maps used were a product of a cross-cultural consultation process to identify community priorities for land and resource use. We could therefore infer that improved conditions for cross cultural dialogue and learning in this instance could also be extrapolated to EIA since the goals are the same. The results and the degree to which this objective was achieved are discussed in Chapters 4 and 5 respectively.

This phase did serve, however, to strengthen the internal validity of the study, particularly findings for objectives 1 and 2, by reviewing interview outcomes from phase one and correcting interpretations of the data where necessary. This technique is described by Creswell (1994) as "member checks" (p.158). This approach would have been improved if more of the original participants had been available. In retrospect, I should have planned to stay in the community for a longer period (2 weeks) to ensure that people had a longer time frame to come for a visit. I stayed six days.

At this time, the commercial fishing season was just beginning and many people were in preparation to leave for their lakes. Also, many of the community support workers that I had interviewed previously were out of the community on holidays as well. However, the elder consultation that I was privileged to be a part of compensated somewhat for this study weakness.

3.4.7 Phase 2: Elder Consultation

On my first trip to the community, I had the opportunity to speak to only two elders because of forest fire evacuations that prioritized elder evacuation. I had requested an opportunity to speak to the elders upon my return. My community contact person graciously arranged space on the Wasasihk (little bay) Gathering agenda for me to have this opportunity which took place on an island in South Bay that was the original settlement location. A man recommended by a councilor offered to interpret for us.

At this session, four elders participated and another came to meet me the following day. We sat in a field for four hours with the old and new maps displayed which were not the topic of conversation directly. What I did receive was some explanations regarding Cree culture that

put many former interactions into context. These insights are further explored in Chapter 4 and 5. An unexpected post-research phone call further contributed to this study which is described in chapter 4.

CHAPTER 4: MAKING MEANING FROM MAPS

4.0 INTRODUCTION

Objective one of this research related to how Cree people interpret maps, the results of which are presented in 4.1. Because interviews were focused on three different themes identified in objective two: 1) Content; 2) Construction; and, 3) Message, the next sections are organized accordingly in 4.2, 4.3 and 4.4 respectively. The structure and construction of the new maps I produced is presented in section 4.5 and results from phase 2 are provided in section 4.6. A post-research phone call is described in 4.7.

4.1 CREE INTERPRETATIONS OF MAPS

Virtually all participants of phase 1 (20 of 22) said they do not use maps for resource usage (fishing, hunting, trapping and guiding). When participants reviewed the OPCN maps though, all were able to use them to identify familiar places and discuss the land using the map as a reference. They discussed in depth their experiences, memories and their travels with reference mainly to lakes and rivers in the region. They were capable of using maps but did not. When probed on why they did not use maps they said 'it's all in my head' or 'I grew up there' or 'my grandfather took me out on the land' indicating

experiential and applied learning of the land versus using maps in any capacity.

Participants generally perceived maps as inadequate to represent the land in sufficient detail and pointed out conspicuous absences of community and/or culture features on most maps such as Registered Traplines (RTL's), fishing or hunting camps, or local placenames which negated their value.

Some people who had completed high school education noted that they had used maps in an academic capacity such as learning about countour lines and legend symbology though this academic knowledge was not applied on the land vis-à-vis the use of maps. Participants said they relied on the internalized knowledge of the land from direct experience and also skills that include taking cues from vegetation and water flow direction to navigate their way in unknown areas. Knowing where areas of high elevation are is very desirable as these vantage points are necessary to read the land in unknown areas. It was confirmed that the elders used this method and experienced resource users still do today to "find their way back to where they want to go [in unfamiliar territory] instead of going further into the bush".

The first of the two people who used the National Topographic Service (NTS) 1:50,000 paper mapsheets actively on their trapline expressed disappointment that his trapline area transected four mapsheets requiring four separate maps whereby their relative utility diminished, he subsequently abandoned their use. The second participant had used the NTS maps to plan trips but would not use these maps actively on those trips. He complained that the maps would actually misinform him to avoid barriers such as bogs and wetlands which, in fact, were found to be traversable.

When asked which was the most important layer for orientation or to 'find where they are' 11 of 14 people who answered the question told me the water was the most important feature, particularly the interface of the water and the land; the shorelines. The next most important layer present on the maps, I was told by 5 of 14 people, was the Registered Trapline (RTL) boundaries as they immediately looked for the trapline number and pointed out their trapline. Fishermen generally reported that the fish camps were secondary to water; the RTL's were of less importance for them though they understood them as a significant majority reported activity in specific RTL trapping areas in winter.

An interesting event also provided illustration of the importance of these socio-significant sites to map interpretation. When I was in the community conducting interviews, a portion of the populous was evacuated because of smoke from a 33,000 hectare fire blazing 15 kilometres to the south of the community; burning in traplines used by the community. A map from Natural Resources was posted at the community administration building to inform residents of the location and extents of the fire. The map showed only labeled water bodies. and fire boundaries. The area displayed was truncated just south of the community (Appendix E). A community leader pointed out that the people had a difficult time interpreting the location and scope of the fire because of a lack of culturally significant layers. He said "if the RTL's were shown, we would know that's #5, Brian's line, or #33 as my line and the people would understand better". Displaying the affected RTL boundaries would have provided a comparative tool not only to help people understand the extent of the fire but to understand its' relative location. Failure of this map to communicate location and scope obviated its purpose.

Therefore, there remains a divide in cross-cultural communication using maps. Existing maps are not useful because they lack many socio-significant elements. The response is to abandon map use

altogether as maps are currently tools that do not meet their needs in any practical way. However, the potential for adapting map content to improve maps as a communication tool evoked enthusiasm and engagement from participants.

4.2 CONTENT

Content refers to what features are displayed on the map and which are not. Since the most important feature on the map for the people was the water, place names (toponyms) were examined in detail. The Selections map contained toponyms of major lakes and rivers to the exclusion of minor ones. Many participants indicated that there were absences of place names for many lakes and rivers and that more comprehensive labeling should take place.

Local place names exist for every peninsula, bay, island, cabin and lake and are passed along orally from person to person in the community. One participant explained: "We have a name for almost 99%, at least 90%, of the points the bays. And if we don't have a name for the point 'it's the bay after Derek's bay'; 'it's the bay off Hazel's bay' ".

Adding more place names to maps was a consistent request and translation of the English names to Cree was supported by several people. Therefore, vernacular language was viewed as essential. I was also told that Cree syllabics were not deemed necessary as they are not practiced there.

Many of the lakes in the region were named after WW1 veterans. The people have a local naming system that supersedes several of the formal Canadian toponyms (although, in many cases, the Euro-Canadian names are adopted into the mosaic of place names) and many alternate local names exist used interchangeably with the official Canadian name.   One participant stated for example:

> There's lakes in the RTL that are not called by the same name...I don't know if it is Dennison or MacCratcher. We know one of these as Wigwam. Let's say it's Kassic. I'm pretty sure it's Kassic. So it would be nice for us to see our traditional name in brackets below. I've fought Conservation on this issue and Conservation wouldn't change the name because most of these lakes are named after veterans. But we've had names for them already before. Like 90% of these lakes have names other than that like Wigwam.

Where possible, lake and place names were collected for further mapping.

Another conspicuous absence on the Selections map was contemporary fish camps and safe havens (cabins built on lake shores and islands to shelter wind bound travelers). Furthermore, participants stated that cabins on traplines could have also been recorded on the map. Fish camps are regarded as private but are available for emergency use and safe havens are for public use in emergency. Trappers' cabin use is at the discretion of the trapline holder.

People indicated that safety was a major issue for both community members and visitors to the community. Several people indicated that they slept outside in stormy weather within reasonable walking distance of a cabin they were unaware of. One participant asked: "if you breakdown 5 miles from one camp but don't know of it, why walk 30 miles to another?" Similarly in regards to safety, displaying areas where thin ice persisted throughout the winter, rapids, falls, travel routes on the lake, buoys, reefs and shoreline features such as sandy or rock shores to illustrate safe landing areas was also deemed important.

Five of twenty two people explicitly expressed much disappointment that Missi Falls Control Structure was not shown on either of the OPCN

maps as this is a central feature to the modern history of the community (more discussion in 5.1). People also noted that the Notigi dam was off the south extent of the map (not shown) which functions as the water release valve into the Rat River leading to the Nelson River generation stations. These two structures gave people the sense that their mobility was limited, an enclosure constructed by the powerful from the south:

> And when we looked at here [Missi Falls], like you know,
> one elder said what are they going to do with us next?
> They got us dammed up here at Missi falls and they got us
> dammed up down below here [Notigi]. They got us right
> in between, you know...They're feeling closed in.

The omission of the Missi Falls control structure and the Notigi Dam is also an omission of acknowledgement of the most significant and devastating event in modern times for this community (which is discussed in greater detail in section 5.1).

The *presence* of certain features on the maps was also questioned. For example, the existence of mining leases on the Capability map was the subject of much inquiry. Some people had heard that some of their TLE selections were rejected on the basis of the presence of mining leases held by others outside the community. The process of acquiring a mining claim or transferring an existing claim from a deceased person in the community to a descendant was not

transparent and people did not know who to ask. They felt that they may incur some lost opportunity for resource development revenues. Similarly, most participants asked for an explanation of greenstone belts displayed on the Capability map which is discussed in the next section on map construction.

4.3 CONSTRUCTION

Construction refers to spatial reasoning (understanding contour lines, for example) (4.3.1), legends and tables (4.3.2), scale (4.3.3), data update (4.3.4) colours (4.3.5), symbology (4.3.6), semantic generalization (4.3.7), and orthographic orientation (4.3.8)

4.3.1 Understanding of Thematic Layers (Spatial Reasoning)

The Capability map was used to assist making TLE selections and the community was advised to select parcels that intersected with areas with potential for future economic opportunity for natural resource development. Some of the future development activity may center on mining extraction where the presence of greenstone belts may indicate the existence of valuable mineral reserves and where local eskers and sand and gravel deposits would reduce material and labour costs for future road development. As a result, these layers were mapped on the Capability map to facilitate community land selection decisions.

Accompanying this diversity of information comes discipline specific

terminology.

For example 'greenstone belts' are not likely to be a subject of

household discussion in South Indian Lake, nor in any other household

in Canada, unless you are a trained geologist. The result is

exclusionary terminology that precludes participation because not all of

the elements on the map are intelligible nor are explained to the

people. It was suggested again and again that the terminology be

simplified to alternate descriptors such as "potential mining areas" in

the case of greenstone belts, "ridges" in the case of eskers, and "bogs

and mashes" in the case of wetlands. So although people had the

capacity to understand different thematic layers, they did not due to

exclusive language.

People were also puzzled by Graticules[****] that were present on the

Capability map. They were displayed as coordinate values around the

map frame in Universal Transverse Mercator (UTM) coordinates which

is a common projection system for Manitoba. The origin of the UTM

coordinate system (from which coordinates ascend in metres) is the

equator for northings and the centre of the UTM zone, in this case of

[****] A network of longitude and latitude lines on a map or chart that relates points on a map to their true locations on the earth (ESRI 2001). In this case, UTM coordinates were used instead of longitude and latitude.

zone 14, is 99 degrees of longitude west of the Greenwich prime meridian, for eastings[††††]. The response from one individual after I explained the coordinates was "Why measure from the equator? This is South Indian Lake!" This was followed up by a sensible solution of adding an alphanumeric grid like road maps the participant had seen. This point is instructive to map makers as their technical cartographic knowledge is not ubiquitous.

4.3.2 Legends and Tables

Legends were not often consulted by the people. I noted that the people would generally ask me orally for clarification on what was represented on the map. Searching for the legend, it appeared to me, seemed to occur among participants who had the most formal education and those with the most reported experience with maps. Evidence offered here to support this observation is anecdotal as it was after roughly half of the phase one interviews were completed that I decided to observe for this activity.

I did notice that no one referred to the tables on the Capability map. These listed fish camp names and mining lease information; the first, assumed to be common local knowledge, the second, not meaningful

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[††††] UTM Zones extend 3 degrees east and 3 degrees west longitude from the easting origin at the equator. A value 500,000 is added to the easting coordinate at the origin to make all eastings positive numbers (when counting to the west), so the actual origin coordinate pair (x,y) has a value of (500,000, 0).

as only one participant indicated any interest in mining. People found

little utility in tables as a communication tool.

4.3.3 Scale

All maps have scale usually documented on maps as a referential

fraction such as 1:250,000. This fraction is the ratio of one unit on the

map that represents an equivalent number of units on the ground and

is set to display the area of interest for a specific paper size. The

OPCN maps were plotted at a 1:350,000 scale. At this plot scale,

features such as bays and points are displayed relatively small which,

in this case, was compounded by generalized shorelines of the data

collection scale, explained next.

Another scale that fewer people are aware of is the data collection

scale. The data collection scale reflects the quality of the source data

used to generate spatial data. For example, a satellite image with 30

x 30 metre pixels will generate, when features are traced or

"digitized", data that could never be more accurate than +/- 30 metres

because of the precision of the source data. Alternatively, if an aerial

photo with 1metre pixels is digitized, the precision of the location of

boundaries of features such as lakes can be as accurate to their true

location as close as +/- 1 metre. The 1 metre data also has the

capability (dependent on the care of the digitizer) to display better

spatial detail such as changes in the direction of boundaries of features

as small as 1m.

Similarly, the Canadian National Topographic Database[‡‡‡‡] (NTDB)

created by Natural Resources Canada, Centre for Topographic

Information consists of digital spatial data that are organized into two

different data collection scales covering all of Canada's land mass; the

first at 1:250,000 and the second at 1:50,000 generally reporting

spatial accuracy of +/- 150 m and +/- 30 metres respectively[§§§§]. A

comparison of the two scales depicting the same waterbody is shown

in Figure 2.

Prior to April 1, 2007, data could be purchased through the Natural

Resources Canada website in tiles that each cover a region of 160 x

110 kilometres (approximately 18,000 km^2) for 1:250,000 scale data

and 40 x 28 kilometres (approximately 1,100 km^2) for 1:50,000 scale

data (Natural Resources Canada 2006). Seven 1:250,000 tiles were

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[‡‡‡‡] This data is defined by Natural Resources Canada: "The National Topographic Data Base (NTDB) comprises digital vector data sets that cover the entire Canadian landmass. Geomatics Canada has digitized and structured thousands of topographic maps, creating a complete and uniform product that can be highly useful in a broad range of industries. The NTDB includes features such as watercourses, urban areas, railways, roads, vegetation, and relief." (Natural Resources Canada, 2007).

[§§§§] 1:20,000 scale data replaces 1:50,000 scale data for southern regions of Canada with a +/- 10 metre accuracy.

used for the base map features represented in the OPCN maps

encompassing the OPCN Trapline Zone.

Figure 2: COMPARISON OF LAKE SHORE DETAIL CAPTURED BY
DIFFERENT NTDB DATA COLLECTION SCALES (1:250,000 - SOLID,
1:50,000 - LINE)
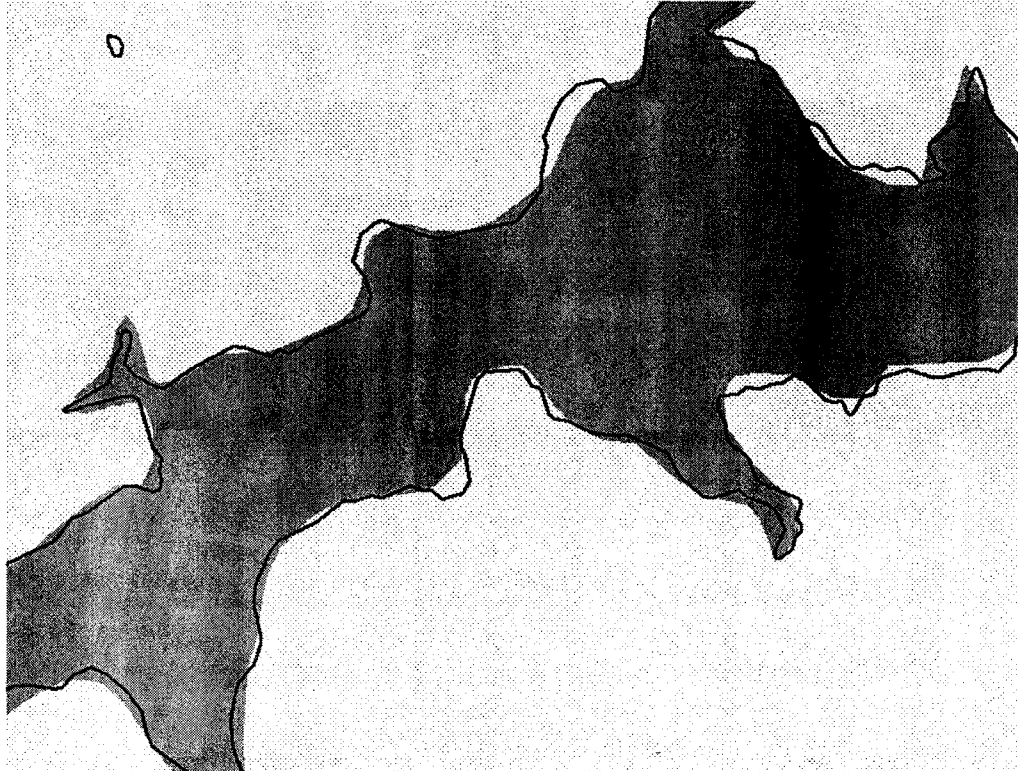
At the data collection scale of 1:250,000 bays and points are

generalized which caused people difficulty in identifying areas on the

map they wished to communicate about. Several people volunteered

to mark down trails, portages, and winter roads as additions to the

features on the existing maps though experienced difficulty identifying

where these features met shorelines and bays because the shorelines

lacked detail. Over half the people indicated that the detail was not sufficient to work with and wanted the area of the map reduced to one registered trapline per map and more detail shown. An improved map, for them, would have better spatial accuracy and the plotting referential fraction would be set at a value closer to 1.

This result is not surprising considering the intimate knowledge of the land that the people possess that they would be discriminating in their use of a tool that reflected a very generalized version of the reality they know. What was interesting was their commitment to accuracy that would, at times, result in refusing to mark the map with a new feature because they were unable to identify the exact location (see also Brody 1981). They would defer to others in the community who they thought might more accurately be able to portray a location of a feature. More than once, even when the recommended individual arrived to mark a feature, they too did not record the feature on the map. After several attempts with several individuals, the task would be abandoned because it could not be completed accurately with the existing map representing a loss of opportunity to share knowledge. This is reflective of the diminished value of working with 1:250,000 scale maps with Aboriginal people.

4.3.4 Data Update

The Canadian government has mandated a monumental task though the creation of NTDB digital data for capturing the topological features of our vast land mass. It is not surprising that, because of a rotational update schedule, the interval of update exceeds 50 years in some areas, particularly in the north. Lack of data update, however, was particularly pronounced on the OPCN maps in the 1:250,000 064H (version 2.02 purchased in 2001) NTS tile area which extends from Missi Falls control structure east along the Churchill River to the eastern boundary of the RTL's, portions of which were valid for the year 1954.

The Churchill River Diversion profoundly affected regions covered by the 064H tile since 1977 when the Missi Falls control structure became operational and the Churchill River water flow was reduced from a long term average of 991 m^3 / second to an average of 510 m^3 / second (Manitoba Hydro, date unknown) and many of the adjacent lake levels were reduced. Figures 3 and 4 display a comparison of Churchill River boundaries between Partridge Breast Lake and Northern Indian Lake that are pre and post CRD and data update.

Figure 3: THE CHURCHILL RIVER, PRE-CHURCHILL RIVER DIVERSION
(CURRENT FOR 1954) AS SHOWN ON THE OPCN MAPS
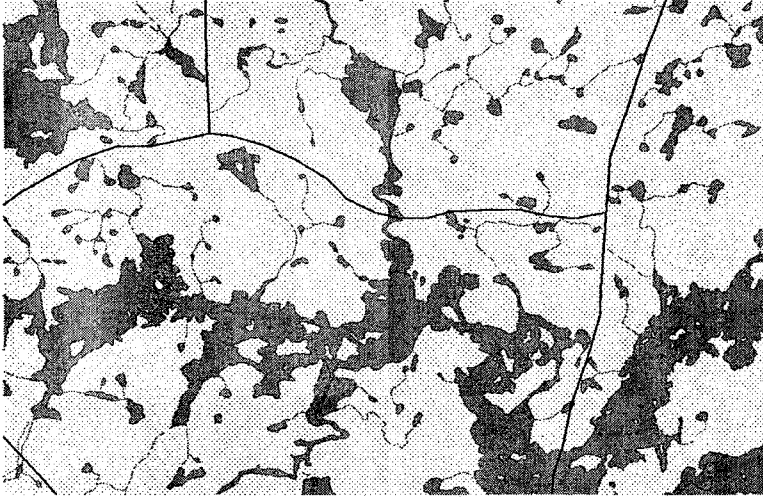
Figure 4: THE CHURCHILL RIVER, POST-CHURCHILL RIVER
DIVERSION (CURRENT FOR 1992)
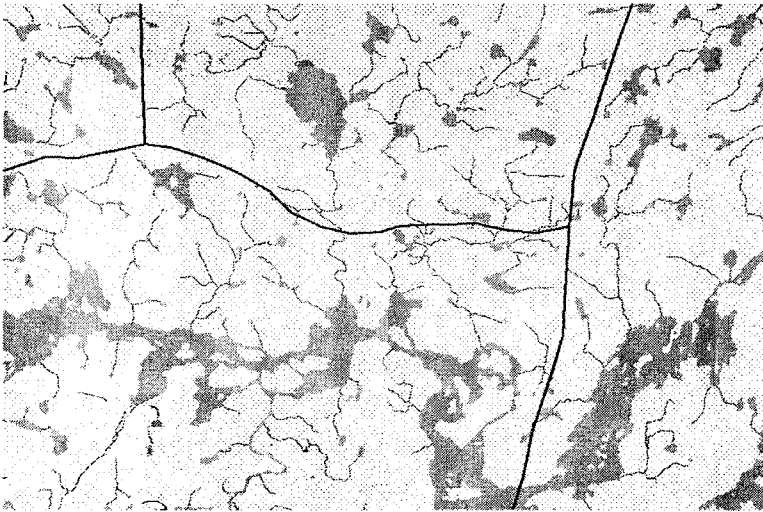
The changes in the water levels in the Churchill River basin became apparent to the people in 1977, though because of the lengthy data update interval, changes were not reflected on the OPCN maps created in 2001 which utilized the 1:250,000 scale data. At the time, the 1:50,000 map sheets may have reflected the changed water levels in this region since an update occurred in 1992, however, the costs of purchasing the 1:50,000 map sheets for such a large region was considered prohibitive at the time. As it was, the seven 1:250,000 mapsheets cost over $2900.00 in 2001. The registered trapline region contains 60 1:50,000 map tiles so that cost would have increased considerably if maps were created with the more detailed scale.

As of April 1st, 2007, however, Natural Resources Canada (2007) issued a press release indicating that all NTDB digital data would be distributed for free by Geogratis***** which is a solution to achieve a more detailed depiction as discussed above as the 1:50,000 scale data is now free. Free release also provides better documentation of data updates as sixteen 1:50,000 tiles cover an equivalent 1:250,000 mapsheet but update documentation is available for each sixteen as opposed to the "partial update" status of the larger mapsheet

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***** GeoGratis (http://geogratis.gc.ca) is a portal provided by the Earth Sciences Sector of NRCan that provides geospatial data at no cost via a Web browser. (Natural Resources Canada, 2007)

(Appendix F) which does not tell a user exactly what has been

updated.

The presence of pre-CRD lake boundaries in the Churchill River basin

downstream from Missi Falls affected peoples' level of trust in the

entire map product although the area that remained significantly out

of date was only a small portion. The lake and river level drop in the

area had profoundly affected the land use as formerly navigable

waterways became un-navigable, catch from commercial fishing lakes

with formerly plentiful bounty was reduced, shoreline cabins were now

offset over 300 metres from the shore and periodic release (2003 as

most recent event) of water from Missi Falls destroyed fishing and

hunting equipment and cabins. As a result, many people abandoned

their traditional land use in this area. The OPCN maps offered no

validation of these conditions.

4.3.5 Colour

The colour of lakes generated much discourse as they are highly

variable on the land. The cartographic convention is to display

lakes and waterbodies as a light blue and, as cartographers are

taught, any alternation of convention can be disconcerting to a

map user (Dent 1999 p.300). The OPCN maps did not deviate from this convention.

In reality, however, lake colour is variable. Figures 5, 6 and 7 display images I took from the aircraft in the southern portion of the South Indian Lake registered trapline zone. These images reflect variable surface vegetation on lakes which give them a green hue (Figure 5). On other lakes, the presence of beavers stir up muddy lake bottoms (Figure 6), and dark deep lakes are also present (Figure 7), none of which display hues similar to the cartographers' representation.

Figure 5: VEGETATION ON LAKE
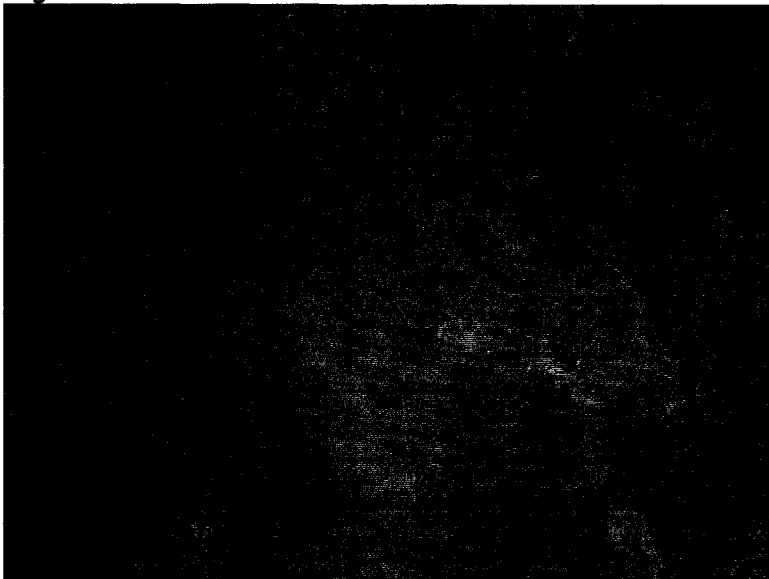
Figure 6: SILTY WATER
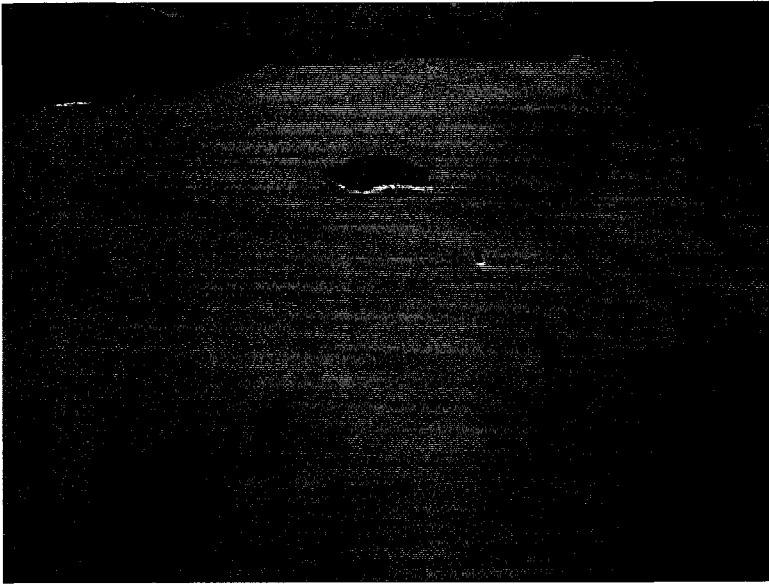
Figure 7: DEEP AND DARK WATER
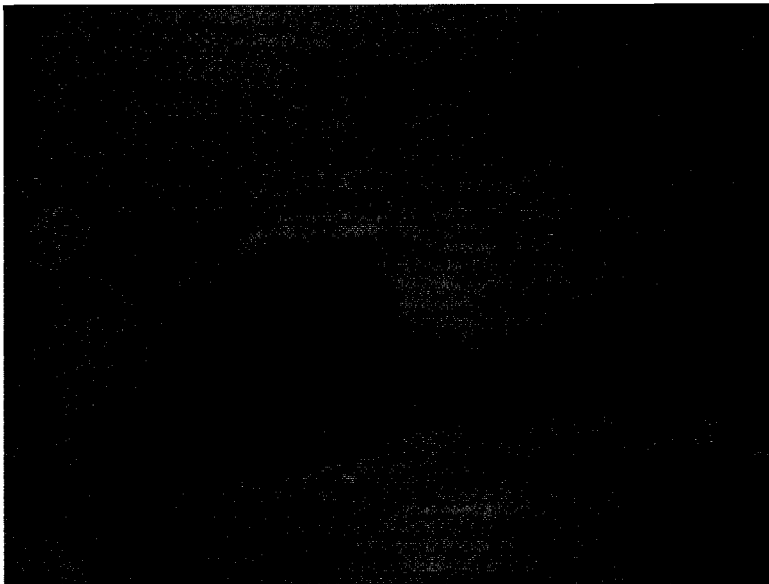
Another factor that affects the colour of water is the controlled water

levels and subsequent shoreline erosion on Southern Indian Lake.

These conditions have affected the colour of this lake making it a

muddy brown / gray colour. The people remember it as a clear blue

lake prior to the CRD. One participant commented:

> I would change the colour of the lakes to reflect it because
> it is nice to see blue. I wish it was blue because me as an
> Aboriginal woman, I am the caretaker of the water. And
> before birth is given, the first thing that comes out of a
> woman is water. Water is sacred and should be sacred to
> all women because we are the water carriers. So that's
> why water is very important to me. And when I see water
> as blue, it saddens me to know that it is not blue.

Another stated "Well, the only thing that doesn't make sense [on the

OPCN maps] is the blue water. Our water is not blue any more. Our

water is murky brown and different colours...shades of different

colours".

The primary suggestion on lake colour included changing CRD affected

lakes as a grey or brown indicating denuded waters and the presence

of debris from erosion. Other suggestions included display of

commercial and sports fishing lakes as different colours, or to colour

lakes according to their bathymetric depth. Others suggested leaving

them as is (blue) as one indicated that "The shape of lakes are more

important than the colour of them". For example, one participant

noted:

> The lake is brown. Everyone understands water to be blue
> so you can leave it as blue on the map. The lake stabilizes

for a while and it turns clear. When the water is stirred
up, it turns a muddy brown again.

This quote emphasizes not only the continuing reminders of the
Churchill River Diversion but ever dynamic conditions on Southern
Indian Lake.

On general map colouring, two of five women noted the four direction
colours were present on the Selections map and thought that this was
culturally respectful. East is represented by red, yellow for south, blue
(sometimes black) for west and white for north. It was suggested that
a centered circle of the respective cardinal direction colour be present
on map edges which "shows respect for the culture of the people that
live on Turtle Island." No men commented on this.

A woman also suggested the use of green as a preferred
representation of registered traplines "I would make it green for the
earth because it's identifying the earth. It's not only the water but the
earth too. It is very sacred to Aboriginal people."

Other suggestions were received regarding changing colours of
overlapping features so that each could be clearly distinguished.
There were some features, particularly on the Capability map that
were placed on top of the order of layers and, in turn, they obscured

base layers. I interpreted these suggestions not as final remarks on how a feature ought to be coloured but thought these suggestions arose because complex overlapping features reduced the clarity of the map. This is likely a reflection of the opportunity for an improved map design (selection of layers to included and/or clear plastic overlays could be flipped over to reveal more detail beneath).

4.3.6 Symbology

People suggested that symbology be simplified by clearer graphic representations for those who lack literacy. For example, community fish camps were symbolized by a small fish symbol with a numeric lookup of the camp name in a chart. Since the name of the camp is known to most community members by its location, it was suggested that a larger symbol be used to indicate the feature type, omitting the numeric lookup key. Similar suggestions for using pictographs for ferries, airports, and using any other symbolic opportunity (versus a textual descriptor) that exists for a map was heard and considered to be more inclusive for those who could not read.

Other pictographic symbology was recommended also for the safety reasons mentioned above including cabin sites on islands. Mapping communal community cabins (also known as 'safe havens'), for example contributes to practical internal usage of community based

maps and it does not instruct us much in the context of map construction in the broader Canadian context.

However, the recommendations received to map the cabins using pictographs do lend evidence to two concepts: pictographs are regarded as far more instructive than text; and secondly, inclusion of culturally significant features on the landscape would improve the credibility and usefulness of maps to local people. One participant who had formal (high school) education in mapping, stated at first that he never used maps and suggested that cabin pictographs would be instructive. When asked if he would bring a map with cabin sites added he said "More than likely".

4.3.7 Semantic Generalization

Semantic generalization of real-world objects refers to the data reduction necessary in the process of creating an abstraction of reality for a map. Since not all information from the real world can be collected and displayed on a map (too profuse), semantic decisions are required to group similar objects or delineate certain attributes of objects and display them differently (i.e. lakes versus wetlands although they are both water on the land). These features of the real world are then organized into thematic layers that collectively represent reality.

Roads, as they were displayed in red for 'limited use' were

contentious. One participant offered the following comments:

> "Roads shown in red are 'limited use'. What does this
> mean? Should be called winter road, skidoo trail or
> gravel" and another asked "What are the winter roads?
> What are the traditional winter roads? What are the
> traditional summer roads?"

Another participant stated: "We only have winter roads in some areas

eh? So here when I look at this Road limited use- what does this

mean? Is it a winter road, you know, be specific" indicating that too

much semantic generalization had occurred which devalues an

important map feature.

To explain further, both the Selection and the Capability maps

displayed roads by generalizing them into two types: Roads in black

(used to denote all season, paved roads) and roads in red (used to

represent 'limited use' roads). This was derived from the National

Topographic Data Base (NTDB) classification system which

differentiates roads with the above classification into two separate

layer files "road_l" and "li_road" respectively for use in a GIS. The

features of the limited use roads are further differentiated into four

coded sub-types in the attribute table: "0", "1", "2" and "3" meaning

generic/unknown, winter road, cart track (minimal maintenance for all

terrain vehicles) and dry weather road (suitable for regular traffic only

in dry weather) respectively (Natural Resources Canada 1996, p.106)

though these road sub-types were not distinguished by different colour or symbology on the maps. These sub-types are essential to display on maps as roads that require skidoos, ATVs, and seasonal or wet weather avoidance have significant implications for travel in the north supporting or precluding various modes of travel. "Limited Use" roads generalized as one colour is not appropriate.

Winter roads such as those to Tadoule Lake and to Big Sands Lake lodge were absent altogether. Where they were displayed, participants recommended delineating the vehicle that would be required to make passage on the road.

Display of elevation also received mixed suggestions including a gradient colour scheme ascending from low to high elevation or the use of contour lines and display of highest lands in each RTL. Elevation is an addition as both OPCN maps did not display this variable. People further requested delineation of the highest lands in each RTL that function as vantage points for assessing routes to traverse the land.

4.3.8 Orthographic Orientation

When I had originally been thinking about this research I had entertained the possibility that a north as 'up' orientation may not be

appropriate and that people may prefer a different orientation. I had been told by an experienced advisor to First Nations communities that he had observed people turning the map in accordance to the direction they were traveling on the land in their mind's eye. In this study, however, I noted that no one had exhibited this behaviour and therefore north as 'up' was regarded as acceptable in this study.

4.4 MESSAGE OF MAPS

Some participants, in particular trappers, observed that there may be value in maps of their own traplines to assist helpers in becoming familiar with the land. They could also use maps as a messaging system if posted in their trapline cabins to indicate meeting places to use maps as a form of communication. The map would function, in this case, as a teaching/learning tool that extends traditional knowledge of the land and the accompanying hunting and fishing skills.

Furthermore, several people indicated that maps had the potential as a learning aid to understand teachings of elders themselves and to educate youth about the land, though the OPCN maps would not be appropriate for this use because they did not contain enough detail. Others did not see the value of maps in general as a tool to instruct

youth as they perceived it as a 'lost cause' because youth are not spending time on the land.

One participant suggested that a harvest calendar could be developed for each RTL indicating the species trapped/hunted, the hunter or fisher's name, and specifics about the weight and size of the animal or fish for the purpose of collecting community resource usage in a central repository. He felt that Manitoba Conservation's record system was too broad indicating that for example a master fish caught was recorded only with the fisher name, lake, and length but this did not indicate the exact location of the catch. For hunting / trapping, he stated:

> Somewhere down the road, a map should be organized to show a harvest calendar. Because one of the biggest issues is that trapping is going to die. Fishing, I hope stabilizes...Imagine an individual picking up a map of a trapline holder who's name is [John Doe; used own name] and this is what he's harvested and this is where he's picked up a fox, a martin. Twenty years down the road, a 100 years down the road, can you image how fascinating to have it in that detail. It's to me my grandchild or great great grandchild picks up my name in the future. All he'll have is my name and 40 martin and that's it.

This participant also felt that if the information was centrally recorded, better efforts could be made to control resource use for future conservation.

Others viewed maps as a tool to document rapid change on lake such as disappearing islands and loss of fishing grounds. Over 15 of the interview participants, and many others informally, indicated that there are eroding islands on the lake that over a period of a few years, simply collapse in to the water. In the eroded islands' place, the subsurface land remains creating a reef that is hazardous for boating. For example on Southern Indian Lake:

> There is so much change on this lake, some things are not there anymore. Mark reefs where islands used to be. Help people in the community. There are lots of areas where we hit reefs. A red spot would make sense to mark there.

And:

> When I went this way. I started to get lost. Last time I was there [at a fish camp on Southern Indian Lake] I was 5-6 years old I didn't recognize Camp 3. Until I saw the building. It was almost gone. I didn't recognize it, we were docking, well, actually not docking it was just an overhang there. With all the erosion, I didn't recognize it until I was walking to the cabin on Camp 3. I don't want to go there. After that I would probably get lost because I haven't been there for a long time. That's a change totally. I don't want to go there eh? It's too devastating. You want to have your memories of the places where you grow up. I wouldn't recognize it.

I frequently heard that people's safety on the land is the highest priority of the community members. People wanted to view navigational hazards, cabin locations, rapids, falls and reefs on maps in sufficient detail that these locations could be interpreted.

4.5 THE NEW MAPS

People indicated consistently that a better scale (detail) is essential to create a useful map. Since the NTDB data became available for free, I downloaded 60 1:50,000 tiles covering the South Indian Lake RTL area. All features therein conform to data standards not deviating more than 30 metres in horizontal accuracy from their actual position. This was a substantive improvement from the former maps as horizontal accuracy was up to 150 metres using 1:250,000 data. I merged the 60 tiles of each thematic layer (such as water, roads, limited use roads, rivers, ferries, eskers etc.) to create a seamless coverage of the OPCN registered trapline area. A complete list of layers and their descriptions are documented in Appendix G and H.

During phase 1, I had collected additional placenames, locations of portages or cabins, and ATV trails if people wished to record them and I added these to the appropriate layers on the map. Layers that were derived or calculated from existing data such as highest lands in each RTL and elevation relief shading were then calculated and added to maps. Thematic layers were organized into four groupings (Appendix I for sample legend):

1. Base Map

    • Registered Traplines
    • Water

- Bogs and Marshes
- Sand
- Rivers
- Highest lands in RTL
- Eskers (ridges)
- Fires (2005 & 2006)

2. Contour Elevation

- Contour lines

3. Navigation and Transportation, and;

- Winter Roads
- ATV Roads
- Dry Weather Roads
- Roads – Minor
- Roads – Highway
- Trail
- Bridge
- Airport
- Seaplane
- Ferry
- Reef or Rock
- Dam
- Rapids or Falls

4. Community Places

- Trapper or Community Cabins
- Fish Camps
- Safe Havens (Public Use)
- 1992 CASIL Agreement Selections
- Traditional Fish Camps
- Treaty Land Entitlement Selections

Each of the four groupings were layered on plastic film comprising 4

sheets which were appended together to make a map which operated

like pages of a book. I created three 'land' maps covering trapline 43

(adjacent to community), trapline 50 (Big Sands Lake Lodge region) and trapline 12 (a heavily utilized area for trapping and fishing and also an area I wished to verify that shoreline boundaries were updated from the pre-CRD era) (Appendix J shows the map for Trapline 50).

I also created a map specifically showing the extents of Southern Indian Lake (plot scale 1:150,000). This map contained all of the layers identified above but with emphasis on barriers to navigation and cabins on the lake. The National Topographic Database supplied some data in the form of locations of reefs and exposed rock, however, this data is not complete. There was some outstanding and current data available that I had not received at the time of returning to the community for phase 2, namely the Global Positioning System (GPS) waypoints collected by the Debris Management crew funded by Manitoba Hydro. These waypoints are collected by community members working on the crew that functions to patrol the lake daily and remove erosion debris such as fallen trees and 'dead heads'. Another important function that this crew does is mark reefs with GPS points and drop buoys in dangerous navigation areas.

This GPS data resides in the Thompson office of Manitoba Hydro and could directly benefit the community in terms of safety if they had

access to the data. However, there is a potential liability concern on Manitoba Hydro's part. For example, ultimately the dataset will not be error free or always current despite reasonable care and quality assurance processes; if these errors or omissions cause a threat to life or damaged equipment, would Manitoba Hydro be responsible? Release of that data is currently under discussion.

One map element that I did not change was the colour of water, though in retrospect, it has potential to further probe people's interpretations. Discussion on how to display water involved five potential ways: 1. colouring water brown or gray reflecting changes post-CRD; 2. according the bathymetric depth; 3. by actual colour the water displays on the land; 4. by commercial and sports fishery variables; or, 5. leaving it as is (blue).

The most frequent comment on water colour was to change it to a post-CRD colour (brown or gray). The most rigorous method for accomplishing this would be to conduct a separate set of interviews to ask the people which lakes had changed post-CRD as consulting the official records of water regime changes in lakes connected to Southern Indian Lake likely would have uncovered a disparity of opinion. I did not have this luxury. Bathymetric depth or actual

colour could potentially be assessed by remote sensing; a technique using satellite imagery, but the former was a minority opinion and the latter would be quickly out of date due to seasonal variation and both would be expensive and labourious. Commercial and sports fishery variables were mentioned by only one respondent. In the end, I left the water as is, as people indicated it was the shape of the lakes, not their colour that allowed them to identify them. The variance in response, however, indicates to me that people were open to adapting the colour of water contrary to cartographic convention.

4.6 RETURN TO THE COMMUNITY WITH NEW MAPS

When I returned to the community to review the new maps with people, I asked four questions, a summary of answers to each is provided in turn.

Do you feel more comfortable talking about the land with the new map? Why or Why not?

One participant commented that the maps were inclusive by virtue that they did not require that viewers read. He said "You have this so that 'Joe' can understand this. These guys looking at these maps are trappers not engineers. They don't read. This is good". Others explained that they thought the map was very clear.

I also observed that women were more likely the visit and speak about the maps, but not at the same time as men. This may have been that I was now a more familiar face in the community, this being my third trip. My sense, though, is that the women felt more comfortable with the new maps as well because several women dropped by and shared some stories about the land, ones I think I may not have been privy to before.

Interviews and visits in phase two affirmed that those who held trapline licenses valued the registered trapline boundaries as their most significant spatial boundary. They would exclaim "Wow this is nice. Finally my trapline is on one map. Can you print me out a map?". I received 15 requests for maps of different trapline areas indicating a shift in the value held in maps. At the outset of this study, almost all (20 of 22) people indicated that they did not have any use for maps.

What could you use this new map for? Inside or outside the community?

One participant thought the maps could contribute significantly to safety because he could submit a boat plan indicating a much more specific destination. If a search would be required, the searchers could respond more quickly and accurately. People also liked the potential

of using the plastic overlays to add additional information indicating for example that addition of trails and portages could help the community communicate among themselves in regards to resource use and travel.

Another participant wanted to add historic pictures and stories to the map with their respective location of events to use as a teaching tool at the school. He wanted to spend an afternoon without interruption to tell stories and bring pictures, a meeting we were not able to arrange. Others viewed the maps as a pedagogical tool for the youth they spent time with. For example, one participant indicated to another "have you ever been to these rapids here? I have a story about those...". He further indicated that the improved detail would assist him in teaching his son the area.

Outside the community, these maps could provide information for visitors to the area. One participant expressed the need to get maps for visiting hunters that "take a wrong turn and end up every which way". Another saw the potential for maps to serve canoeists and sports fishers with well documented local information of travel routes and cabin amenities, thereby improving community capacity to participate in eco-tourism ventures.

Would this new map help talking and understanding across cultures?

The detailed scale also served to stimulate dialogue among community members. People were also able to pinpoint features on the map more accurately. When one participant was telling me where his new cabin was, I was marking it with the marker and asked "there"? He said no, it's on top of the hill. Since elevation contours were not previously available on the maps, we were able to communicate a more accurate location. Though this task could have been accomplished with a 1:50,000 mapsheet from the National Topographic Service, the map that centred on his trapline, displayed his trapline boundaries, made him more comfortable to discuss his use of his line he said.

Another observation involved a weakness in the mapping that I had brought back. I had plotted Southern Indian Lake for the fishermen on one map at a 1:150,000 scale. Since safety is the highest priority, people were asking for additions of cabins, and correction of one that was displayed in the wrong location. I collected the information from one individual and verified the information with another. This became a labourious process as I had difficulty making a mark on the small islands displayed indicating which shoreline the cabin was on (west or east, for example). Knowing that this task may have important future

consequences when people are seeking shelter, I felt unsure when I tried to input this information into the computer which is accurate digitally to 1/1000th of a metre (millimeter). At 1:150,000 the scale was not adequate to collect this information (yet features were displayed at 2.5 times the size of the OPCN maps), which is a setback considering I had the local expertise present for collection and verification. In this study, maps that displayed a 1:75,000 plot scale or better were more successful at collecting input from people than the 1:150,000 plot scale. Re-mapping the lake would require that the lake be split into three parts to improve communication.

Did you learn anything new about maps or communicating across cultures?

This question relates directly to objective 3 of this study: To seek ways improve dialogic interaction and learning in the EIA process in Manitoba through the use of maps such that it indicates what conditions for dialogue and learning must be present for Cree people. This question was difficult for people to answer indicating either a flaw in the study design or in the question itself. At first I attributed the lack of results to the former because only nine of the original participants participated again in phase 2, reducing the number of

people that had time for critical reflection, but later deduced it was the latter.

One insight that I did receive was perhaps more reflective of the consultation process than the maps themselves. A participant said that he liked what I had done here by coming and listening to the people in regards to what they wanted to see on maps. From there, he indicated that now Hydro was starting to listen: "Our traditional knowledge is valuable. I'd say 'get out of that helicopter, you are full of shit. Come, let me show you'..." from which I would infer that cultural barriers persist when dialogue and genuine listening is lacking.

Another insight into improving cross-cultural communication was in regards to a perceived error in the mapping, one that arose from a culturally specific (mis)interpretation. On the top plastic sheet of the maps, I mixed place names and Treaty Land Entitlement selections together and classified them euphemistically as "Community Places". My own perception of TLE selections are that, when they are present, they represent hegemonic and autonomous authority for a First Nation over land; as close to ownership as First Nations get. I was reminded that this was a western conception when one participant said:

I told you before, this is important to you, but the people here don't care about TLE, they care about local place names. Maybe the TLE's are important if I wanted to build a cabin or something but I can't turn the page without getting rid of the place names.

My first reaction was to judge this as an introspective or isolationist view because of my superficial assessment that settling TLE claims (however slowly) would somehow rectify the injustices of our modern political and economic histories and resultant changes to Aboriginal ways of life. Why was he not acknowledging the significance of negotiating TLE as evidence of a cross-cultural success story? I think TLE from an Aboriginal is another example of systematic land and resource appropriation and the process of gifting it back, as Canadian law officially recognizes only a small portion of Aboriginal traditional lands (Krishnaswamy, 2000). Another participant clarified the perspective: "I am not interested in TLE. *All* the [RTL] land is ours. *All* the land is important to us," which was affirmed by an elder present (more discussion in section 6.1). It was at this moment that I realized that it was *I* that required the learning about cross-cultural communication using maps.

This revelation indicates that the question asked here - what did *you* learn should have been rephrased to be more respectful about who actually is in possession of the knowledge. The greatest potential for

learning is on the part of the dominant society. I think this is why the

question above was so difficult for people to answer; it was loaded in

favour of the dominant society.

However, I do believe there is potential for Cree dialogue, learning and

capacity building around maps to negotiate, demand acknowledgement

and command respect for their worldview in environmental

assessment. Throughout the research process, I witnessed an

evolution such that the people involved became more discriminative

about the maps as they display the land, *all of the land*, which

comprises their traditional territory. Focus on place names, local

assets such as cabins, and display of RTL versus TLE parcel boundaries

attests to using maps to assert local power over prevailing hegemonic

influences; similar to the Delgamuukw case discussed in chapter two.

The elders proffer the same sentiment in the next section.

4.7 ELDER WISDOM: RESULTS FROM WASASIHK

Four elders attended this session. After explaining the purpose of the study and showing the elders the maps one elder told me "Where I used to walk, there is now 30 feet of water". Thinking he misunderstood, I explained that while I respected that the impacts of the Churchill River Diversion had changed the character of the community significantly, documenting the effects was not what I had intended to do here. He then said "I will take you on the boat and show you where the land was, and you can use that GPS to record it" indicating that a pre-CRD map would be useful (more discussion in section 6.4).

Another elder, in agreement with the rest, said the maps should be used for identifying and preventing desecration of sacred sites. She said that it was important that the location of these sites be transmitted as her generation was the last to possess this information. Their grandchildren have not learned of these sites as they have had reduced experience on the land. Without documentation, these sites could be destroyed / diminished by accidental and oblivious trespass. It was important to her that this information remain internal to the community so that control of release of the information remains with the community.

Transmission of this knowledge appeared to be a dilemma for many elders on maps or otherwise. Another elder explained: "My grandfather found a cave with writing. He would never show it to my brothers. He said that they would tell others and people would come and desecrate the site". On the other hand, once the current elders have passed away, the knowledge will be lost permanently. Either way, the decision is for community members to make. What may be valuable is that the tool is now created that can record, at the very least, the location of these sites (but not necessarily their spiritual and historical significance) so that they can be protected.

The elders also explained that mapping could also be a pedagogical tool for elder story telling and encouraging Cree language use as they are inextricably linked (Westfall 2003). She said that it was important to maintain elder teachings in Cree because Cree word constructions do not have English equivalents, or at least, the English translation reduces meaning. Maps, in this way could contribute to preservation of Cree culture.

Another elder, reflecting on different learning styles of youth, thought that maps were a good visualization tool. The youth who were not accessing their elders could learn from maps. Although he did not

regard maps as a replacement for elder knowledge, maps were an alternate method of recording cultural knowledge.

4.8 A POST-RESEARCH PHONE CALL

Although I was disappointed in the results in uncovering reflections on dialogue and learning of the participants (Weiler 2005 had a similar experience), perhaps actions speak more clearly than words. I received a phone call on September 13, 2007 from the Executive Director of OPCN. He told me "leaving those maps with me was the best thing that ever happened to me. It's just steady. Everyone wants a copy." And, there is a "tremendous amount of input from these resource users", "I guess the word got out and I can't get any work done around here. They were talking to me so much; I had to send them to the Boardroom" to look at the maps.

The Executive Director asked for a print 51 maps, each representing one RTL, for the purpose of putting the maps in a central repository where people could mark and catalogue features on the map. The community plans to catalogue the cabins in the trapline zone and travel routes; thereby sharing collective knowledge, learning and dialoguing around the maps. Based on the relative success of this mapping project, some key map elements are proposed in the next

section to provide a baseline evaluation of current practice and potentially to guide environmental assessment mapping.

4.9 PROPOSING KEY MAP ELEMENTS FOR ENVIRONMENTAL ASSESSMENT MAPPING

The following key map elements developed from the above research findings offer a practical guide to mapping First Nation space. Some of the following elements, however, arise from the discourse surrounding the CRD. Since not all First Nations are affected by hydro-electric development, it is assumed that some map elements can not be applied to general Aboriginal land mapping. These elements will be demarcated with an asterisk (*).

It is also assumed that, since this study finds its roots in promoting authentic cross-cultural dialogue and learning, the following map elements not be employed for manipulation or for promoting the solitary interests of a proponent on behalf of the dominant society. Since this knowledge was collected using appropriate consultation processes with conditions of trust, misuse would undermine the purpose of the following criteria (as list in Appendix K).

To begin, people valued most the land / water interface for orientation; the shorelines. Shorelines should be displayed (plotted) as

large features and at a sufficient data collection scale for both

understanding location and for detailed spatial knowledge to be

transmitted. In this study, 1:75,000 was used successfully; 1:150,000

was unsuccessful.

Map Element 1: Plot scale ratio is at or better than 1:75,000.

And;

Map Element 2: Data collection scale is at or more detailed than 1:50,000.

Secondly, people value, depending on their primary resource usage,

spatial references such as the registered trapline boundaries (hunters /

trappers) and fish camps / cabins (fishers) to orient and participate

with maps.

Map Element 3: Display of local spatial references such as registered traplines, cabins, fish camps and other community assets.

Local place names are consistently regarded as essential on maps by

the people and are considered reverent of Aboriginal culture and

therefore command respect.

Map Element 4: Vernacular and local place names are used with Cree translation where possible.

Accommodate people with low literacy levels by avoiding exclusive

language. Simple clarifications can significantly improve

understanding and therefore, participation. For example, 'wetland' can be converted to 'bogs and marshes'.

Map Element 5: Complex language is replaced with simplified language.

People with low literacy levels can also be included by changing symbology to pictographic representations more reflective of actual entities rather than forcing people to refer to the legend for explanation. Legends were underutilized and therefore, not a significant source of information for many people.

Map Element 6: Pictographic representation is utilized.

Other cartographic constructions that are intended as supporting information also assume existing and formal knowledge. For example the presence of graticules favours people with a high education by way of labeling distance metrics from an origin. An alpha-numeric grid, for example, can be more instructive and used by more people than referencing degrees from the equator or the prime meridian. Additionally, tables and charts present information in a format relevant only to those who are accustomed to working with these communication tools. The presence of graticules, tables and charts will exclude some people and were generally underutilized by the people.

Map Element 7: Lower literacy and numeracy skills are accommodated.

Recent data update is especially important given events that change the characteristics of the landscape such as the Churchill River Diversion. If old boundaries are displayed, even in isolated or small areas of the map, trust in the entire map product is undermined.

Map Element 8*: Data is current especially in areas affected by hydro-electric development.

Flexibility could be employed in the context of lake colour to display characteristics such as commercial or sports fishing lakes, Hydro-electric development affected lakes, or the colour they actually appear (if data is available) rather than maintaining rigidity in adhering to cartographic convention.

Map Element 9: Blue lakes are not essential, despite cartographic conventions to the contrary.

The opportunity exists to use colour to display multiple variables for water.

In regards to colour, women preferred the use of the four direction colours (red, yellow, blue/black and white) who considered these colours to be culturally responsive and representative of Turtle Island. Green is also a highly valued colour.

Map Element 10: The four direction colours and the colour green is used.

Addressing northern needs and northern features generated considerable dialogue in how features were generalized. Roads in particular, have different and defining characteristics in the north than in the south. Roads that provide opportunity for or constraints against additional modes of transportation such as snowmobiles and ATVs need to be delimited on maps.

> *Map Element 11*: Different road use characteristics are delimited (winter roads, ATV trails, snowmobile routes, and all weather roads).

Elevation is another significant feature that should be displayed. Elevation impacts resource use, local orientation, and areas affected by fluctuating water levels. People iterated that elevation was socially significant. Elevation was portrayed in three ways reflecting a lack of consensus on how it should be displayed: as a graduated colour scheme, as contour lines, and areas of highest elevation (1/2 of 1 standard deviation from the maximum elevation in each registered trapline) which is particularly important to elders and those who do not use maps for reference when on the land.

> *Map Element 12*: Elevation is displayed as graduated colour for general topography display, contours for more technical location

of objects, and highest elevation areas for spatial referencing for elders or those who navigate without maps.

Safety was also a significant priority for the community. The location of shelters (both fish and trappers' cabins) represented protection for resource users and also formed a basis for local referencing. Cabins and other community safety assets, therefore, should be included on any mapping designed for internal community use. Although mapping cabins may not be practical for a cross-cultural consultation process such as environmental assessment, these cultural features represent valued community assets. Certainly, in the context of a potential development project being discussed, people would consider it important that these assets are protected and / or mitigated for damage.

Map Element 13: Community assets (cabins etc.) are displayed.

Also in regards to safety, people were concerned with other features that affected safe navigation and land travel such as rapids, falls, reefs, escape trails, and safe landing shore areas. The Canadian NTDB contains insufficient documentation of these features as was described by community members. As was noted by a majority of community members interviewed, reefs continue to be created on Southern Indian Lake such that experienced fishers continue to damage their equipment and risk their lives. In the context of a planned

development project, resource users will be concerned how their activities will be potentially affected. They would want to dialogue about potential changes in practical resource usage and impacts in terms of safety.

> *Map Element 14*: Contextual data relating to safety is displayed on maps such as how a potential development project would affect traveling by boat, ATV, or snowmobile. Data such as reefs, buoys, rapids, falls, winter travel routes, and escape trails should be included.

Likewise, acknowledgement of CRD impacts was identified as a major theme for mapping.

> *Map Element 15**: Acknowledge former colonial impositions on the land base by the dominant society such as control structures, dams, or diversions.

As discussed above, the purpose of acknowledging these impositions generates better conditions for forging trust and consequently dialogue as the effects of these impositions are currently considered under-acknowledged.

The TLE's, and uniquely in this case, the CASIL land parcels, were identified as a low priority feature either not meaningful to the people, or for some, a reminder of land-base reduction should be de-emphasized or omitted altogether. To most people, they are perceived as serving no practical purpose on maps.

Map Element 16: TLE parcels are de-emphasized or omitted.

A broader but related map element, relates to mapping Eurocentric

layers as they relate to the proprietary land/resource interests of the

dominant society (mining leases, water power reserves) or are derived

by contemporary European science (greenstone belts, sand and gravel

deposits). These features are typically poorly understood, under-

explained and culturally irrelevant to Aboriginal people. They should

be displayed only when they are absolutely necessary in the context of

cross-cultural negotiations for space and, if present, their purpose

should be clearly explained in non-technical language.

> *Map Element 17*: Eurocentric layers that display proprietary land
> / resource interests of the dominant society are explained and
> justified in non-technical terminology.

These layers, if present, should also not obscure visualization of more

culturally significant features (for example, OPCN maps were criticized

because mining leases were obscuring lake shorelines). An

opportunity for mylar overlays exists here.

4.10 EVALUATING CURRENT ENVIRONMENTAL ASSESSMENT MAPPING PRACTICE

The next step was to evaluate for implementation map elements

presented above in the context of current environmental assessment

mapping practice using maps from the Wuskwatim Clean Environment

Commission proceedings. This review was not intended to criticize the

practice of any consultants or imply any wrongdoing but simply to

provide an assessment of a typical example of current mapping

practice in EA. First, some background on the CEC hearings' mandate

and goals.

The second mandate of the hearings was to consider "the potential

environmental, socio-economic and cultural effects, of the construction

and operation of the Wuskwatim Proposals" (Clean Environment

Commission 2004, Appendix A) as per the Process Guidelines

Respecting Public Hearings which are intended to "ensure that the

hearings remain fair and open forums for the exchange of information

and ideas, and that they provide a full opportunity for public

involvement in the environmental management process in Manitoba"

(Clean Environment Commission 1996 p.1).

Given these goals for equitable exchange of information, we could

assume that a concurrent and congruent sub-goal would be that all

documents prepared for the process would also be culturally respectful

in regards to attempting to reconcile the diversity and competing

interests of the 'publics' involved.   Hence, at least some of the

generally known mapping criteria above would have already been

implemented since the project is located in the NCN trapline area and would require input from NCN band members.

The maps reviewed were selected on the basis of their purpose in the consultation process. Map 1(a) displays the proposed road access route and alternatives (Appendix L) as published in the Environmental Impact Statement (EIS) (Manitoba Hydro and NCN 2003a p.4-10). A variant of the same map was published in the Wuskwatim Newsletter #3 following the evaluation of the alternate road routes and selection of the preferred route by the Alternatives Committee[†††††] (Manitoba Hydro and NCN 2002 p.11) and is referred to here as Map1(b) (Appendix M). The second map, 'Map 2' (Appendix N) (Manitoba Hydro and NCN 2003b p.7-24) identifies projected construction impacts. Both Map 1 (two variants) and Map 2 would have been required to encourage local input and feedback on the respective effects on the local environment.

The evaluation here is not intended to critique or support the process by which the decisions were made such as road route selection or make comment on project impacts. Substantive documentation exists in the EIS and the CEC hearing transcripts. The objective here is to

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[†††††] comprised of representatives from Hydro, NCN, technical specialists and the Environmental Management Team (Manitoba Hydro and NCN 2002)

review the cultural inclusiveness of the maps that Cree participants in the process had to work with in order to make their decisions by evaluating against the mapping elements evolving out of this study. It is also recognized that the map elements presented in this research are not necessarily a definitive 'guide' or complete list to which map makers must adhere, but simply some insights that former NCN (now OPCN) members have made in regards to maps.

Map 1(a) and 1(b) implemented 5 of 15 map elements (2 could not be assessed) and two elements were partially fulfilled for both (presented in a matrix in Appendix O). Of note, is the lack of registered traplines, local place names, local transportation routes and trails, or any local cultural features at all on these maps. By not acknowledging local presence on the lands, local voice is suppressed.

Also of concern is the removal of all lakes and rivers that intersect the preferred road on map 1b. This must have been a purposeful and manipulative effort to diminish the impacts of the road to the public as over 57 lakes and two major river systems do not 'disappear' on their own accord. Even an argument to remove the lakes and rivers on account of cartographic simplicity and clarity of message would not have authority; this practice undermines the purpose of the public

participation process for selection of the preferred road and lulls the

public into complacency about a road that transects six (or more)

significant water crossings that are not shown.

Map 2 (Construction Impacts) incorporated 2 of 15 map elements (2

could not be assessed) (presented in a matrix in Appendix P). Of note

here are the lack of water features, which in this study, was the most

significant feature for participants to orient themselves. The map

reader is also required to leverage some weighty cartographic

knowledge (and numeracy skills) to understand the scales at which the

project construction impacts will occur based on the graticules

surrounding the map frame. The lack of any place names (local

included), registered trapline boundaries, elevation, community assets,

or any other contextual information precludes participation or dialogue

in regards to those elements. The reader is forced to accept the

author's assessment that:

> All direct and indirect construction effects on upland /
> mainland habitat except accidental forest fires and
> potentially invasive plant species are expected to be
> limited to less than 2,500 ha or 1% of the Sub-Region land
> area. Construction will not substantially alter habitat
> composition (Manitoba Hydro and NCN 2003 b, p.27).

This map, as is, does not invite the reader to 'see for themselves',

however, serves to reinforce the statement above through omission of

any features that may assist a person familiar with the area to orient themselves. That is not to say that the author's analysis must be flawed, but simply that construction impacts cannot be evaluated by anyone else with this tool.

CHAPTER 5: COMMUNITY CONTEXT, CONSULTATION AND RESEARCH CONSIDERATIONS

5.0 INTRODUCTION

This chapter reviews the community context for this study, which in turn, sheds light on the underlying logic of some of the community priorities for the use and construction of maps which is discussed in section 5.1. That same community context also forced the redesign of this study discussed in 5.2. In light of these events, I sought to critically reflect on the role of research and the outsider researcher in Aboriginal communities discussed in 5.3. Section 5.4 reviews the role of maps in research based on my experiences and section and 5.5 reviews this consultation process, dialogue, learning, and participation.

5.1 COLONIAL HISTORIES

Any cross-cultural interaction, including research, cannot be taken out of context of the colonial history of the two cultures. Most notably, in this case, is the context of extensive hydroelectric development in northern Manitoba. The most relevant to the OPCN people is the Churchill River Diversion (CRD) project which displaced their community and changed their way of life forever (Hrenchuck 1991, Robson 1993).

For context on the origins of the Churchill River Diversion, the Manitoba provincial administrations of Weir and Roblin (1950's – 1960's) viewed the use Manitoba's northern rivers as a source of fuel for the provincial economy (Canadian Broadcasting Corporation 1991) which was stagnating comparatively to other provinces in Canada. The thrust for policy to harness the energy capacity of Manitoba's major river systems was concurrent with Diefenbaker's National Policy and Northern Road Policy (Progressive Conservative Government 1963, p.20). At this time, the impetus for massive, large scale hydroelectric development had gained acceptance by populations in the south culminating in the Churchill River Diversion and in northern Quebec and Labrador, the James Bay Project 1.

Chorney and Hanson (1985) argued that the inception of large-scale hydro-electric development policy emerged for political reasons rather than economic need but was justified by the latter. This policy emerged during the 1950's and 1960's because of the presence of a more numerous working class populous in Winnipeg and a wealthy but geographically dispersed ruling class which created an unstable political environment where the ruling class was required to respond to the working class in order to maintain political power.

The response, proffered by the administrations of Weir, Roblin and

later, Schreyer promoted:

> 'mega-project' development represented an attempt to
> foster economic growth, while at the same time diffusing,
> or at least masking, pressures for a more equal
> distribution of wealth and income in Manitoba society. The
> provision of new resource-based jobs and associated
> development would obviate the need to face directly the
> issue of inequality at its structural roots (Chorney 1985
> p.6).

Despite the rhetoric of economic growth, the difficulty is that the

nature of employment for hydroelectric development is front-end only;

jobs are in short-term construction and taper to a minimum thereafter

(Waldram 1987). For example, one participant of the study indicated

that the only position at Missi Falls control structure was now

automated: "There was a man there for many years. His name was

Albert. He's no longer [t]here...Hydro controls it now from Winnipeg."

Similarly, another participant had worked on the winter roads from

Notigi dam to Missi Falls 35 years ago but they "are now grown in".

Since the nature of employment is short-term, the challenge is to

finance the interest on external capital borrowed to create such a

project over the long-term. The response could be, and is, to build

another dam. Unfortunately, this approach satisfies the *political*

interests of a political administration but fails in the long term to foster

lasting *economic* growth.

The cycle continues today, apparent in recent Waskwatim dam CEC

proceedings in Manitoba. Given Manitobans' clear opposition to

nuclear power generation (Beverly and Qamanirjuaq Caribou

Management Board 2005 p.1, CNP 1996 p.1), hydroelectric 'mega-

projects' predominantly in the north are still viewed as a viable

method to stimulate the provincial economy and attract foreign

industrial capital (Chorney 1985 p.11), referred to in the media as

"black gold on tap" (Rabson, 2007); the benefits of which are

channeled to the south[‡‡‡‡‡]. Furthermore, the north-south disparity is

confounded and perpetuated by the perception that "such highly

visible capital projects have proven popular among the [Manitoba]

provincial electorate, which has come to associate hydroelectricity with

economic progress" (Han 2003 p.3).

Therefore, northern Manitoba is viewed as an unallocated, resource

rich frontier (Manitoba Conservation 1991, Scott 2001) from which the

south can generate and sustain wealth through resource extractive

policy. In this regard, much literature is dedicated to capturing the

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[‡‡‡‡‡] Although some would argue that the NCN, as partners in the Wuskwatime dam, will benefit economically, it will be years before net returns on investment, if any, will come.

sweeping impacts of hydroelectric development and corresponding

flooding on northern Aboriginal communities and the attending and

enduring social, economic, and environmental injustices (Han 2003,

Loney 1987, 1995, Niezen 1993, Roebuck 1999, Thouez 1992, Ward

1999).

Skeptics of the prevailing hydroelectric development policy have

catalogued tales of how Manitoba Hydro, Manitoba, and Canada have

intentionally dispossessed, disenfranchised and otherwise subordinated

Aboriginal peoples to the dominant culture then offered systematic

denials (Niezen 1999 p.518, Loney 1987 p.58). This perception was

shared by research participants: "[t]hey were presented with the

consequences [before the CRD] but they did it anyways". Another

participant expressed concern regarding loss of fish spawning grounds

in adjoining creeks to Southern Indian Lake. Since fish spawn in fall

during high lake levels, the eggs are vulnerable to controlled lake level

drops in spring before they hatch. He said "[y]ou can't do anything

about it. Nowadays everything is politics. You have to go to ten

different places to argue it. Then it goes to Ottawa to agree".

Therefore, of great concern to Aboriginal peoples is the loss of

resources and net export of capital, capacity and knowledge that

benefits the south while continuing to suppress autonomy in the north

(see Smith 1999, chapter 3 on colonizing knowledges, Gibbs 2001).

This phenomenon is not isolated to hydro-electric and resource

development.

Smith (1999 p.1), a Maori researcher and advocate for Aboriginal

peoples, offers a strikingly parallel reflection, not on resource

development, but on academic research involving Aboriginal peoples:

> The west can desire, extract and claim ownership of our
> ways of knowing, our imagery, the things we create and
> produce, and then simultaneously reject the people who
> created and developed those ideas and seek to deny them
> further opportunities to be creators of their own culture
> and own nations.

Consequently, when conducting cross-cultural research with Aboriginal

peoples, researchers must incorporate cognizance of local

colonial/historical contexts *and* integrate explicit research design

principles that demonstrate a departure from that colonial context.

5.2 RESEARCH DESIGN PRINCIPLES IN THE CONTEXT OF COLONIAL HISTORIES

When I first sought permission to conduct research in the community

of South Indian Lake, my research design included selection of maps

from the Wuskwatim Clean Environment Commission hearings. I had

reasoned that selecting Wuskwatim maps were appropriate because

the Wuskwatim project area partially overlapped the traditional

territories of the OPCN people who, prior to formal recognition as a

First Nation on November 25th, 2005 were a part of the NCN (partners

in the Wuskwatim dam).   Consequently, I thought that the people

would be interested in exposing strengths and shortcomings in the

mapping as these maps depicted areas that are familiar to them and

they had actively followed and / or participated in the Wuskwatim CEC

hearings. As an adjunct benefit, I reasoned, these maps were

produced out of an Environmental Assessment process which could

directly elucidate the relative strengths and weaknesses in the map

design for the process, thereby reflecting on the value of these maps

for cross-cultural communication purposes.

I was wrong for two reasons. Upon discussion with Chris Baker, Chief

of OPCN, he told me first that only the elders would have experience

on the lands closer to the Wuskwatim region. The younger

generations operate within the OPCN RTL's (collectively known as the

SIL Trapline Zone) clustered around the community South Indian Lake

and their activities do not, as a rule, extend south towards Nelson

house and the Wuskwatim region (Appendix Q).

Secondly, and more importantly, Chris Baker indicated that his community was in the process of healing from the Churchill River Diversion and attempting to reconcile relations with Manitoba Hydro. He felt that selection of maps from the Wuskwatim hearings could be viewed as an affront to the political history of the community and as a researcher, I would be met with suspicion by some of the people that I was attempting to collect information on behalf of Hydro. This would not only distract from meeting the research objectives but come across as insincere, insensitive and of no direct benefit to people of OPCN. As a result of this meeting, we agreed that I would use maps previously produced for the community of the community environs.

This set me on a process of reflection, one I believe is essential to research with First Nations communities. In my experience as a researcher, it is required that you actively demonstrate how your research directly benefits the community you are working within a context that is understandable to the people. People have a long history of visiting researchers, the benefits from their knowledge sharing, they may never see; an activity that could be perceived and characterized as colonial. Therefore, I think researchers must be prepared to 'give back' to the community in which they worked with an improved product that is useful on some community level. In this

case, I was able to redesign maps that reflected community priorities and interests. Furthermore, research should be adaptive to the message that people want to express. This may involve listening to seemingly unrelated stories, sitting and talking with people without gleaning any research 'products', and even overhauling research objectives in favour of bringing a message, their message, forward on their behalf.

Furthermore, a couple of comments from people set me on a process of reflection in regards to sharing research results. Although many researchers might make a copy of their thesis or dissertation available at the Band office, these documents are essentially useless to a broad segment of the population. One participant of this study reflected on the low literacy rates in the community: "they [community members] don't read too much. Lots of guys in their 30's, 40's and 50's thought they would have a bush life instead of going to school and chose that for their life". Any mechanism by which to improve inclusiveness for those without functional literacy is of concern in First Nation communities as 27.1 % of Aboriginal people, 15 years or older in Manitoba have not completed grade 9 (a benchmark for functional literacy) (Manitoba Aboriginal and Northern Affairs (MANA) 2000). The lack of functional literacy among participants in this study is higher as

13 of 22 people completed elementary school (grade 6) and did not attend high school. Therefore, a thesis document is not sufficient to share results. The implication is that research continues to be conducted 'on' First Nations people for the benefit of academy discourse versus creating an environment fostering a more inclusive and mutual learning environment.

5.3 THE OUTSIDER RESEARCHER

One of the most helpful elements when you are an outside researcher to an Aboriginal community is the assistance of a local 'community contact person'. This person can help to make community announcements of your presence and facilitate meetings with and introductions to key people. One of the OPCN Councilors volunteered to do this for me, for which I am grateful. He posted a community announcement (Appendix R) on my behalf, introducing me and describing the research objectives and goals, thereby lending credibility to the work in the eyes of the community.

One other interesting element of research by an outsider in an Aboriginal community is regarding the complaint process - when research is not performed correctly or the researcher has offended community members. Even though the University of Manitoba's JFREB

ensures that researchers bring a consent form for research which provides a process for recourse if research is not being conducted appropriately, it is likely that no complaints ever leave the community. This was affirmed by my community contact person.

A previous researcher here had gone door-to-door, entering people's homes to conduct interviews. The contact person made it a priority to tell me "this was not appreciated", though neither the researcher nor the academy was informed of this. This places extra burden on Chief and Council and others to mediate complaints about researchers and their activities. The University JFREB ethics approval process, therefore, would benefit from internalizing the real mediators of complaints about research involving Aboriginal people into their process; members of the Chief and Council or a community contact person.

5.4 RESEARCH AND MAPS

One of the benefits of working with maps is that they are a visual (versus textual) conceptualization of ideas and are therefore more inclusive by virtue that they use pictorial representation (for those with lower literacy levels) and their messages describe the land (a highly valued cultural edifice).

Without exception, the interviews proceeded, upon laying the maps on the table, at a furious pace. People immediately told their stories, their experiences, and shared their memories with me. People were likely more relaxed in this private setting with a map evoking memories and stories than they might have been in the public meetings where their participation would have been under public scrutiny.

The revised maps, plotted at 1:75,000 detail (features were over four times larger than the OPCN maps) evoked different stories from people. People were more specific about land identifying individual points, beaches, bays, and their accompanying history. People told me about archeological finds, experiences on specific rapids, moose that they had hunted, and areas with high density of mammals and fish.

In that regard, maps could be used as a research tool for those who wish to document oral histories, land use changes, impact assessment, resource harvest and use, and a variety of other knowledges that Aboriginal people have. They are an effective tool for engagement, dialogue and learning (See Weiler 2005, p.75).

With caveat, though, I support maps as a fundamental communication tool as this is one of my strongest personal biases. In the course of this research, a private consultation process also occurred in conjunction with the map redesign process, one which was on the terms of the participants' own knowledges. As the researcher, I acted as a 'bridge' between the knowledge systems of the two cultures. It is with that in mind, I would recommend that map use remain in the context of an appropriate consultation process, one that is respectful of colonial contexts and histories.

5.5 CONSULTATION PROCESSES

Throughout this research process, I was amazed at the continuous adaptation required to engage the people. The study had to be revamped to avoid Wuskwatim maps because, as the chief said, the community members are in a process of healing from the CRD and my efforts could be met with suspicion. In South Indian Lake, Manitoba Hydro is referred to as "them" or "they". I have not felt that kind of pain in my life; I could not look through their eyes and understand at first. I am still struggling to understand.

I was frustrated at times, because my linearity of thinking led me to believe that I could simply schedule interviews until the roster was full

and that I wouldn't have to be adaptive to when people would simply arrive and ask to be interviewed whether I felt ready or not. Phase 2 group workshops did not materialize as I had planned. One of my main tenets is to plan well and stick to the plan, which when confronted with exhaustion of all of the contingencies I could think out, I was deeply unsettled.

I entered with the assumption that this would be "my" public consultation process as if I could claim ownership of it. What I ultimately realized that it was not about me or that success in research required following *my* plan staunchly. People would be willing to dialogue when the process was self directed, couched in their own personal context; when control was relinquished.

The importance of acknowledging and encouraging the local context, in turn, stimulates dialogue is best illustrated by a short discussion on the participants' reactions to the presence and / or absence of local place names on maps. For example, the Capability map contained a limited number of local toponyms from a Land Use and Occupancy study conducted by Hrenchuck (1991); the Selections map did not. I observed that the Capability map stimulated more dialogue in regards to land and resource usage than the Selections map did. People talked

about fish camps and places such as 'Camp 3', 'Hole in the Wall' and 'Dynamite Channel' when reviewing the Capability map; dialogue that was not stimulated by reviewing the Selections map.

When local places were labeled, participants would discover a familiar place had been labeled and ask "Oh, do you know why it's called Dynamite Channel? Well...." and explain the significance and history of the space, though only when toponyms were present as on the Capability map.

These local and internally shared references promote cross-cultural respect, when labeled, by both acknowledging and encouraging the emergence of dialogue on the local histories and significance of these sites. For example, 12 of 22 participants made 28 references to the significance of local place names without prompt. One participant explained the role of local toponyms in the context of oral histories:

> This is Otter River. It's important to know where Otter Portage is because these are references that we make all the time. This portage is probably the most famous talked about portages. These are the areas that are important to us.

Another participant noted the absence of place names on the

Selections map: "Lots of community places are not labeled on this map

for example, Camp 1 and Camp 3. Local names are important."

Therefore, the absence of toponyms and other local features on maps,

as Harley (1998) noted suppresses local hegemony on the land in

favour of the dominant society:

> Both in the selectivity of their content and in their signs
> and styles of representation maps are a way of conceiving,
> articulating, and structuring the human world which is
> biased towards, promoted by, and exerts influence upon
> particular sets of social relations (p. 278).

It is not surprising then if a consultation process involving maps that

do not acknowledge local places or local spaces, people could approach

the process at the outset with mistrust. The normative decision to

bias the dominant society's input has already been made which is

hardly a condition for authentic dialogue.

CHAPTER 6: MAPPING COLONIALISM, CULTURE AND IMPROVING DIALOGUE AND LEARNING

In this chapter I will discuss mapping colonial impositions in 6.1, mapping the CRD in 6.2, and then explore the relative strengths and weaknesses of mapping Aboriginal culture in 6.3. Section 6.4 provides some insights for improving both internal and external cultural dialogue and learning.

6.1 MAPPING COLONIAL IMPOSITIONS

It is impossible to avoid mapping at least some elements of colonial impositions made on the land. The Registered Trapllines, which were identified by the people as the most significant local division of space after water, are themselves a colonial burden.

Although the RTL areas represent an extremely significant division of space for Aboriginal people (as noted above), trapline divisions were created with inherent faults. In this study, one participant indicated that he was disappointed with the process by which the RTL areas were created in 1943. He stated that the old people that worked that area pointed on the map in consultation with people 'from the south' where they had trapped and the RTL's were summarily drawn around

that. He explained that "some of these people had never even seen a map before".

Imposition of the RTL boundaries and the resultant "denial of access to some whose hunting lands long pre-dated the provincial boundaries...must have seemed to the Crees totally irrational" (Morantz 2002 p.175). In that regard, one participant of this study exclaimed "And if I cross over a trapline boundary, they now think I am poaching!" The burden of the RTL linear boundaries certainly denotes a shift from the contiguous traditional and communal territory in use by Cree peoples extending from Quebec to Northern British Columbia (Foster 1982) to compartmentalized and isolated parcels that grant exclusive rights associated with the Euro-Canadian conception of land ownership.

This supports Walker et. al's (2001) assessment that:

> Linear boundaries inherent to Western cartography may poorly represent the ways that some social groups conceptualize sociospatial relations and resource rights. Linear map boundaries tend to impart a sense of comprehensive rights to all land and resources within a given set of boundaries. In some cultures, boundaries impart a less inclusive sense of rights. By appropriating the conventional tools of cartography, efforts to map resource rights risk inadvertently prioritizing exogenous sociospatial concepts at the expense of local ones. (p.421)

What is reflective here of cross-cultural communication processes is that even the elements of the most thoughtfully constructed maps contains a series of reminders of inappropriate cultural impositions on Aboriginal people.

For example, the treaty land entitlement parcels are, as Harris (2002) perceives it, a representation of tiny fragments of land "displayed rather like insects on pins" (p.271); a reminder of Aboriginal land dispossession and evidence of a purposeful policy to disunion Aboriginal people. In contrast, Brody (1981) reflected that the trapline areas do not simply represent areas that provide a source of fur but "for everyone, active trapper or not, it has become a struggle for the right to be an Indian...it is the registered traplines that they hold to be especially and irreversibly theirs" (p.99). Therefore, a TLE focused approach, forgoing an emphasis on the broader trapline areas, further reduces Aboriginal dominion over traditional space; it represents another step towards completing colonization.

The local emphasis on the RTL boundaries is ironic though because it is one of the most tenuous, individualistic, and provisional type of land right. RTL licenses are administered by annual license to an individual and can be revoked, conditional on continuous trapping activity. While

RTL's were originally created to compartmentalize Aboriginal people and secure white trapper's access to fur elsewhere and arguably, to protect Aboriginal land access (Brody 1981), RTL's have now become a sort of 'front line' against the unrelenting march of development. As RTL licenses are given to individuals, they divide community members where they were undivided before. Such as they are, RTL's are both a gift and a curse.

6.2 MAPPING AND THE CURCHILL RIVER DIVERSION

The CRD has changed how people would characterize water, land and resource elements on maps. The history of the CRD has fundamentally affected intercultural trust. The fundamental lack of understanding of the projected and actual CRD impacts on the Southern Indian Lake fishery by one government official was told to me by several people such that it has become a sardonic community joke, documented by Waldram (1984):

> Certainly nobody at the moment can be quite sure of what is going to happen. I think all of us that are reasonable will know that there must be some fish in the lake, and its going to be a bigger lake so it should be able to carry more fish. (p. 219).

Loney (1995) refers to this lack of trust manifesting itself in the community as a "corrosive effect of the apparent indifference of the project's proponents to the damage they have caused" (p.247).

For example, people iterated again and again that ongoing erosion on Southern Indian Lake continues to affect their lives, livelihood, and their safety. Over 50 interview references were made to ongoing shoreline and island erosion on the lake such that the eroded islands looked like top-heavy 'mushrooms on a stalk' until the islands topple over into the lake, leaving treacherous reefs behind. Mapping, they said, would be difficult because "everything changes in 5 to 10 years". It was clear that people felt they weren't consulted on the original project as was discussed section 5.1, but ongoing frustration at the lack of acknowledgement and recourse provides evidence that Loney's adjective 'corrosive' is very appropriate. One participant noted:

> In Hydro negotiations, they require that we hire an expert
> because they need proof. Canada ...[is] not responsible
> because we were not on reserve. It's not you, it's not
> Hydro, it's the system that caused it.

As for mapping, the ongoing quest to secure acknowledgement resulted in numerous requests to demark lost islands with a red "X", display fallen trees on the shoreline, to ensure that Missi Falls is prominently displayed, change the lake colour to a gray or brown and

to display the 'escape road' downstream from Missi Falls that functions to allow resource users a safe route out of the area when water is released from the control structure. Maps would provide the acknowledgement of ongoing impacts that is not forthcoming.

This lack of acknowledgement, leads to a lack of trust which is one of the preconditions of deliberative dialogue as was discussed in Chapter two. Mapping how the community collectively perceives ongoing CRD impacts provides an authentic account of a community priority; a voice for the people who have generally felt ignored. Throughout this study, I had often felt that the CRD had 'railroaded' the focus of this research; however, it should be a main locus. As discussed in the section on problem definition (2.4.3), people feel they have been left out of the problem framing process. They used this research to explain their view.

People told of curtailed resource use downstream of Missi Falls where water flow was reduced. For example, "You could go far enough on Churchill and then get stuck if the water dries up" and "lowering of water causes sheets of algae to dry up and form a board like cardboard paper" on Northern Indian Lake. Hunting and trapping activities have also been reduced such that one respondent

commented that the water was so low that he could not bring supplies

to his trapline so now he only traps in the winter. Another said that

"Partridge Breast fluctuates so much; one mile changes in shorelines.

When the water is high, it is easy to access the RTL. When it is low,

there are lots of rapids".

Feit (2004) explains the socio-cultural significance of this curtailed

resource use:

> In a society in which animals are sacred and labour is
> highly valued and a source of respect, social exchanges of
> bush foods and access to hunting lands are highly valued.
> The gifts of bush foods are a sign both of the continuing
> value of those foods and of the value of the social bonds
> that motivate the distribution and are confirmed by it. The
> fact that such exchange is less of a material necessity
> today highlights its social value (p.120).

Participants were using the maps to deliver three pedagogical

messages for the dominant society: their resource usage and safety

continues to this day to be fundamentally affected by CRD impacts;

this is a culturally significant phenomenon; and, maps could be used to

display these effects. As Tobias (2000) stated: "Mapping always gives

rise to a heightened awareness of [A]boriginal rights that have been

denied, and an increased willingness to be involved in strategies to

right long-standing injustices" (p. 2).

6.3 MAPPING CULTURE (?)

Another precondition for deliberative dialogue and learning discussed in chapter two is acknowledging cultural difference in which maps are discussed in the context of cultural preservation and finding the way forward. Maps, in this regard, have pervasive weaknesses and strengths.

One of the key elements of cross cultural communication discussed in Chapter 2 was acknowledging peoples' particular view of the world. As Paulo Freire (1972) stated, "one can hardly expect positive results from an educational or political action program which fails to respect the particular view of the world held by the people" (p.76). Therefore, if the new maps that emerged from this study would succeed in encouraging cross-cultural dialogue and learning, they would have to respect the worldview of the people. In several ways they do not.

The difficulty therein is a maps' static representation of reality as maps are a product as opposed to a process. Little Bear (2000) explains further:

> [C]osmic cycles are in constant motion, but they have
> regular patterns that result in recurrences such as the
> seasons of the year, the migration of animals, renewal

ceremonies, songs and stories. Constant motion, as manifested in cyclical or repetitive patterns emphasizes process as opposed to product (p.78).

That is not to say that maps as products do not have any utility in an Aboriginal context, however, maps contain systemic flaws that reduce their viability, especially in the context of time (Little Bear 2000) as it is understood from an Aboriginal perspective. Maps remain a consolidated 'snap shot' of reality and cannot represent a conceptualization of land in state of constant flux.

Maps are also comprised from a series of dichotomies (such as presence / absence, inside / outside, or centre / periphery) created by criteria for representation (or not) and recorded as points, lines and polygons. Features on maps represent objects such as wetlands, lakes, rivers or cabins but these fail to capture much or all of the wisdom that comprises Aboriginal understandings of the land. These dichotomies translate into practical barriers for documenting characteristics of the land from an Aboriginal perspective. One participant told me of an island in Southern Indian Lake (formerly a point before inundation) to which one must never point else the winds become a gale. Though the participant did not tell me what or who would cause the gale, Westfall (2003) documents the case of a person in Pukatawagan attributing the cause of the gale to the "*mîmîkwîsiwak,*

the supernatural 'little rock people'" (p.5). I have yet to think of a practical way to document this belief on a map.

Therefore, the cultural mosaic of myths, legends, stories and oral history has limited space on maps. As Little Bear (2000) explains "Aboriginal languages are, for the most part, verb-rich languages that are process or action-oriented. They are generally aimed at describing "'happenings' rather than objects" (p.78). Maps, on the other hand, describe concrete physical features on the land; a focus on nouns. Despite this dichotomy, there was recognition that maps could be used as a tool for mapping culture, or in the absence of that capability, for stimulating cultural dialogue making maps a useful, albeit incomplete, tool for cultural learning.

An interesting element of Aboriginal worldview relates to the concept of honesty (one of the seven sacred teachings), a lesson about which, I learned the hard way. In interviews I would ask "what do you think other people would think about ....?", to which the invariable response, in a somewhat insulted tone, would be "I don't know, go ask them". I did this more times than I care to admit. Little Bear (2000) puts this experience in context:

> Honesty allows Aboriginal people to accept that no one can
> ever know for certain what someone else knows. The only

thing that you can go on is what the other human being shares or says to you or others. And, in all of this, there is an underlying presumption that a person is reporting an event the way he or she experienced it. For the purposes of social control, there is a strong expectation that everyone will share his or her truth (p.80).

This concept is very different from the Eurocentric perspective that there is one objective truth and that a representative from a hierarchical position can speak on behalf of all[§§§§§]. The lesson here is that from an Aboriginal perspective, *all* the voices need to be heard to compile understanding, underscoring the need for dialogue and learning.

Where maps fail to capture cultural perspectives, they do have strengths in the context of encouraging this dialogue and learning. As the phone call I received on September 13th, 2007 attests (4.8), the maps have stimulated considerable discourse and learning within the community and a shift in the values held by the people towards maps.

6.4 INTERNAL / EXTERNAL CULTURAL DIALOGUE AND LEARNING WITH MAPS

As the results from Wasasikh (section 4.7) indicated, elders viewed potential in maps for the following internal purposes: to document geographic knowledge of sacred sites for their preservation; to use a

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[§§§§§] In this sense, this thesis does not impart respect for Aboriginal culture.

tool for community story-telling; and maps as a mode for generating internal dialogue, especially in the Cree language and for understanding traditional land use prior to the CRD.

To expand on the last purpose, beyond affecting resource use, CRD impacts have created a disjoint in elder teachings; representing a discontinuity in cultural transmissions of knowledge for the people of South Indian Lake. The younger people interviewed, without memories of the pre-CRD landscape, have indicated that they do not understand elder teachings in the context of new water levels. In regards to elder knowledge, one participant stated:

> They have stories where they tell you where they were walking, traveling prior to the flood and these stories don't make sense now. My mothers' house was partly in the water after the flood and partly on shore. I don't understand how far from shore she previously lived prior to the flood. I would like to see a map of the previous settlement prior to the flood, the houses where they lived, where the school was. Historical data is important to us.

Understanding traditional land use and consequently elder knowledges, requires representation of the pre and post-CRD land and water characteristics and would require further revisions to the maps completed to date. This would contribute to dialogue and learning *internal* to the community.

However, a pre/post-CRD map would also promote an *external* cross-cultural dialogue and learning opportunity in environmental assessment. The frequency of dialogue regarding CRD effects in the interviews conducted in this study attests to outstanding issues not resolved in the minds of the people of South Indian Lake and therefore requires further cross-cultural dialogue and learning. A channel to communicate ongoing and substantive CRD impacts to the larger Canadian society and an explanation why these effects are significant in the context of Aboriginal worldview is required.

To illustrate, an elder explained to me the concept of stealing from an Aboriginal perspective. He told me that he had asked *his* elder 'what is stealing?' That elder had explained to him that property such as an axe, food or a stove can be taken by another individual without being considered stealing, even if the item is not returned.

Stealing relates to the concept of livelihood. For example, if a gun is stolen from a hunter who relies on that gun to provide for his family and the loss of that gun therefore affects his ability to secure a livelihood; this is defined as stealing. Any other possessions that the hunter may have are immaterial and replaceable in relation to that gun.

This reminded me of a bitter comment made by one of the trappers who had lost equipment following water release from Missi Falls who stated "Hydro compensated me for the equipment but they said that they do not compensate for lost livelihood". Although at the time, I did not understand why this was so significant, he was saying that Hydro had affected his livelihood and therefore, had stolen from him. The loss of equipment was not the issue.

This puts into context the very first task that the elder had asked me to do; map the pre-CRD landscape. The utility he saw within that task was to document the loss of livelihood that the people had experienced and therefore document how they had experienced theft. Furthermore, lack of trust and fear of cultural disruption through future development also exists. This underscores the need for environmental assessment processes to be directly accountable to the people in terms of former impacts and the need for cumulative social impact assessment to become a rigorous and integrated component of assessing future impacts of development.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

7.0 SUMMARY OF RESEARCH

This research involved consultation with the O-Pipon-Na-Piwin Cree Nation in South Indian Lake on how the people understand and perceive maps, how they would change the content, construction and messages of maps for a culturally appropriate product, and finally, how the new maps constructed could promote dialogue and learning in the context of the larger Canadian society.

Twenty-two open ended interviews were conducted during the first phase of research asking people how they might change some pre-existing maps of their trapline region to better reflect their land use priorities, their values and their cultural references on maps. New maps were constructed for a return trip to the community for phase two.

Phase two involved presentation of the new maps to assess their validity in presenting outcomes from phase one research findings and also to explore how the new maps might contribute to dialogue and learning external to the community. Thirty people participated in this research phase; including nine that had participated in phase one (for a total of 43 people altogether that participated in this research).

The results from this research phase illuminated some community priorities in terms of consultation with the broader Canadian society, underscored that issues of diminished trust continue given the history of the Churchill River Diversion, but also presented some opportunity for preserving cultural assets and building community capacity and cohesion for negotiating their interests in broader Canadian context. Maps could be used to improve dialogue and learning with the broader Canadian society.

Seventeen key map elements for evaluating maps created for environmental assessment evolved out of this research that could serve as a preliminary guide to mapping Aboriginal space. When evaluated against two maps from the Wuskwatim Clean Environment Hearings, few of the key map elements were implemented indicating significant improvements could be made in regards to how maps are constructed for consultations with Aboriginal people.

7.1 SUMMARY OF RESEARCH OBJECTIVE OUTCOMES

7.1.1 How Cree People Interpret Maps

Cree people clearly understand maps but do not trust existing maps. Their knowledge systems, when experiential learning on the land has occurred, are adequate for resource usage. Though, changing

dynamics in land use has reduced collective experience on the land, which necessitates other mechanisms for capturing and transmitting this knowledge, existing maps are not appropriate for this purpose.

7.1.2 Changing Map Content, Construction and Message

In the context of consultation externally or cross-culturally, traditionally, maps have presented culturally exogenous spatial interpretations of Cree space favouring the dominant society and suppressing local voice. The absence of adequate shoreline scales, traplines, local placenames, community assets (cabins, trails etc.), and elevation prevent people from orienting to local familiar spaces and therefore, prevents participation. The presence of complex graticules, charts, tables, language, and unexplained, external and proprietary land interests of the dominant society also prevents participation. These features on maps are exclusionary to those with lower literacy and less familiarity with the broader Canadian legal frameworks that produce them.

The Cree commitment to honesty and accuracy also presents a barrier to participation because people will defer to others or refrain from commenting on specific local phenomenon if the map product is out of date, the scale is too coarse, or if local reference points are absent.

People will participate if the map displays the land commensurate with their applied experience on the land and the message is attuned to and centred on valued local spatial organizations such as registered traplines.

7.1.3 Improving Dialogue and Learning using maps in Environmental Assessment

As discussed in section 6.4, responsibility to improve learning and dialogue related to mapping in environmental assessment resides with both Aboriginal people and project proponents. Three key concepts reside with Aboriginal people, the first of which, requires holding project proponents accountable for how they present the maps ensuring that no masking of features and deceptions are present as they know the local area best. Secondly, Aboriginal people should be involved in dialoguing around maps from the inception stage of project planning to ensure that investments expended on project planning and development are not perceived as too costly to revise in light of late-stage dialogue and learning. Thirdly, Aboriginal peoples could be more proactive in developing regional resource plans using maps to assert their hegemony over these lands because the conception on the part of the dominant society that these lands are unallocated and unencumbered by interests continues to persist. Maps are an excellent way to document and assert these interests.

On the part of project proponents, the unique nature of land use in the north requires that spatial organization such as registered traplines, elevation, cabins and trails, local place names be mapped to ensure that cultural difference is recognized and affirmed. Dams, diversions and other development should be explicitly acknowledged on maps to address prior concerns that were not voiced or perceived not to be heard. Also, recognition of the socio-cultural significance of resource use and people's safety on land and water needs to be a topic of dialogue to ensure that interests are expressed. It goes without saying that purposeful manipulation of features to suppress voice, influence and power is not appropriate in the context of environmental assessment.

7.2 CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER STUDY

As Mezirow, Banduras, and Freire, expressed above, it is essential to involve people in a dialogue for learning to occur. Therefore, when maps promote engagement and dialogue on the part of Aboriginal people, as they have in this case of this research, then maps can be used to stimulate learning, especially for internal cultural transmissions. Special conditions however, need to exist on a map that is to be used effectively by Aboriginal people.

In order for participation and dialogue to occur, assumptions regarding literacy and numeracy skills need addressing in the context of simplified language, use of pictographic representation, reducing complexity of language and legends, removal or simplification of graticules, charts, tables or other support instruments that assume ubiquitous numeracy and literacy skills. Local context is also important particularly in the case of representing Registered Traplines, elevation, and cabins (fish and trapper) for people to orient themselves on the map and begin participating. Detailed data collection scales and large plot scales addresses the peoples' need to comment on features of the land honesty and accurately, otherwise efforts will be abandoned or deferred to someone else.

In the context of these research findings, these map elements, when present, constitute a culturally appropriate map. That is not to say that further additions and refinements could not contribute to understanding how Cree people interpret maps. As a result, I recommend that studies of this nature be conducted in other Aboriginal communities to further refine the findings here.

The Environmental Assessment process in both Manitoba and Canada acknowledges dialogue and learning as a main tenet enabling

participation, yet there is work to do, at least in the instance of maps created for these processes. As the evaluation of the Wuskwatim CRD maps presented above indicates, few of the key map elements developed out of this research are currently being implemented in EA mapping practice. In fact, suppression of local features and local influence on the land has occurred. This analysis could be furthered by three future research activities: 1.) by an expansion of the number of Environmental Assessment maps directly reviewed by Aboriginal people; 2.) through review of EA maps, refinement of these map elements; and, 3.) an exploration of the potential for cumulative impact assessment using maps.

As for the environmental assessment processes, the larger Canadian society would better dialogue and learn in environmental assessment processes if Aboriginal people would:

1. Be more discriminative about the map products offered in EA insisting that their local space be mapped respectful of Aboriginal worldview;

2. Insist on direct input into the map products for EA dialogue and learning such that this input is conducted at the normative planning stages of a project;

3. Demand full and transparent disclosure of predicted project impacts displayed on maps which have potential to be masked / diminished by cartographic techniques;

4. Be adamant on the 'duty to consult' as affirmed by Canadian case law (*Guerin v. R* [1984]) again at normative planning stages of a project to ensure that *sui generis,* fiduciary obligations are upheld particularly in respect to development near or on culturally significant / sacred sites, near calving or spawning grounds which should be mapped (but not necessarily publicly shared).

Project proponents could promote dialogue and learning using maps in environmental assessment if they would:

1. Be cognizant that omissions of culturally significant features such as community assets, community toponyms, registered traplines, and community transportation reduces opportunity for participation;

2. Make special accommodations for detailed (as opposed to coarse) plot scales and data collection scales for maps and map data;

3. Refrain from manipulation of map features that mask, or reduce predicted project impacts;

4. Involve Aboriginal stakeholders at the normative project development stage to participate in mapping activities such that dialogue and learning begins early;

5. Understand that hunting, fishing and trapping are extremely socio-culturally significant activities versus simply for supplementing diet and, that disruptions in these activities resulting from project effects constitute an infringement on constitutional rights and must be addressed in the context of project consultation using maps;

6. Recognize that travel safety is a significant issue for Aboriginal people particularly in the context of water flow / water volume changes and barriers to travel such as bridges over water crossings and integrate this into project planning using maps; and,

7. Acknowledge clearly on maps prior colonial impositions on the land such as dams, diversions or other development infrastructure.

By doing so, we could together improve cross-cultural dialogue and learning using maps.

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O-Pipon-Na-Piwin Cree Nation Treaty Land Entitlement Selections,
1992 CASIL Settlement Land Selections,
and
Traditional Fish Camps prior to the Churchill River Diversion
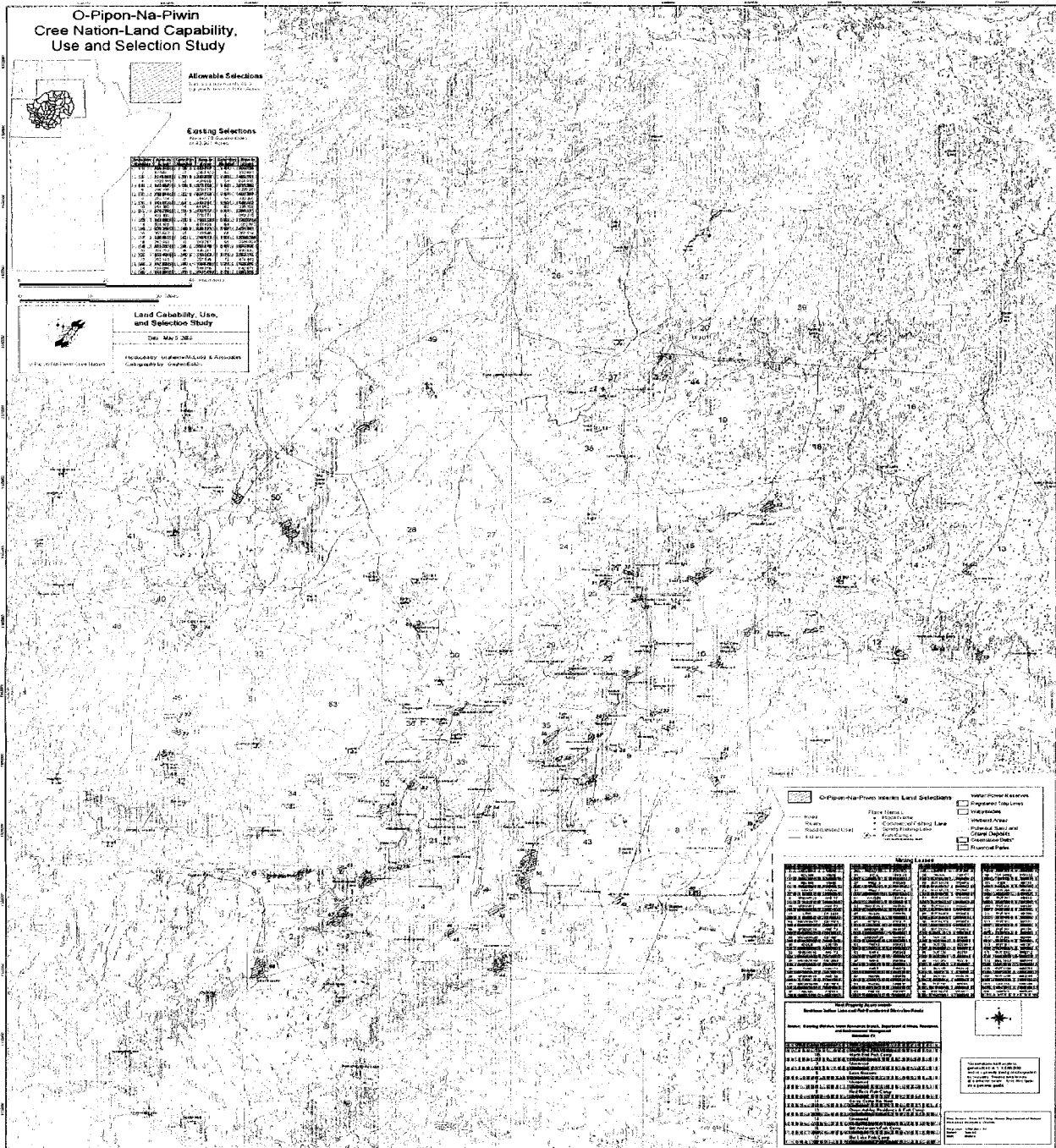
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APPENDIX C: ORAL RESEARCH CONSENT FORM

Researcher: Gaylen Eaton
Address: 229 Walnut St.
Winnipeg, Manitoba
R3G 1P4
Phone: Daytime (204) 632-2969
Evening (204) 783-7739
Email: geaton@rrc.mb.ca

Thank you for agreeing to participate in this study which will take place from July 8th to July 26th, 2007 and August 22nd to 27th, 2007. This paper outlines the purpose of this study and describes your involvement and rights as a participant.

This verbal consent script, a copy of which will be sent to you for your records, is only part of the process of informed consent. It should give you a basic idea of what the research is about and what your participation will involve. If you would like more information about something mentioned here, or information not included here, you should feel free to ask.

Maps are created to plan for the future, communicate information on building projects, and, in this case, make land selections for the community. Maps are put together from rules that exist from a European viewpoint. Things that are on maps such as scalebars, blue coloured water and red roads etc. all come from European tradition of mapping. Most of the time, map-makers do not ask whether their maps make sense to people. Therefore, very little understanding exists on how the people who use the maps actually understand them. There is even less talk about how good maps are when they are used between different cultures. The purpose of my research is to see if talking and learning together with maps can find ways to improve maps to talk across cultures. This research will gather ideas on how these maps could be made better in a cross-cultural setting and how they can be changed to communicate more effectively.

This research will involve two stages. The first stage is individual interviews which is the activity for today that will last from 1-2 hours. The second stage, if you choose to participate, is a group meeting where we can share ideas together on how to improve maps together which will be during the week of August 12th – 19th. I will provide you with a $25 payment for your time at the end of today's interview.

Your Privacy: All information that you share with me will be kept confidential. Your identity will never be connected in any way with the notes that are kept during our conversation. If you would prefer, I can use your real name in my report after you have given me further consent to do so. In the end only a summary of answers will be made public. No papers or computer files used for analysis will contain your real name.

Your Rights: Agreeing to participate in this study, by giving your verbal consent, indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You can stop participating at any time, and refuse to answer any questions I ask without any consequences.

If you have any Questions or Problems: Please feel free to ask questions for information about this research at any time. You may contact the principle researcher, Gaylen Eaton 204-632-2969 (**geaton@rrc.mb.ca**), or the Director of the Natural Resources Institute 204-474-6169. Further, this research has been approved by the University of Manitoba Joint Faculty Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at 1-204-474-7122, or e-mail **margaret_bowman@umanitoba.ca**.

I guarantee the following conditions will be met:

1) Your real name will not be used at any point during information collection and write-up.

2) If you grant permission for audio taping, no tapes will be used for any purpose other than to do this study.

3) Tapes will be destroyed following completion of data compilation.

4) Your participation in this study is voluntary; you have the right to withdraw at any point of the study, for any reason and any information will be turned over to you and not used in the study.

5) You will receive a copy of the final report, available at the OPCN Band office, which is handed in to the University.

Do you grant permission to be quoted directly?

Yes _____   No_____

Do you grant permission to be audio taped?

Yes _____   No_____

How do you wish transcripts of your interview be disposed of?

Shred _____   Keep on File _____

APPENDIX D: RESEARCH QUESTIONS

PREAMBLE

- Introduction of researcher and participant
- Small talk to make participant comfortable
- Introduction of purpose of research
- Introduction of why this research is being conducted
- Ascertain whether participant has read, understood and signed research consent form.
- Ask again whether recording of interview is permitted, and if yes, start recording
- Inform participant of anticipated duration of the interview, what it involves

All interview questions will apply to two or more maps from the Wuskwatim CEC hearings that will be available to the participant in the interview room.

THEME 1: CONTENT
Perhaps we can start by looking at the main map frame (gestured to).

What things is this map showing? (ie. Features or layers such as roads, rivers etc.)

Is it Ok if we call these layers? Or, if you prefer, something else?

What layers do you use to orient yourself in this map?
    Prompt: how do you find familiar places on this map?

Do you think these layers are accurate to the real world?
    If No,   Is that important?

Are there any layers missing from this map that would improve it?
    Prompt: Would you add something to this map if you mapped this?

    If yes, Would you consider this culturally important?

Would you get rid of any layers here?
    Prompt: Are there things on this map that don't have much meaning?

    If yes, Is that because those are culturally unimportant?

THEME 2: CONSTRUCTION

A) Colour

Is it OK if we talk about the colours used on this map?
Why do you think they make the water blue?
What colour would you change it to?
What other colours would you change?

B) Symbology

What do you think of the symbols for towns used here? (gestured to)

Would you change the symbol to something different if you were the one mapping it?
(If positive response, ask why?)
What about...other symbology? Are these symbols a good choice?
What symbols would you change if you were the mapper?
What would your new symbols look like?

C) Generalization (semantic and geographic)

They grouped all the roads together and made them one colour even though they are gravel, winter or paved roads.

Do you think that other things were grouped together that shouldn't have been?
(referring to semantic generalization)
Are there things here that could be grouped together and shown with the same colour or symbol that weren't?
How would you change how things are grouped together?

Are the lines showing the rivers smoothed out from reality or shown in greater detail? (Referring to geographic generalization)

Is that OK? Or should it be different? What should it look like instead?

  Prompt if not OK: Are there any other features that have lost detail? (such as shorelines or roads)

D) Scale

This scale is called a referential fraction reading 1:250,000 or "one to two hundred and fifty thousand".

Does this number make sense?
What does it mean?
What does the scalebar tell you?
Do you think this map should show more details or fewer details about the land?
  Prompt: should it be more 'zoomed in' / 'zoomed out'?

E) Legends

What do you think of the legend? (Gestured to)
Does it explain the layers on the map?
Is it easy to understand?
Does it tell you what you need to know?
Would you do anything to change it?

F) Orthographic Orientation

North on this map is oriented to the top of the page (gestured to).
Would you change the direction of north?

  If Yes, What direction would it be?
    Why would you change it that way?
    Would you make all maps with their direction pointing that
     way?

Why or why not?

If No,   Is that because that is what you are used to on maps?

G) Review for additional insights

Now that we've had some time to look carefully at this map....

If you had a chance to change anything on this map, above and beyond what we have talked about so far, what would it be?

If Yes,   do you think any of those changes are partly from your Cree heritage? Why?

THEME 3: MESSAGE

What message is this map trying to tell you?
Is the map successful at its message?
Would you change the map to make it more successful?
        Prompt: How?
Would you change what the message is?
        Prompt: How would you do that?
Is there anything that the map makers *didn't* understand about this area?
What *did* the map makers understand about this area?

INTERVIEW PROCESS QUESTIONS
What did you think of this interview?
Did you learn anything by doing this? ...I know I learned lots from you
Was there anything I could have done to make it better?
Would you like to participate in a group workshop in about one month to discuss these maps and to see if we can learn more together?

Thank you!

APPENDIX E: FIRE LOCATION
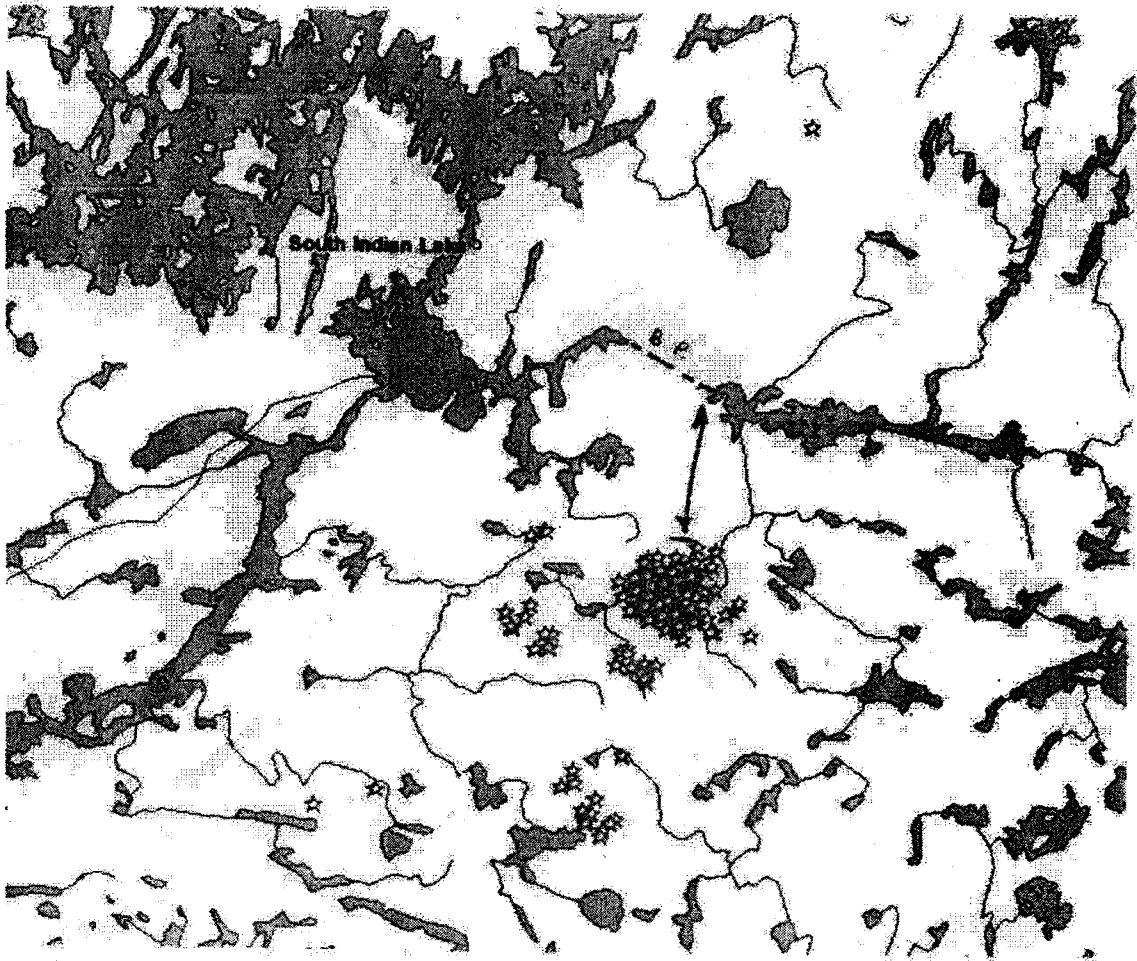
Update Time: 1:00pm

Fire 115 was 12.2 kms to Beaver Portage.

Winds at:

SW - 18 mph (29.2 km/h)
Peak - 27 mph (43.7 km/h)

Temperatures are at 31Celcius.

APPENDIX F: 1:50,000 NTDB DATA UPDATE STATUS

National Topographic Service 1:50,000 Map Sheets that Overlap with OPCN Registered Traplines–								
Data Collection Start and End Dates								

MAP-SHEET	NAME	START DATE	END DATE	MAP-SHEET	NAME	START DATE	END DATE
64A-13	GAUER LAKE	1955	1986	64G-09	HAMMOND POINT	1954	1954
64B-05	PEMICHIGAMAU LAKE	1981	1988	64G-10	MOSS LAKE	1954	1988
64B-06	EARP LAKE	1978	1988	64G-11	SEDGWICK LAKE	1954	1983
64B-07	LIVINGSTON LAKE	1978	1987	64G-12	HENDRY LAKE	1954	1983
64B-09	BROUGHTON LAKE	1977	1988	64G-13	MAXWELL LAKE	1955	1983
64B-10	SWAN BAY	1978	1988	64G-14	WOLF LAKE	1955	1983
64B-11	ISSETT LAKE	1981	1988	64G-15	LITTLE SAND LAKE	1959	1983
64B-12	OPACHUANAU LAKE	1981	1988	64G-16	CHIPEWYAN LAKE	1955	1983
64B-13	FRASER LAKE	1978	1988	64H-03	HOOD LAKE	1954	1954
64B-14	LEMAY ISLAND	1978	1988	64H-04	MCLEOD PENINSULA	1954	1954
64B-15	COUSINS LAKE	1978	1988	64H-05	WOOD LAKE	1992	1992
64B-16	CHAPMAN LAKE	1977	1988	64H-06	KILFOYLE LAKE	1992	1992
64C-09	EDEN LAKE	1981	1986	64H-07	SOLMUNDSSON LAKE	1954	1954
64C-15	COCKERAM LAKE	1977	1986	64H-10	BUCKLAND LAKE	1983	1983
64C-16	BARRINGTON LAKE	1981	1986	64H-11	SMALL LAKE	1954	1983
64F-01	MELVIN LAKE	1979	1986	64H-12	MAJURY LAKE	1954	1984
64F-02	DUNSHEATH LAKE	1976	1988	64H-13	CURRIE LAKE	1955	1983
64F-07	BRISEBOIS LAKE	1978	1986	64H-14	KNIFEHEAD LAKE	1955	1983
64F-08	LE CLAIR LAKE	1986	1986	64H-15	ETAWNEY LAKE	1983	1983
64F-09	JORDAN LAKE	1986	1986	64I-03	BLYTH LAKE	1954	1983
64F-10	EYRIE LAKE	1979	1986	64I-04	ASHLEY LAKE	1954	1983
64F-16	KUSTRA LAKE	1978	1986	64I-05	LEGARY LAKE	1955	1983
64G-01	TORRANCE LAKE	1978	1986	64I-06	PARAGON LAKE	1954	1983
64G-02	NUMAKOOS LAKE	1978	1988	64J-01	FOX LAKE	1979	1983
64G-03	MULCAHY LAKE	1978	1988	64J-02	GIMBY LAKE	1955	1983
64G-04	GRANDMOTHER LAKE	1978	1983	64J-03	SAMSON LAKE	1955	1983
64G-05	JAMES LAKE	1954	1983	64J-04	MORAND LAKE	1955	1983
64G-06	MACKERRACHER LAKE	1954	1954	64J-06	CHEYNE LAKES	1955	1983
64G-07	NUTTER LAKE	1955	1988	64J-07	KINSMAN LAKE	1955	1983
64G-08	SHEPPARD ISLAND	1992	1992	64J-08	PORCUPINE RAPIDS	1955	1983

National Topographic Database Thematic Layers

Name of Layer on Maps	NTDB Thematic Layer	Description
Airport	Runway	Airfield, all types, converted to a point
Bridge	Bridge	Bridge structure
Bogs and Marshes	Wetland	Water saturated soils
Dam	Dam	device for regulating water through a sluice or irrigation canal
Elevation (Contours)	Contour	land height and depressions
Eskers (ridges)	Esker	reduced from contours
Ferry	Ferry	Ferry Routes (available in both points and lines). Depicted as a point.
Placename	Toponym	Toponym as stored in the separation & reconciled Canadian database (CANDB)
Reef or Rock	Hazard to Navigation	Obstacle in water, rock in water, exposed shipwreck and generic
Rapids or Falls	Water Discharge	Falls, rapids or generic storage points, lines and polygons (all dissolved)
Rivers	Watercourse (line)	Rivers (intermittent, seasonal and permanent)
Road (Minor and Highway)	Road	Highway & Minor (generic, main, secondary, street)
Road (Winter, ATV, Dry Weather)	Limited-use Road	Winter, ATV, or dry weather roads
Sand	Sand	Generic underwater including foreshore flats and other than underwater
Seaplane	Seaplane Base	Generic, Anchorage (mooring) or base (mooring and services for aircraft)
Trail	Trail	Generic, Other than portage, portage (a trail used by canoeists to bypass an unnavigable portion of a watercourse)
Water	Waterbody	Lakes, intermittent/slough, flooded areas, irrigation canal, generic

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21 Adapted from the NTDB Data Dictionary, Edition 3.1 (Natural Resources Canada 1996).
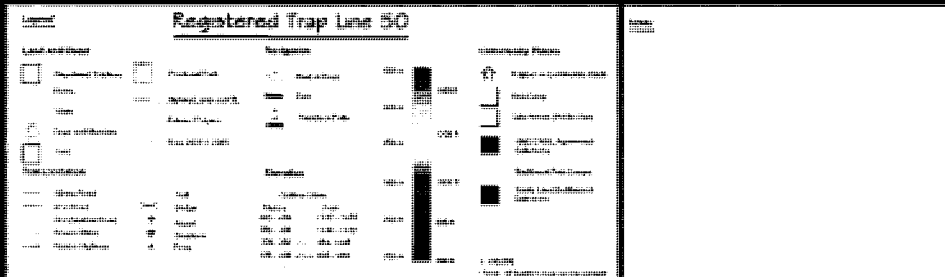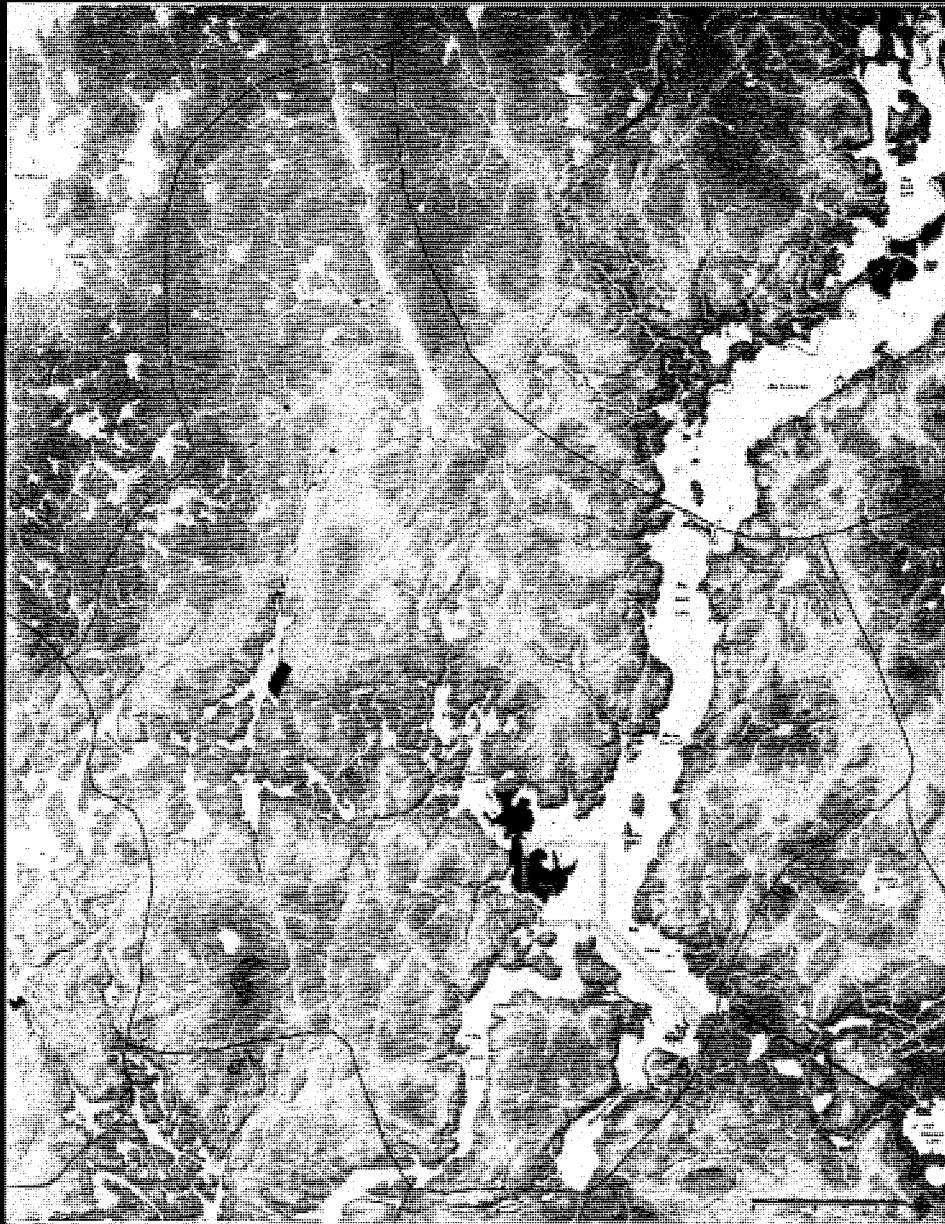
Thematic Layers from Other Sources or Derived Layers

Name of Layers on Maps	Source	Description
Community Selections		
Community Selections	Treaty Land Entitlement, Traditional Fish Camps, and 1992 CASIL Agreement Selections	Selection parcels
Elevation (Relief Shading)	NTDB Contours	Interpolated surface from NTDB contour lines, create a contoured elevation surface
Fires (2005 & 2006)	Manitoba Conservation, Fire Branch	Provided by Manitoba Conservation on August 10th, 2007 for SIL Registered Trapline Area
Placename (Local)	University of Manitoba, MNRM masters thesis, Carl Frenchuch & South Indian Lake residents' input	Placenames that are not part of the CGNDB but are common references within the community. Also Cree translations where available
Provincial Parks & Reserves	Manitoba Conservation, Parks Branch, Wendy Creed	1:1,000,000 scale park boundaries of Big Sands Lake Provincial Park & Amish Park Reserve
Registered Traplines	Manitoba Conservation	1:1,000,000 scale RTL boundaries digitized from a paper map
Highest Lands in RTL	Derived from Triangulated Irregular Network (TIN) from NTDB contour lines	For each RTL the average, min, max and standard deviation of elevation was calculated. The highest lands are displayed as 1/2 of one standard deviation from the max elevation value in each RTL or HL=max - (σ/2)

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APPENDIX I: SAMPLE LEGEND

Legend*

Registered Trap Line 50

Land and Water

- Registered Traplines
- Rivers
- Water
- Bogs and Marshes
- Sand

- Provincial Park
- Highest Lands in RTL
- Eskers (Ridges)
- Fires 2005 & 2006

Transportation

- Winter Road
- ATV Road
- Dry Weather Road
- Roads- Minor
- Roads- Highway

- Trail
- Bridge
- Airport
- Seaplane
- Ferry

Navigation

- Reef or Rock
- Dam
- or   Rapids or Falls

Elevation

Contour Lines

Metres	Feet
400 - 450	1312 - 1476
350 - 400	1148 - 1312
300- 350	984-1148
198 - 300	635 -984

450 m
1400 ft
400 m
1200 ft
350 m
300 m 1000 ft
250 m 800 ft
200 m 600 ft

Community Places

- Trapper or Community Cabin
- Fish Camp
- Safe Haven (Public Use)
- 1992 CASIL Agreement Selections
- Traditional Fish Camps
- Treaty Land Entitlement Selections

1: 100,000

* Note: all features may not be present

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APPENDIX K: PROPOSED MAP ELEMENTS FOR MAPS

Map Element 1: Plot scale ratio is at or better than 1:75,000.

Map Element 2: Data collection scale is at or more detailed than 1:50,000.

Map Element 3: Display of local spatial references such as registered traplines, cabins, fish camps and other community assets.

Map Element 4: Vernacular and local place names are used with Cree translation where possible.

Map Element 5: Complex language is replaced with simplified language.

Map Element 6: Pictographic representation is utilized.

Map Element 7: Lower literacy and numeracy skills are accommodated.

Map Element 8*: Data is current especially in areas affected by hydro-electric development.

Map Element 9: Blue lakes are not essential, despite cartographic conventions to the contrary.

Map Element 10: The four direction colours and the colour green is used.

Map Element 11: Different road use characteristics are delimited (winter roads, ATV trails, snowmobile routes, and all weather roads).

Map Element 12: Elevation is displayed as graduated colour for general topography display, contours for more technical location of objects, and highest elevation areas for spatial referencing for elders or those who navigate without maps.

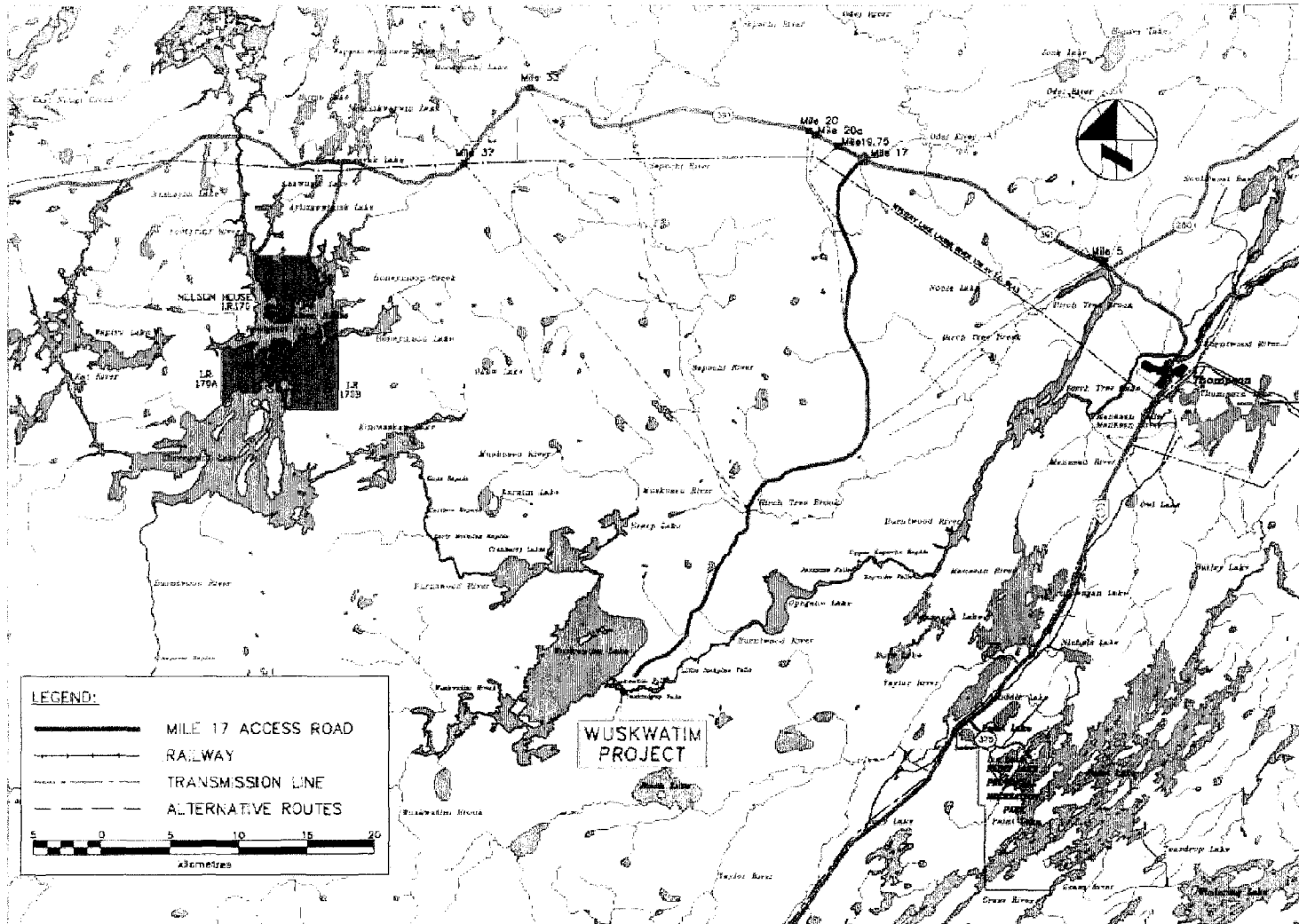*Map Element 13*: Community assets (cabins etc.) are displayed.

Map Element 14: Contextual data relating to safety is displayed on maps such as how a potential development project would affect traveling by boat, ATV, or snowmobile. Data such as reefs, buoys, rapids, falls, winter travel routes, and escape trails should be included.

Map Element 15*: Acknowledge former colonial impositions on the land base by the dominant society such as control structures, dams, or diversions.

Map Element 16: TLE parcels are de-emphasized or omitted.

Map Element 17: Eurocentric layers that display proprietary land / resource interests of the dominant society are explained and justified in non-technical terminology.

LEGEND:

————	MILE 17 ACCESS ROAD
—•—•—	RAILWAY
—••—••—	TRANSMISSION LINE
————	ALTERNATIVE ROUTES

kilometres

WUSKWATIM
PROJECT

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APPENDIX N: WUSKWATIM EIS MAP (2) DISPLAYING CONSTRUCTION IMPACTS (Manitoba Hydro and NCN 2003b)

Project Impact Type

- Access Road Clearing
- Borrow Pit Clearing & Excavation
- Flooding (cleared first)
- Generating Station Clearing Full Rehab
- Generating Station Clearing Slight Rehab
- Generating Station Disturbed (not cleared)
- Generating Station Permanent Clearing
- Erosion from Project at 2014, 2034, 2109
- Shore Zone Water Regime Changes

Sub-Region Boundary

Source: Manitoba Conservation for 1:15,840 Provincial FRI Data
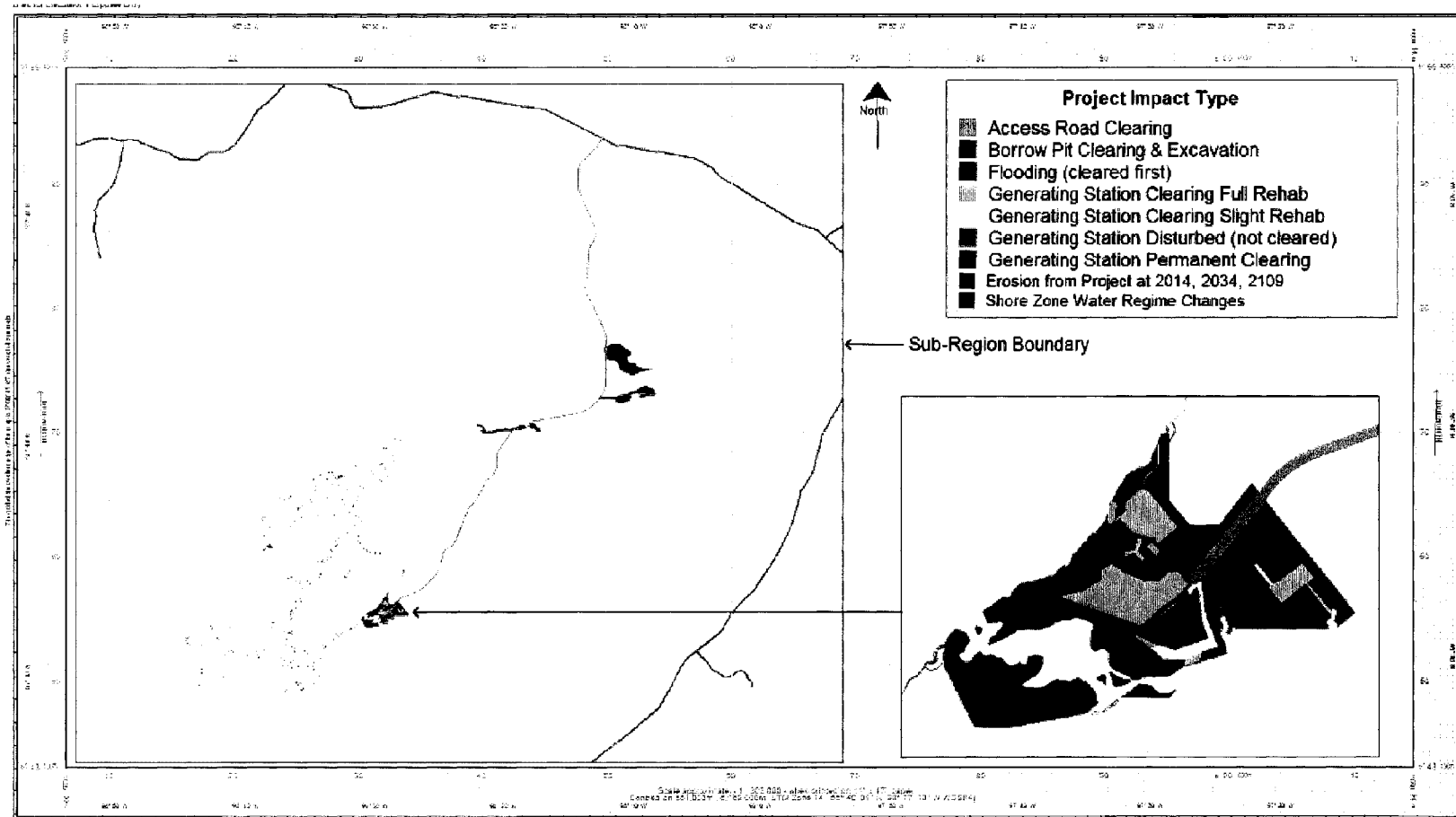Manitoba Hydro for NTS

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APPENDIX O: EVALUATION OF WUSKWATIM EIS MAP 1(a) AND NEWSLETTER MAP 1(b) IN IMPLEMENTING MAP ELEMENTS

#	Map Element	MAP 1(a & b) (achieved? Yes / No / Partial / Unable to Assess (UA))	Comments
1	Plot Scale more detailed than 1:75,000	UA	Plot scale not documented
2	1:50,000 data collection scale or more detailed	N	1:250 000 Scale Data used
3	Registered trapline boundaries and fish camps / cabins are displayed to provide people with spatial references	N	None present
4	Use vernacular and local place names	N	All place names derived from Canadian Geographic Names Database (CGNDB), Map 1b- selections from CNTDB
5	Use Simplified language	N	'Alternatives' could be rephrased to "Choices"; "Generating Station" sub-text (Power House) could be added. "3 Alternatives" is difficult to understand as 6 alternatives are displayed on the map, unless there were 3 alternatives from the road to Nelson House as opposed to PTH 391, which would make a total of 8 alternatives.
6	Include pictographic representation	N	None used
7	Avoid assumptions of literacy and numeracy	Y	No complex graticules, legends, or symbology was used.
8	Currency of data	Y	The 0630 NTDB tile (1:250:000) metadata reports a data collection end date of 1995
9	Blue lakes are not essential	Y	Convention used
10	Use four direction colours and the colour green	N (1a), Partial (1b)	Map 1b has a green background, Map 1a does not. The 4 directions colours do not appear to be used purposely.
11	Delimit different road use characteristics	N	No local trails or roads are shown

12	Display elevation	N	Not Shown
13	Address important community assets (cabins etc.)	UA	Likely a part of the consultation process
14	Include contextual data on maps that respect the experiential component of resource use and safety concerns	N	Map 1b- over 57 lakes in area removed from the map, Sapochi river system and Burnt Tree Brook not shown. This is considered a disservice to the public as proposed road will traverse a minimum of 6 rivers
15	Acknowledge with symbology and text labels former colonial impositions	Partial (1a), N (1b)	Transmission lines clearly shown on Map 1a; Not shown on Map 1b.
16	De-emphasize or omit TLE parcels	Y	Not shown, though on map 1a, "I.R. 170 A, B, & C" labels are larger than the Nelson House place label emphasizing the Eurocentric classification.
17	Justify Eurocentric layers that display proprietary land / resource interests of the dominant society	Y	Not shown

APPENDIX P: EVALUATION OF WUSKWATIM EIS MAP2: CONSTRUCTION IMPACTS IN ACHIEVING IMPLEMENTING MAP ELEMENTS

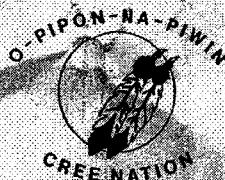| #	Map Element	MAP 2 (achieved? Yes / No / Partial / Unable to Assess (UA))	Comments
1	Plot Scale more detailed than 1:75,000	N	Map reports plot scale at approximately 1:303,000 on 11x17" paper
2	1:50,000 data collection scale or more detailed	Y	Forest Resource Inventory Data is collected at 1: 15,840
3	Registered trapline boundaries and fish camps / cabins are displayed to provide people with spatial references	N	Not shown
4	Use vernacular and local place names	N	No place labels
5	Use Simplified language	N	"Borrow Pit", "Rehab", "disturbed" and "water regime changes" need clarification
6	Include pictographic representation	N	Complex legend lookup
7	Avoid assumptions of literacy and numeracy	N	Two Graticules are displayed. One in Degrees, Minutes and Seconds, and one in metres on a 1000m grid. UTM coordinates are displayed at variable intervals such as "61 99 400m" which is northings from the equator and "5 o6 500m which is a measure from the central meridian of the UTM Zone. This is explained by map subtext "Centred on 561,000, 6,169,000m UTM Zone 14 (55 40' 01" N, 98 17' 10"W WGS1984)".
8	Currency of data	UA	FRI data version not documented, though assumed up-to-date
9	Blue lakes are not essential	N	No lakes shown
10	Use four direction colours and the colour green	N	Not utilized
11	Delimit different road use characteristics	N	No existing roads shown excepting selected alternative
12	Display elevation	N	Not shown

13	Address important community assets (cabins etc.)	N	No local assets shown
14	Include contextual data on maps that respect the experiential component of resource use and safety concerns	N	No contextual data shown
15	Acknowledge with symbology and text labels former colonial impositions	UA	No existing features shown
16	De-emphasize or omit TLE parcels	Y	None shown
17	Justify Eurocentric layers that display proprietary land / resource interests of the dominant society	N	No context for comparing project impacts as they overlap with existing local features. Map displays, exclusively, Eurocentric layers.

The Nelson House Resource Management Areas as recognized by section 15.1 of the Northern Flood Agreement. The South Indian Lake SIL Trapline Zone as recognized by Schedule 5.1 of the Nelson House Northern Flood Agreement

© Gaylen Eaton

Tansi:

We would like to introduce Ms. Gaylen Dann to our New Nation.
Gaylen is here visiting the Community to speak to Community members about maps until July 26th /07.

She is hoping to understand how to make maps that make sense across Cultures.

She is doing interviews using some local maps to ask people "if you made a map what would it look like?"
She will be returning in the third or fourth week of August with maps made from suggestions that have been made and to share results with people.
People will be invited to group sessions at that time.

If you wish to speak with Gaylen, come on down and visit her or phone @ 374 2277.
She will be at the OPCN administration Building, Victors Office.

Ekosani- Thank you.

GLOSSARY OF TERMS

Consensus: is defined as a position that all participants can accept, as distinct from one that all participants would endorse (Glicken 2003, notes p.323).

Cross-cultural research: is research that takes place across, or between, cultures and includes research undertaken by non-indigenous researchers into the lives of indigenous people. (Gibbs, 2001)

Culture: refers to the shared ways and thinking that is the outcome of similar group experiences and is passed from one generation to the next (Erik de Man, 2003)

Dialectic thinking: is defined here as acceptance of inherent ambiguities and contradictions and different worldviews (Merriam 2004).

Dualistic thinking: also referred to as Aristotelian logic which polarizes different perspectives into dualistic modes such as "right and wrong", "good and bad" etc. (Peng 1999)

EIA: Environmental Impact Assessment as defined by the Manitoba Environment Act (synonymous with "EA")

GIS: is a system of hardware, software and procedures to facilitate the management, manipulation, analysis, modeling, representation and display of georeferenced data to solve complex problems regarding planning and management of resources (NCGIA, 1990)

Intercultural competence: the ability to communicate across cultures

Praxis: process of reflection on one's assumptions before taking action (Freire 1972).

Procedural Justice: is defined by the concepts of fairness and competence of a process as perceived by the public (Webler 1995). It is related to the *process* of decision making versus the *outcome* of the decision making (i.e. distributive justice)

Proponent: means a person who is undertaking, or proposes to undertake a development, or who has been designated by a

person or group of persons to undertake a development in Manitoba on behalf of that person or group of persons; (Queen's Printer Statutory Publications,1988, s1(2))

Public: Used synonymously with 'community' here, means neighbourhood, village or town but can exist in other forms such as professional or social relationships (Weiner et al. 2002)

Public Consultation: as a term may be interpreted as involving a high level of dialogic interaction, however it may also be used to represent one-way information transmission; due to these ambiguities, it will not be used in this document.

Public Participation: is public hegemony in decision making

Resource Management Area (RMA): Defined in section 15(1) of the Northern Flood Agreement (NFA) that signors of the NFA receive "first priority to all the wildlife resources within their Trapline Zones, and in the rivers and lakes which were traditionally available to and used by them as a source of food supply, income-in-kind and income ("the Resource Area")".

Stakeholder: all people and institutions who have an interest in the successful design, implementation and sustainability of a project. (Howlett and Nagu 1997).

Trapping: "means taking, capturing or killing or attempting to take, capture or kill wildlife by any means or contrivance designed to enclose, capture, hold, ensnare or otherwise restrain an animal, whether that means or contrivance kills the animal or not" (S.1 C.C.S.M. c.W130 *The Wildlife Act*).

Registered Trapline (RTL) District: means an area designated as a registered trapline district by the regulations outlined in the Wildlife Act (S.38(2) C.C.S.M. c.W130 *The Wildlife Act).*

Treaty Land Entitlement (TLE): Manitoba's constitutional obligation under the under the Manitoba Natural Resource Transfer Agreement (MNRTA) to set aside unoccupied Crown lands under the framework identified by the Framework Agreement - Treaty Land Entitlement (1997) including Treaty 5 in this case. Under treaty, as of September 20, 1875, each family of 5 would receive 160 acres or a proportion thereof.