First Nations Community Capacity and Empowerment in Forest and Land Use Planning in B.C., Canada

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M.Sc. Thesis

F.J.M. van Bohemen (February 2010)

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THIS THESIS* IS IN SERVICE OF THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF:

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"Our ancestors must have had maps.

They saw that Harrison Lake is a footprint.

The print of a right foot. The left foot is over in Stanley Park.

They must have had maps, how else could they have seen it?"

(Aboriginal research participant)

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Summary

Continuous court rulings and environmental pressure have brought about a transformation in B.C.'s forest policy arena with respect to the recognition of Aboriginal rights and title. However, the legacy of centuries of colonization and marginalization lead some to question the extent in which indigenous communities possess the capacities to successfully accommodate the increasing powers and authority that are being devolved to them.

Two case studies (First Nation communities in British Columbia) were used to improve the understanding of First Nations community capacity and its impact on Aboriginal empowerment. The case studies focused on the use of Geographic Information Systems (GIS). GIS is used by an increasing number of organizations involved in forest and land use management, including First Nations communities, to manage and display geographic data. GIS was therefore identified as a potentially valuable tool for First Nations to accommodate their increasing power and authority in forest and land use planning. A total of 23 semi-structured interviews was conducted with members of the Sliammon and Chehalis Nations used as case studies, as well as with representatives of the timber sector, the Crown government and (e)ngos. The results were subsequently used in a comprehensive analysis of First Nations empowerment in forest and land use planning.

Access to GIS proved indispensable for First Nation communities in B.C. to successfully accommodate their increasing power and authority in forest and land use planning. However, capacity building initiatives must be sensitive of the community's long term vision and priorities. The level of GIS capacity within a community is at least partially determined by the strategies a community deploys to pursue its long-term vision. The effectiveness with which a community implements these strategies to reach community outcomes, is subject to a variety of conditioning influences.

The pursuit of a fully operable, in-house GIS for every Nation is inappropriate and potentially wasteful. It should be borne in mind that given the small size of many communities and their limited demand for GIS maps, many Nations may not be able to economically justify large investments in setting up and maintaining the system. Efforts to build GIS capacity should be generated bottom-up by those Nations who have identified GIS as a potentially valuable tool to support their community's strategies. External contractors play a vital role in meeting the demand for GIS to Nations that have no, or limited in-house GIS capacity.

1. Introduction

The process of Aboriginal[1] empowerment is a controversial issue in Canadian politics. The recognition of Canada's indigenous peoples as serious partners in an array of different social, economic and political contexts has taken many centuries and is still evolving. Although Aboriginals' increasing political sway signals the progress that is made along the long and strenuous path of empowerment, the variety of capacities Aboriginals possess to accommodate and wield their increased power and authority, are stretched to their limits (Wiber *et al.* 2009). In its broadest sense, community empowerment refers to the improvement of conditions within which communities are able to influence the processes at play in and around their respective communities (Israel *et al.* 1994). Community capacity is the capability of a community to organize around a common issue and through participation and cooperation, identify and implement strategies to deal with the issue (Thomson and Pepperdine 2003).

This study aims at better understanding the disposition, development, use and retention of First Nations community capacity. The focus hereon is on the use of Geographic Information Systems (GIS). For their rhetorical power, GIS maps are potentially powerful instruments First Nations can wield in negotiations concerning forest and land use planning in

[1] A note to clarify the use of terms is in place here. The term 'Aboriginal' is often used to refer to Canada's indigenous peoples. Technically, the term includes First Nations, as well as Métis and Inuit. However, when examined in British Columbia's provincial context, the term specifically refers to First Nations, since they are by far the most populous Aboriginal ethnicity in the province. Further, when referring to an Aboriginal community, the terms 'community' and 'band' are often used as well as 'Nation'; the latter referring specifically to a First Nations community (Dickason 2002: xiv, -v).

British Columbia; Canada's westernmost province. This chapter delves deeper into the study's background and problem statement.

This research has been carried out in service of the partial completion of the degree of Master of Science attended at Wageningen University, Wageningen, the Netherlands. The research was conducted with ethics approval of the UBC Behavioural Research Ethics Board (BREB: UBC BREB Number H09-01975), Vancouver, Canada under the auspices of the Forest and Nature Conservation Policy Group (Wageningen University, the Netherlands) and the department of Forest Resources Management (University of British Columbia, Canada).

1.1 Background

During most of the 20th century, the forestry sector in British Columbia (B.C.) was dominated by a strong government-industry alliance within which political power was concentrated, leaving little room for the involvement of other parties such as First Nations (Bradshaw 2003). Forest policy aimed primarily at the extraction of timber for commercial value; little notice was taken of conservation efforts or Aboriginal rights and title.

This section describes the path along which the political landscape of B.C.'s forest policy arena has become, and continues to be, shaped, reshaped and defined. A limited analysis of a number of key court rulings highlights the judicial process through which First Nations have gradually gained rights over their traditional lands and resources. Further, a campaign led by the environmental movement exerted increasing pressure to protect B.C.'s natural resources. Although initially separate processes, the intersection of forest and Aboriginal policy eventually led to the break up of the government-industry alliance in the late 1990s leading to an unprecedented shift in B.C.'s forest policy arrangement (Hoberg and Morawski 1997).

1.1.1 Evolving Rights and Title

During the colonial era, most indigenous communities in Canada signed treaties through which they surrendered the rights and title over their traditional territories to the colonizer. The boundaries of authority between the arriving government and Aboriginal communities were thus established in the early stages of colonization. This however did not occur in B.C. which was the last remaining part of Canada to be colonized, since it was generally assumed indigenous culture would assimilate with the arriving Western culture. Official treaties would therefore not be necessary. The First Nation communities in B.C. however, have resisted the usurpation of their land by arriving Europeans and have fought for the recognition of their rights and title through, most importantly, the courts (Dickason 2002).

It took a number of successive milestone court rulings to confirm the continuing existence of Aboriginal rights and title in B.C. because of the absence of historically binding treaties, and for First Nations to become recognized as serious partners in forest and land use planning. The analysis presented here starts in 1973 when the *Nisga'a* First Nation claimed Native rights over their land in north-western British Columbia and demanded those rights persisted despite the colonial history. The court was unanimous in its decision that the land originally belonged to the *Nisga'a*[2], but the court was divided over the present-day existence of indigenous rights over the land, since three judges argued that Aboriginal rights over the *Nisga'a* territory were extinguished prior to B.C.'s accession to what is now known as Canada (Tennant 1996). Although the recognition of the existence of Aboriginal rights was mostly a moral victory, it did break way for other Nations to claim title over their traditional lands. In 1984 the *Musqueam* Nation brought the *Guerin* case to court. Following in the footsteps of the *Nisga'a* case, the Nation argued Aboriginal title beyond the boundaries of its reserve

[2] Aboriginal names and titles are printed in italics.

existed and had never been extinguished (Reynolds 2005). The Supreme Court agreed with the *Musqueam*, and acknowledged the persistence of their Aboriginal title. It was the first case of its kind in which land beyond a reserve was recognized as originally belonging to a Nation, further widening the scope for indigenous communities to claim their original lands.

The existence of Aboriginal rights within and beyond reserves were confirmed in the *Sparrow* (1990) and *Delgamuukw* (1997) cases. Additionally judges in the *Sparrow* case determined the legal boundaries for the exercise of those rights for a narrow spectrum of purposes and asserted these boundaries should be determined on a tribe-specific basis (Boldt 1993). In this case the use of Aboriginal fishing techniques was under dispute as, under Crown law, these techniques were prohibited. The specification and extent of these rights, their contents and their definition was laid down in the *Delgamuukw* case seven years later. Additionally, in the latter case the judges ruled these rights have to be compensated if land use planning (logging amongst more) would infringe upon Aboriginal title (Lindsay and Smith 2001).

Finally, the *Haida* Nation and *Taku River Tlingit* Nation (2004) cases broke new ground with respect to the responsibility of the B.C. government to timely and appropriately consult First Nations and accommodate their interests if planning activities would infringe Aboriginal interests. The ruling initiated what has generally become known as processes of consultation and accommodation in which First Nations receive referrals of newly proposed developments in their traditional territory. Although the Nations have not been given veto over decisions that concern these developments, the cases did contribute to the recognition of Aboriginal title over traditional lands. Further, in the *Haida* case, the Supreme Court overruled a lower court decision by establishing the impossibility of the Crown to delegate their responsibilities to third parties such as the logging or mining industries (McNeil 2005).

Although at present legal disputes addressing First Nations sovereignty continuously appear in court, persistently shaping the issue and redefining the roles of those involved, agreements have meanwhile been reached through negotiations between the Crown government and First Nation governments: so called government-to-government negotiations. Although different agreements exist, perhaps the most common agreement in B.C. are so-called Forest and Range Agreements. These interim agreements between the Crown government and First Nations governments aim to facilitate the accommodation process by providing upfront economic compensation for future developments. Compensation is provided to First Nations whose interests may be infringed upon by forestry related activities within their traditional territory. Compensation occurs through the allocation of forest tenures to First Nations and the sharing of revenue generated from the extraction of natural resources. In exchange for these benefits, the signing Nation acknowledges the province's fulfilment of their obligation to accommodate the Nation's economic interests (Ministry of Forest and Range 2004). Additional cultural compensation such as avoiding areas with specific cultural or spiritual value, is determined on a per-project basis.

Recently, the far-reaching Recognition and Reconciliation Act, proposed by the government of British Columbia to further devolve rights to Aboriginal communities and break new ground in recognizing Aboriginal title, was turned down by both First Nations and resource (e.g. timber and mining) companies. First Nations argued more should be done to recognize their Aboriginal rights and title (Hunter 2009). The rejection effectively stalled the 'New Relationship' which could potentially significantly have overhauled political relations between Crown and First Nation governments. Finally, an agreement between the provincial government and several First Nations in the Central and North Coast regions in B.C. has recently been reached. The agreement provides for economic development, revenue sharing and shared decision making in, amongst more, land use and carbon offsets (Penner 2009).

Numerous modern-day treaty negotiations are currently underway in B.C. to establish the boundaries of authority between Aboriginal and Crown governments. These negotiations are held primarily between the participating Nation and different provincial and federal ministries. The negotiations aim to establish the division of power and authority over a wide array of issues, to the end of improving the well-being of the members of the community through increased self-governance.

1.1.2 Environmentalist Pressure

Besides gradual advances in the field of Aboriginal rights and title at that time, the late 1980s and 1990s witnessed increasing environmentalist pressure to protect B.C.'s natural resources. The dispute revolved around the precious forests of Clayoquot Sound which were threatened by logging. The threat of logging on Meares Island (*Tla-o-qui-aht* Nation territory) was heavily opposed by environmentalist groups, First Nations and ordinary civilians. An increasingly urgent call was made to accommodate Aboriginal rights and title and protect Clayoquot Sound (Fraser *et al.* 2006). The campaign finally resulted in far-reaching concessions made by the Crown government and the logging industry to protect the area.

The then current state of court rulings had not yet done enough to force a seat for First Nations at the negotiating table, then still rendering them at the periphery of the forest policy arena. The social stampede and the business turmoil the environmentalists stirred up through their campaigns, along with rulings to accommodate First Nations' rights and title, eventually left the government-industry alliance untenable. The coincidence of forest and Aboriginal policy resulted in decentralization of forest and land use decisions (Hoberg and Morawski 1997) through the formation of the Scientific Panel and the Central Region Board (CRB) (Mabee and Hoberg 2006). These bodies aimed at developing a shared vision on land use in Clayoquot and the co-management of its resources through 'world class' forestry practices (Mabee and Hoberg 2004).

Examples of projects that have sprung up throughout Canada due to the legal and political progress being made, are abound. Examples related to economic development are the growing number of corporate-indigenous partnerships in forestry and resource management more generally (e.g.: Anderson 1997; Aboriginal Strategy Group 2007). The growing number of participatory and consultative processes that concern traditional lands and/or resources (e.g.: Sharvit *et al.* 1999; Shepert 2008) signals the ongoing progress in Aboriginal empowerment. Inclusion of First Nations in a wide array of decision-making processes and numerous participatory initiatives (e.g.: Labonte and Laverack 2001a; Price *et al.* 2009) has the potential to significantly improve their socioeconomic position in Canadian society (Pearse and Wilson 1999).

1.2 Problem Statement

The crisis in B.C.'s political stance towards Aboriginals has substantially enhanced First Nations' political influence. Most importantly, Aboriginal communities have won important means for self-governance through formal recognition of Aboriginal rights and title over vast tracts of land containing the most commercially, ecologically and aesthetically valuable natural resources in B.C.

For empowerment to be anywhere near successful however, requires substantially more than merely ensuring political inclusion. Meaningful participation of First Nations in the political arena implies vastly different cultural fabrics must be combined to create a suitable backdrop on which the progression of empowerment can be founded (Stevenson 2006). The capability to wield the proper tools to lubricate the strenuous and sometimes grinding process may pose tough challenges for First Nations as participatory processes can be a potential drain on a community's financial resources (Treseder and Krogman 2000; Wiber *et al.* 2009), and may be technically challenging (Mabee and Hoberg 2006). Finally, Castro and Nielsen (2001)

warn us that participatory arrangements may even reinforce existing institutions thereby strengthening the existing power balance.

1.3 Research Objectives and Research Questions

This study aims to improve our understanding of the disposition, development, use and retention of community capacity by First Nations and its influence on empowerment in the forest and land use planning arena. This study intends to:

- assess and compare First Nations' disposition, development, use and retention of community capacity;
- determine and compare the factors which enable and constrain the effective use of community capacity by First Nations, and;
- provide a comprehensive analysis of First Nations empowerment in forest and land use planning.

Since "*capacity exists only in relation to specific groups, activities and issues*" (Labonte and Laverack 2001b: 129. Italics added) the term community capacity is at risk of becoming an empty shell if we fail to carve its perimeters and refine our focus by answering the questions "*Capacity for What? Capacity for Whom?*" (Stevenson and Perreault 2008: Italics added).

The consideration of First Nations community capacity in this study is centered around the use of Geographic Information Systems (GIS). In short, GIS is a versatile map making tool that is used by a wide array of organizations. The program relies on extensive databases in which geographic information is stored and maintained. In making maps, the system draws on these databases to, for example, identify certain geographic locations, draw polygons or distinguish between areas. In the First Nations context, GIS is extensively used to map traditional land use and occupancy of land such as hunting areas, old village sites and places

of spiritual significance (Tobias 2000). Besides a functionally limited 'standard' GIS package, add-ons can be bought to expand the functionality of the system and therefore can be adjusted to the changing needs of the organization using the system.

GIS' capability to produce maps is of interest here because "*As social constructions of reality, maps embody the values, truth-claims and power-structures of the cultures that make them*" (Brealey 1995: 140. Italics added). The value-laden images they mirror render maps important tools in the pursuit of a diverse array of ends. Harley (2009) emphasizes the persuasive role maps play in a political context: "[Maps] *are a class of rhetorical images* […] *just as surely as any other discursive form*. [The recognition of a map's rhetorical power] *can lead us to a better appreciation of the mechanisms by which maps –like books– became a political force in society*" (Harley 2009: 130. Italics added). Maps are further becoming increasingly important tools "*as mediators for collaboration – in a range of contexts that include urban planning, resource management, scientific inquiry and education*" (MacEachren 2000: 445. Italics added).

GIS maps have become essential tools in virtually all issues with respect to B.C.'s natural resources. Maps are for example used abundantly in referral processes to consult and accommodate First Nations interests. Consequently, practically all First Nations in B.C. are (or have been) somehow engaged in the production and enrichment of GIS maps. A successful GIS is demanding and requires substantial commitment by the organization using it. However, a GIS may generate significant empowering value to the Nation wielding its capabilities. Because of the visibility of managing GIS and the process of making and wielding the maps, GIS comprises the ideal subject to study the operation of community capacity.

The main research question around which this study evolves therefore reads: *"What role does First Nations community capacity play in support of the process of empowerment in forest and land use planning in B.C., Canada?"*

Four sub-questions address the constituent parts of the main question:

- To what extent do the Nations dispose of the community capacity to produce GIS maps?
- How do communities wield and retain community capacity for GIS?
- What factors enable and constrain the effectiveness of a GIS?
- How does community capacity contribute to empowerment in forest and land use planning?

1.4 Structure of the Thesis

Besides this chapter, which provides a background of the study and establishes the research objectives and questions, this thesis is composed of six additional chapters. The next chapter delves deeper into the theoretical background of this study. It discusses various different perspectives on community capacity and empowerment before indentifying the use of these concepts in this study. Next, the application of Chaskin's (2001) theoretical framework and its accompanying dimensions is laid out.

Chapter 3 details the materials and methods used in this study. It describes the use of two case studies as well as the methods for data collection and analysis. Finally, a consideration is given to the reliability and internal and external validity of the study's data and results.

The results of the two case studies are laid down in chapter 4 and 5. First, chapter 4 provides a comprehensive background on the two communities that were used as case studies.

The chapter details the political structure of both communities as well as their respective current political, economic and community developments.

Chapter 5 continues by reviewing the (potential) role GIS plays to facilitate developments on these three levels of strategic decision making and further provides a non-Aboriginal perspective on the use of GIS by First Nations, and their participation in forest and land use planning in B.C. Further, chapter 5 expounds an array of conditioning influences that may hamper or contribute to capacity building efforts in pursuit of community goals. Finally, the extent in which community capacity for GIS contributes to increase Aboriginal power and authority in forest and land use planning is reviewed. It does so by falling back on the conceptualization of empowerment expounded in chapter 2.

After the exposition of the results in chapter 4 and 5, chapter 6 discusses these results within the broader context of previous research. The extent to which the characteristics of community capacity may hamper or contribute to the pursuit of community objectives is discussed, followed by a reflection on the 'make-buy' decision as well as the reciprocal relation between community capacity and empowerment. The final section provides a number of theoretical consideration and the consequent limits of the methodology employed

Finally, chapter 7 enumerates and briefly expounds this study's conclusions.

2. Theoretical Framework

This section sets forth the theoretical background of this study. First, common and divergent views on some of the basic elements of community capacity and empowerment are exposed as obtained from a review of literature in this area, to the end of framing and defining the use of the concepts in this study. Next, this section develops a theoretical framework along which the collection and analysis of data is structured to inform the study's research questions.

2.1 (Community) Capacity and Empowerment

The terms 'capacity' and 'empowerment', whether applied to an individual or a collective, have much in common and cannot be considered separately. In the literature, the terms are often used interchangeably and are generally depicted as pivotal in processes of power rearrangement. The actual distinction between both concepts and the different aspects of power rearrangement they imply, however, remain shrouded in mist. Next follows an exposition of the common and divergent views on capacity and empowerment respectively in an effort to dissipate the mist.

2.1.1 Common Views on Capacity

Capacity related literature distinguishes between a primarily individualistic focus (e.g.: Babu and Mthindi 1995) and a community focus (e.g.: Crisp *et al.* 2000). In general, individual capacity is defined as one's personal skills, experiences and knowledge to pursue one's individual agenda (Stevenson and Perreault 2008). Community capacity is generally less instrumentally defined and mostly refers to a shared concern for the welfare of the members within a community and the commitment to sustain and improve community well-being (Bowen *et al.* 2000). The communal form of capacity is the point of departure in this study,

since the focus in this study is on the involvement of Aboriginal communities in forest and land use planning. The effectiveness of a community's participation in forest and land use planning results from the efforts of a group of community members rather than any one individual and emerges from the combined characteristics of individual capacities. Individual capacities are thus explicitly acknowledged and will be an inherent part of the analysis to follow.

Although virtually all analysts conceptualize capacity differently, all acknowledge the concept's multi-dimensionality. Community capacity is for example subdivided in dimensions such as, amongst others, citizen participation, leadership, skills, resources, sense of community and critical reflection (Goodman *et al.* 1998: 261-2; Chaskin 2001: 295) or 'capacity building domains' such as participation, organizational structures, problem assessment, resources mobilization and links with others (Gibbon *et al.* 2002: 488). Beckley *et al.* (2009) identify essential relations between physical, institutional and social worlds which, through interaction, yield 'capacity outcomes'. An overview reflecting the diversity of definitions of community capacity is included in table 2.1.

Table 2.1. Definitions of Community Capacity

"Community capacity is the ability of a community (or communities within a single aggregation) to adapt to circumstances of all sorts and to meet the needs of its residents." (Doak and Kusel 1996: 402, Appendix 13.2)
"Community capacity is the interaction of human capital, organization resources, and social capital existing within a given community that can be leveraged to solve collective problems and improve or maintain the well-being of a given community. It may operate through informal social processes and/or organized effort." (Chaskin 2001: 295)
Community capacity is "…the capability of individuals, groups and institutions to understand and deal with the enabling and constraining elements, dimensions and issues that drive the process of capital accumulation and decline (in all its forms) to produce desirable outcomes." (Thomson and Pepperdine 2003: 12)

Table 2.1 (Continued). Definitions of Community Capacity

"We define community capacity as the collective ability of a group (the community) to combine various forms of capital within institutional and relational contexts to produce desired results or outcomes." (Beckley *et al.* 2009: 60)
Goodman *et al.* (1998) present two working definitions: "1) the characteristics of communities that affect their ability to identify, mobilize, and address social and public health problems and 2) the cultivation and use of transferable knowledge, skills, systems and resources that affect community- and individual-level changes consistent with public health-related goals and objectives." (Goodman *et al.* 1998: 259)

Although often implicitly assumed (with Gibbon *et al.* 2002; Beckley *et al.* 2009 as notable exceptions), the expression of capacity by an individual or a collective is regarded to be conditional on the presence of enabling and constraining elements both in and external to the individual or collective, such as technical skills, leadership, economic or social resources, or the like. Thomson and Pepperdine (2003) therefore remark that capacity does not merely refer to the *ability* of a community to perform certain tasks, but also to the possibility to *engage* capacity to perform these tasks.

Finally, there is broad consensus that enhancing the capacity of an individual does not automatically benefit the collective (e.g.: Kusel 1996; Baker and Teaser-Polk 1998; Hur 2006) and may even be detrimental to it (Stevenson and Perreault 2008: 34). Baker and Teaser-Polk go as far as noting that the aggregate of individual capacities in solving communal problems may even be less than the individual capacities separately (Baker and Teaser-Polk 1998: 280)

2.1.2 Common Views on Empowerment

The conceptualization of empowerment is different from capacity in that more emphasis is put on the process that empowerment entails. Laverack (1999) and Laverack and Wallerstein

(2001) conceptualize empowerment through nine factors ('organizational areas of influence') that impact community empowerment. These factors are for example participation, leadership and problem assessment. Stevenson and Perreault (2008) base their views on Hur (2006). Hur (2006) views empowerment as the interaction and development of both individual and collective empowerment and identifies meaning, competence, self-determination and impact as characteristics of individual empowerment. Collective belonging, involvement in the community, control over the organization in the community, and community building are identified as characteristics of collective empowerment. Their conjunction occurs along a "path towards empowerment" (Hur 2006: 536). Stevenson and Perreault (2008) add that "*empowerment is multidimensional (occurring within sociological, psychological, economic, political and other dimensions), operative at a number of levels (individual, group, community)*" (Stevenson and Perreault 2008: 34. Italics added). They further emphasize the importance of a time perspective to reach the desired capacity outcome. Finally, Thomson and Pepperdine (2003) call for a 'dialectical approach' towards capacity and capacity building and view *"'things' (resource condition, attitudes, behaviours, etc.) as outcomes of underlying processes"* (Thomson and Pepperdine 2003: 10. Italics added). In this study, empowerment is considered as one such outcome. Table 2.2 includes a number of definitions of empowerment as used in other studies.

Table 2.2. Definitions of Empowerment

"Community empowerment is defined broadly: the process of gaining influence over conditions that matter to people who share neighborhoods, workplaces, experiences, or concerns." (Fawcett *et al.* 1995: 679)
"The empowerment process is not a constant, but rather a continuing, development that involves many changes and whereby an individual or group is able to strengthen and exercise the ability to act to gain control and mastery over life, community, and society." (Hur 2006: 535)

Table 2.2 (Continued). Definitions of Empowerment

"The definitions [of empowerment] are generally consistent with empowerment as "an intentional ongoing process centered in the local community, involving mutual respect, critical reflection, caring, and group participation, through which people lacking an equal share of valued resources gain greater access to and control over those resources" ." (Cornell Empowerment Group 1989; In: Perkins and Zimmerman 1995: 570)
"Empowerment, in its most general sense, refers to the ability of people to gain understanding and control over personal, social, economic, and political forces in order to take action to improve their life situations." (Israel *et al.* 1994: 152)
"At the community level of analysis, empowerment refers to individuals working together in an organized fashion to improve their collective lives and linkages among community organizations and agencies that help maintain that quality of life." (Zimmerman 1995: 582)

The overview of descriptions show there is general agreement that empowerment is both an outcome and a process (Zimmerman 1995). A process, as it changes the balance of power in favour of at least one person or collective amidst an interplay of individuals and/or collectives; it is perpetual, acting on and acted upon by the players involved (Thomas and Velthouse 1990). Empowerment is also an outcome in the sense that the current balance of power or a change in the balance of power over time, whether experienced by the individual or a collective, can be empirically studied (Laverack and Wallerstein 2001). Implicit in this discussion is the recognition that the study of empowerment should carefully consider the appropriate level of analysis (Perkins 1995) since the effects of empowerment may be different on different levels of analysis within the same context in which empowerment is studied (Fawcett *et al.* 1995: 692).

2.1.3 The Relation between Capacity and Empowerment

A review of divergent views on capacity and empowerment primarily concentrates on the relation between the concepts and consequently the method of measurement. Some authors (e.g.: Stevenson and Perreault 2008; Beckley *et al.* 2009) limit the role of capacity by

primarily placing it in service of attaining the ultimate goal of empowerment. The motivation to build capacity in this view builds upon its instrumentality in empowerment. Others (e.g.: Laverack and Wallerstein 2001) take the opposite perspective and view empowerment as essential in developing capacity. The majority of authors however (e.g.: Goodman *et al.* 1998; Chaskin 2001; Gibbon *et al.* 2002) argue that empowerment and capacity are on par and that their relation is reciprocal. In their view, the attempt to empower an individual or collective should involve building capacity and *vice versa*.

The methodology deployed to measure empowerment is diverse and depends on the definition of the relation between capacity and empowerment. Since most analysts agree empowerment is both a process and an outcome, it can be measured in and across time (Thomas and Velthouse 1990). The methodology makes use of both quantitative and qualitative measures. Rogers *et al.* (1997) used a 28-item empowerment scale to assess psychological empowerment of mentally impaired persons. Alsop and Heinsohn (2005) propose a framework comprised of a set of indirect (through capacity) and direct (through aspects of choice) tools to measure empowerment. Others such as Laverack (1999) rely solely on (indirect) capacity indicators.

The propriety of measuring empowerment however, is debatable. Zimmerman (1995) argues: "*the development of a universal and global measure of empowerment is not an appropriate goal because it may not mean the same thing for every person, organization, or community everywhere"* (Zimmerman 1995: 587. Italics in original). Most authors implicitly recognize this problem. Although the reciprocity between empowerment and capacity is broadly recognized, they take an assessment of capacity as their starting point because of its visibility in individual or collective action and inaction (e.g.: Doak and Kusel 1996). The observed operation and inclusion of capacity in the decision-making process is then used to determine (the level of) empowerment (e.g.: Forsyth 2006: adapted from Berkes 1994).

2.1.4 Capacity and Empowerment Defined

The variety of views on empowerment and community capacity offers many useful clues for their use in this study. Considering the dynamism that is intrinsic to the context in which both concepts will be used here, as well as the reciprocity that exists between them, it is essential that the definitions reflect these properties. A clear distinction however, should be made in that power, which empowerment implies (Hur 2006), is a *structure* of relative positions between social entities and capacity is the capability of pursuing certain agendas (Israel *et al.* 1994) *within* that structure. Consequently, *empowerment* means an improvement in the relative position of at least one individual or collective in relation to other individuals or collectives in the structure (Fawcett *et al.* 1995). Their reciprocity lies in that a rearrangement of power, whether between individuals, organizations or networks (Chaskin 2001), may improve or impede the operation of capacity. Conversely, building capacity may improve the relative position of an individual, organization or network within the power structure. Consequently, capacity and empowerment can be seen as two sides of the same coin: they should be considered jointly for the analysis to build on firm ground.

In this study, the definition of community capacity is borrowed from Chaskin (2001): *"Community capacity is the interaction of human capital, organizational resources, and social capital existing within a given community that can be leveraged to solve collective problems and improve or maintain the well-being of a given community. It may operate through informal social processes and/or organized effort"* (Chaskin 2001: 295. Italics added).

Central in the definition of empowerment is the concept of power itself. A more refined distinction must be made between formal and informal power and authority. Here, power is defined as the ability of an individual or collective to influence the course of action by partially or entirely overcoming the resistance of opposing parties (Emerson 1962). As an

attribute to certain individuals or collectives, power only realizes its potential in a formal or informal setting of exchange (Parsons 1963). Informal power is embedded in the social fabric of individuals and collectives that lacks written consent or institutionalization in formally recognized organizations. Its functioning depends upon recognition and acceptance, whether forced or voluntary, by those affected by its operation. In contrast, formal power derives its legitimacy from formal recognition and agreed upon social conduct and organization. Power in its formal guise translates into authority: *"When social action and interaction proceed wholly in conformity to the norms of the formal organization, power is dissolved without residue into authority"* (Bierstedt 1950: 734. Italics added). Finally Aghion and Tirole (1997) distinguish formal and real authority, relating the former to *"the right to decide"* whereas the latter implies *"effective control over decisions"* (Aghion and Tirole 1997: 1. Italics added). Changing the division of control over decisions in favour of an individual or collective, whether through a formal or informal arrangement is here understood as empowerment.

In accordance with most literature, empowerment in this study is seen as both a process and an outcome. However, its depiction as an outcome is considered a statically typified deduction from its more important dynamic (as a process) form. Especially relevant in the context of this study is the realisation that empowerment acts on different levels within a community with possibly different outcomes (Fawcett *et al.* 1995: 692). Although these levels of analysis (individual, organizational or community) cannot be considered separately, the emphasis when discussing empowerment here will be on the community level.

A definition of community empowerment specifically adjusted to the First Nations context is a scarce good. The definition is therefore borrowed from the field of health education: *"Empowerment, in its most general sense, refers to the ability of people to gain understanding and control over personal, social, economic and political forces in order to take action to improve their life situations"* (Israel *et al.* 1994: 152. Italics added). This

definition takes a broad approach towards empowerment stressing its potential to improve living standards by gaining control over decisive forces rather than tangible resources. This perspective fits well the context in which empowerment is described here. Further, this definition is indifferent to the level of analysis.

2.2 Analyzing Community Capacity and Empowerment

Of the many frameworks available to analyse community capacity and empowerment, the framework proposed by Chaskin (2001) stands out. Chaskin (2001) has constructed a comprehensive approach towards the assessment of how community capacity operates, by identifying the essential dimensions which act and interact towards the realisation of outcomes (see figure 2.1, next page). The framework integrates well the notions of community capacity and empowerment assuming their relation to be reciprocal and departs from the assumption that community capacity is a dynamic process in and between the members of a community. The composition of the model allows a degree of organizational flexibility that supersedes the almost mathematical rigor that is applied in some other models (e.g.: Beckley *et al.* 2009) to describe the pursuit of community objectives. Another useful feature of Chaskin's (2001) model is that it not only provides a basis to assess community capacity, which Goodman (1998) and Laverack (1999) do very well, it also incorporates the processes in which capacity acts or is acted upon, described by for example Perkins and Zimmerman (1995) and Hur (2006).

The model will serve as a guiding principle to inform the study's research questions. The various concepts and dimensions of the model are a starting point for the design of interviews and is used to analyse the data gathered. Further, they serve as an outline to present, and subsequently discuss, the results obtained.

Chaskin's (2001) framework identifies six dimensions related to community capacity and its use which act and are acted upon in conjunction to attain a variety of outcomes. The six dimensions are: 1) characteristics of community capacity, 2) levels of social agency, 3) functions of community capacity, 4) strategies for building community capacity, 5) conditioning influences and 6) outcomes (Chaskin 2001: 295). Figure 2.1 illustrates the framework depicting its six dimensions which act in dynamic conjunction upon a common background.

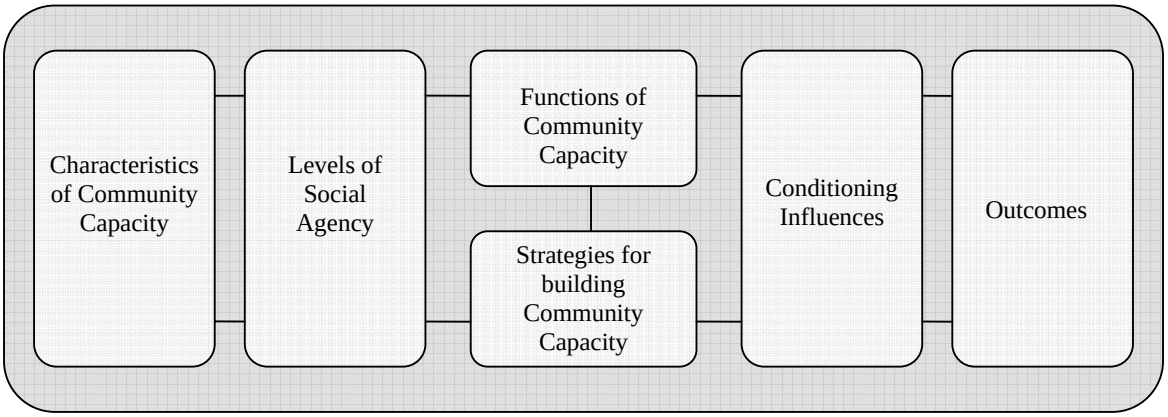

Figure 2.1 The six dimensions of Chaskin's (2001) theoretical framework

2.2.1 Dimension 1. Characteristics of Community Capacity

The first dimension identifies the characteristics of community capacity which form the fundamental basis for solving community problems. These characteristics are 1) a sense of community, 2) level of commitment, 3) problem solving ability and 4) access to resources (Chaskin 2001: 295, -6). In this study, a *sense of community* refers to the sharing of values and norms and, more specifically, the shared vision to enhance the community's socioeconomic situation and political position through empowerment. *Level of commitment* refers to the engagement people feel and their dedication to act cooperatively in support of pursuing community objectives. A community's *problem solving ability* refers to the formal (through organizations) and informal (through social relations) means community members

have and make use of to assume and pursue a communal strategy. This characteristic is enabled or constrained by the community's *access to resources*. These are here defined as the social, human, physical and economic resources that can be drawn on in the pursuit of a communal goal (Chaskin 2001).

These characteristics are not new and are to a greater or lesser extent also used, amongst others, by Goodman *et al.* (1998), Gibbon *et al.* (2002) and Beckley *et al.* (2009). A fundamental characteristic Chaskin (2001) does not explicitly include (but other authors do) is leadership. *Leadership* refers to the presence of well defined and commonly recognized leaders who are able to engage and connect people through an inclusive process of cooperation, to support procedural cohesiveness towards the attainment of community goals. Leadership is essential in solving practically every problem on the community level (Fawcett *et al.* 1995), and is therefore included as the fifth characteristic in this dimension.

2.2.2 Dimension 2. Levels of Social Agency

It is through three levels of social agency that capacity is wielded in the pursuit of community goals. Social agency is here understood as "*the capacity to exercise control over one's own thought processes, motivation and action*" (Bandura 1989: 1175. Italics added) through various levels of social relations (Dobres 2000). The *individual level* of social agency concerns all personal attributes and resources (e.g. skills, experience, knowledge and social contacts) an individual contributes to the process. The *organizational level* comprises of organizations that are principally made up of intra-community ties that, through their activities, support community concerns. These organizations may include businesses, non-profit organizations or (parts of) larger institutions such as schools and government. Finally, at the *network level* persons and organizations may dispose of and wield resources outside the community in service of their objectives. This may occur voluntarily, but the inclusion of external ties may also be mandatory because of power-sharing arrangements or because of the

nature of the negotiations that call for the inclusion of stakeholders external to the community (Chaskin 2001). In this study these stakeholders are to a certain extent at least Crown governments and the forestry industry.

2.2.3 Dimension 3. Functions of Community Capacity

The third dimension 'functions of community capacity' relates to the purposes for which community capacity is wielded. A prominent function of community capacity in this study, is its contribution to empowerment. It is through the fundamental characteristics of community capacity and the levels of social agency (dimension 1 and 2, respectively) that community goals may be attained (Chaskin 2001: 299). The attainment of communal goals again make their contribution to accommodate and make use of the shifting power balance between the parties involved in forest and land use planning and the consequent economic and political opportunities this may generate. Other functions of capacity in this case could be to foster mutual understanding and cooperation between the stakeholders involved in forest and land use planning (MacEachren 2000).

2.2.4 Dimension 4. Strategies for building Community Capacity

The fourth dimension relates to the means through which community capacity is wielded to attain the intended purposes in dimension 3. A wide range of strategies can be imagined through which First Nations build and engage community capacity. In this research, a strategy as community chooses to pursue could be to build community capacity for GIS in order to become more effective participants in forest and land use planning. Other strategies could include formal and/or informal arrangements between the various stakeholders involved through which tasks are divided and resources are purposefully deployed. These strategies could be aimed at supporting the process to reach intended ends (e.g. involve influential individuals or organizations or to smoothen the bureaucratic process) and/or focus on

supporting the content of the process such as building skills and acquiring technologies to conduct the tasks at hand.

2.2.5 Dimension 5. Conditioning Influences

Conditioning influences are the opportunities and threats that enable and constrain the attainment of the intended purposes. A distinction is made between those factors that are within the sphere of a community's influence and those that are beyond the community's reach (Chaskin 2001: 300). Conditioning circumstances within the community's sphere of influence are those characteristics of community capacity identified in dimension 1. Whereas in dimension 1 these characteristics are assessed as part of community capacity, in dimension 5 they are judged by the extent in which they support or undermine the attainment of community goals. Influences beyond the reach of the community refer mainly to higher level (socio-)economic, political or judicial factors such as the community's demography, economic state, the presence of laws and regulations and court rulings. Further, the formal and informal distribution of power is an important determinant for the success of cooperation between the stakeholders involved in forest and land use planning (McDonald 2004; Forsyth 2006) but is beyond the reach of a community's capacity.

2.2.6 Dimension 6. Outcomes

The final dimension assesses the outcomes that are reached through the conjunction of dimensions 1-5 and comprise those outcomes that were intended (explicitly or implicitly) and/or were possibly unintended. Important to the First Nations context is the question whether the use of GIS has helped achieve a community's goals. Has its use for example contributed to a stronger position of the community around negotiation tables? Close attention will therefore be paid to the extent in which the use of GIS and the investment in GIS infrastructure has contributed to the process of empowerment. Outcomes may also be negative

such as the strengthening of existing power relations through a participatory approach (Castro and Nielsen 2001).

2.3 Assessing Empowerment

Chaskin's (2001) framework and the conceptualization of empowerment as outlined foregoing lay the basis for an analysis of First Nations empowerment in the forest and land use planning arena. Empowerment is reviewed as an outcome intended by Nations who have engaged with GIS. The analysis will be based on the characterization of empowerment as a process and an outcome. Observations will be concentrated on the different levels of analysis (individual, organization, community) such as increased opportunities for training and employment and the possibly improved position of the community at various negotiating tables. Secondly, the reciprocity between community capacity and empowerment is considered by reviewing the extent in which both concepts act upon each other in the community's pursuit of empowerment.

3. Materials and Methods

This chapter sets forth the materials and methods used in this study. First, the use of case studies is outlined as the preferred research approach. Next, the methods of data collection and data analysis are expounded and finally the reliability and validity of the study's data is discussed.

3.1 Research Approach

This study's research objectives are of an exploratory nature. The research questions were informed by means of qualitative data gathered through case studies in two First Nation communities and additional interviews with non-community members. The Sliammon First Nation is located just north of the city of Powell River on the coast of B.C.'s mainland. The Chehalis First Nation is located west of the city of Agassiz in B.C.'s lower mainland. (See appendix 1 for a map and chapter 4 for a more detailed profile of both communities.) The inclusion of First Nations in a research project is a complicated undertaking. Cultural, bureaucratic and other factors complicate the attainment of permission to interview the members of indigenous communities. These complexities are further compounded by the limited financial resources and time constraints faced by the researcher.

3.1.1 Case Study Selection

The point of departure for the empirical work in this study can most specifically be phrased as the involvement of two case studies (First Nation communities) in British Columbia, that are engaged in Geographical Information Systems. The use of case studies was recognized as the ideal method which allowed detailed information of the study's research questions and comparison of the empirical phenomena. The small size of the community allowed all aspects

of the community to be studied, thereby gaining a detailed insight into the community's priorities, long-term vision and consequently the strategies it wishes to deploy. These characteristics were deemed essential in explaining the level and composition of community capacity. Further, First Nation communities are clearly defined societies with similar institutional setup, which greatly facilitated comparison of the empirical phenomena of interest. Finally, and at least equally important here, is the flexibility case studies allow to adjust the means of data collection to the communities' cultural embedding.

The process of engaging two suitable communities however, has been largely self-selective as only very few Nations showed an interest to participate. The objectives and research questions were formulated such that room was left to include Nations with varying degrees of GIS engagement. Initial contact with the communities and subsequent cooperation was built upon mutual interests in, and benefits of, the study.

From both a cultural and pragmatic perspective, this is the furthest the study's precepts went. A number of strategies was deployed to engage communities in the study. Consultation was sought with organizations working with First Nations in the GIS field. Further, contact with Nations was sought through (Aboriginal) students at UBC.

After taking up contact with communities, consultation was initiated to determine the most suitable backdrop on which to build cooperation. Besides it being a requirement of the UBC Behavioural Research Ethics Board (BREB), it was the author's explicit aim to create a sphere of trust and acceptance with the community to ensure the study's success for both the researcher and the community. Both communities issued a letter of agreement that confirmed the Nation's interest to participate and their consent to interview community members.

3.1.2 Description Cases

The Sliammon[3] (*Tla'amin*) First Nation is a medium size Nation with a population of approximately 1000 members, 350 of whom live off-reserve. Sliammon's main reserve is located just north of Powell River in the Sunshine Coast District on the coast of B.C.'s mainland, approximately 150km northwest of Vancouver (see appendix 1 for a map). Sliammon is linguistically related to the Coast Salish people, the communities of which are located in the lower coastal region of British Columbia, Vancouver Island and in Oregon and Washington state in the United States. Sliammon is the largest of three adjoining Nations, the others being the Homalco and Klahoose Nations. Further, Sliammon is a member of the *Naut'sa Mawt* Tribal Council which is a political body representing its 11 member communities on all levels of government. Additionally, the council provides assistance in areas such as community governance, economic development, financial management, etc.

The Chehalis (*Sts'ailes*) First Nation is roughly of similar size as Sliammon with approximately 1000 members. The band's main reserve is located in B.C.'s lower mainland about 25km west of Agassiz, on the north shore of the Harrison River in the Chilliwack District (see appendix 1 for a map). The area is densely populated by First Nations such as the Yale, Scowlitz, Cheam, Seabird Island and *In-SHUCK-ch* Nations. In contrast to most of the Nations in the area, the Chehalis people do not consider themselves part of the *Stó:lō* people and are therefore also not a member of one of the two *Stó:lō* Tribal Councils.

A more elaborate background on the political structure of both communities as well as their current political, economic and community developments is provided in chapter 4.

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[3] For ease of reading, I will refer to both the Sliammon and Chehalis communities by their (common) English names rather than their Aboriginal names.

3.1.3 Study Populations and Sampling Methods

To distinguish between the *production* of GIS maps and their *application* in the forest and land use planning context, essentially two study populations can be distinguished: a 'community' and a 'non-community' population. Inclusion of an individual in the community study population rested on two broadly defined criteria: through either voluntary or professional *occupation* the individual is (in)directly engaged in GIS and the employing organization is part of either the Sliammon or Chehalis Nations. Further, the individual is *able* and *willing* to deliberate and express one's views on the GIS process and the social dynamics implied. I stress the fact that these criteria do not specifically aim to identify band members since many communities in B.C. rely to varying extents on non-Aboriginal consultants to do part of their work.

Slightly different criteria were applied in the identification of the non-community population. Firstly, the individual's professional *occupation* is related to the Sliammon and/or Chehalis Nations or to B.C.'s First Nations in general, and the employing organization is not managed or owned by either of the two communities. Further, the individual's occupation should be *related* to the involvement of First Nations in GIS or in forest and land use planning more generally. Similarly, the individual should be *able* and *willing* to deliberate and reflect on his/her experiences. These criteria thus put less emphasis on the technical side of GIS or forest and land use planning, but more so on the application and organization of a GIS and involvement in forest and land use planning.

Three means were used to identify both study populations. Most important was consultation with the main contact person in each community who was able to identify both community and non-community members who fit the criteria mentioned foregoing. Further, at the end of most of the interviews during the first round, the interviewee was asked to identify individuals or organizations, who could contribute valuable information to the study. By

means of this snow-ball sampling technique (Kumar 2005: 179) a clearer understanding of the social relations involved in the GIS process was obtained, as well as new contacts; some of whom were invited for an interview. Finally, direct contact with organizations of interest yielded additional insight into mainly the non-community population.

Samples were purposefully drawn (Kumar 2005: 179) to represent a complete cross section of both study populations. The samples were required to reflect the entire range of functions and commitments to the GIS process and/or the involvement in forest and land use planning and was not based on physical or other characteristics of the individuals. Most community members were invited by the contact persons in the community, but a small minority of individuals was contacted directly by the researcher. In one case it was not possible to interview a member of the community's leadership.

3.2 Data Collection and Analysis

This section details the methods used to gather and analyse the data.

3.2.1 Semi-structured Interviews

This study has been informed by means of primary data gathered by means of 23 individual, semi-structured interviews, see table 3.1 (next page). The core of the data was gathered through interviews with members of both Nations. In total, 9 interviews were held with Sliammon (4) and Chehalis (5) community members and 14 with non-community members. The non-community members represented the public sector (3), the for-profit (corporate) sector (6) as well as non-profit, non-governmental organizations (5).

Table 3.1 Overview of organizations and number of study participants

Organization	Number of respondents
Sliammon First Nation	4
Chehalis First Nation	5
Public Sector	3
For-profit (corporate) sector	6
(e)ngos	5
Total	23

Preliminary conclusions were drafted after the initial round of interviews which took place throughout November 2009. By means of a second round of interviews with both community and non-community members held during December 2009, these conclusions were tested and evaluated. The data was used to supplement and fine-tune the initial conclusions and to fill remaining gaps of knowledge. Before publication of this thesis, the contact persons in both communities were provided with these conclusions for their consent and additional remarks.

Conversations took approximately 25 minutes to 1,5 hour depending on the interviewee. These interviews were mostly personal, but three interviews were also held by telephone. Semi-structured interviews were regarded the most appropriate means to allow the interviewee to reflect on his/her experiences. They further balanced well the necessity of following a certain structure along which to develop the conversation as well as to create a comfortable setting for both interviewer and interviewee to have an open and fruitful discussion. It was also found by Lewis and Sheppard (2006: 298) to be the optimal means to deal respectfully with the cultural intricacies inherent in social engagement with First Nations.

The semi-structured interviews consisted primarily of open questions as well as a limited number of closed questions. A variety of open questions was discussed ranging from the respondent's general experiences in his/her field in relation to for example the involvement of First Nations in GIS and/or in forest and land use planning, to questions detailing certain technical or organizational aspects of the GIS process. The interview scripts for interviews with both community and non-community members is taken up in appendix 2.

It is however emphasized that these scripts are an approximation of the contents of the interviews since each interview was adjusted to fit the respondent's specific professional occupation, as well as the position within the organization he/she represented.

The various dimensions and properties of Chaskin's (2001) framework were used as a guideline along which the questions were developed. Each dimension was considered separately and a number of 2 – 5 questions was developed to inform each dimension. Depending on the position and/or experiences of the interviewee, more attention was paid to those aspects of the framework which he/she was familiar with. During the second round of interviews less attention was paid on informing the entire theoretical framework but more so on supplementing data in parts of the framework that remained underdeveloped. The characteristics of community capacity as specified in the theoretical framework proved an adequate foundation on which to build observations and extract conclusion in a qualitative manner.

Besides qualitative methods, the methodology outlined in this study's research proposal also provided for quantitative methods to assess community capacity and empowerment. In accordance with recommendations by MacLellan-Wright *et al.* (2007) an instrument consisting of 17 randomly positively and negatively, easily worded statements was designed which was meant to measure community capacity quantitatively by means of 5-point Likert scales (Kumar 2005: 145). Similar to the setup of the interviews, 2 – 4 statements were formulated for each dimension to reflect the entire theoretical framework. However, due to a lack of pre-testing, the instrument failed to achieve its purpose. The respondents were unable to relate to the statements and could not indicate the degree to which a statement matched their perceived reality. This prevented any quantitative measures of community capacity and limited the methodological focus to qualitative methods. Although quantitative data would

have been a valuable and innovative contribution to the grounding of the study's conclusions, the qualitative methodology provided sufficiently rich data to inform the research questions.

3.2.2 Qualitative Data Analysis

Of 23 interviews, 18 were audio-recorded with explicit permission of the interviewees. The audio-files were subsequently transcribed into text documents. The remaining 5 interviews were not audio-recorded because the interview was held over telephone (3), the respondent refused to be recorded (1) and because of a technical deficiency (1). Notes consisting mainly of catchwords were kept during conversations that were not recorded and these notes were worked up within a day after the interview. A set of codes was used that represented the entire theoretical framework for content analysis. Every section of a transcribed interview was labelled with a code. The sections were subsequently arranged according their applicability to research questions which facilitated the identification, verification and comparison of answers to the research questions. Examples of codes are 'Sense of community', 'Level of Commitment', 'Problem solving ability', 'Access to Resources' and 'Leadership' with regards the characteristics of community capacity. Other codes addressed different dimensions such as 'Individual level', 'Organizational level' and 'Network level' representing the level of social agency at which capacity operates.

3.3 Reliability, Internal and External Validity

A final note in this chapter is devoted to the data's reliability and the internal and external validity of the study's results. A distinction must be made between the assessment and evaluation of community capacity and empowerment. As regards the study's methodological design, the reliability of the data as well as the internal validity of the study's conclusions is high with respect to community capacity. The various attributes of community capacity as

well as the motives behind developing and maintaining capacity and pursuing empowerment were well informed and during the analysis of data no significant gaps were uncovered. However, given the variability between communities with respect to social, cultural, demographic and geographic characteristics as well as their level of engagement with GIS, the external validity of these results is limited at best. This problem was partially countered by the use of a comparative case study approach. However, this method can only account for very minimal variation between First Nations in B.C. Therefore, the extension of conclusions with respect to community capacity to other First Nations should occur with due caution.

The purposes for which GIS is used and the effectiveness of the Nations' engagement with external partners in issues related to forest and land use planning is the basis on which conclusions with respect to empowerment are deduced. Most non-community respondents are engaged with a large number of First Nations communities. The discussions with non-community respondents therefore could mainly reflect their general experiences, rather than their experiences with specifically any one of the two communities engaged in the study. These discussions yielded an accurate perspective of how community capacity and empowerment operate within B.C., but these questions were on too high a level of generalization to be able to account specifically for either Sliammon or Chehalis. As a result, the study's external validity with respect to empowerment is expected to be strong since the composition of organizations that are engaged in forest and land use planning in B.C. is comparable and so are the general purposes for which Nations could use GIS. The data on community capacity and empowerment are thus strongly mutually reinforcing and can only collectively account for the study's internal and external validity.

4. Community Setup and Strategic Level Decision Making

The presentation of the study's results is divided in two chapters. First, this chapter describes the political setup of both the Sliammon and Chehalis communities. Further, this chapter expounds the political, economic and community characteristics of both communities. This elaborate description of the organization of both communities as well as current community developments, allows a more refined focus in the next chapter on the involvement of Sliammon and Chehalis in forest and land use planning and the role that GIS plays to facilitate their strategic level decision making.

The results presented in this chapter are based mainly on interviews with community members of both Nations. In accordance with agreements with the participating Nations as well as with rules and regulations set out by the UBC BREB, all interviewees that took part in this study will remain anonymous. None of the respondents is therefore identified by name and/or title. The revelation of the sources of the study's results is limited to the applicable organization whom the respondent(s) represented such as the provincial government, the private industry or a community.

4.1 Political Structure and Community Governance

This section provides a more profound background of both communities. First the political structure of both communities is presented. Next, the employment of band members is described followed by a review of strategic level decision making in the final section.

4.1.1 Political Structure

The political structures of Sliammon and Chehalis (depicted in figures 4.1 and 4.2 respectively, next page) are very similar which is largely due to federal legislation. These

policies limit the Nations' freedom to implement their own government structure. The political authority within both the Sliammon and the Chehalis First Nations is in the hands of their respective Chiefs and councils. They are responsible for the daily leadership of the community as well as the community's strategic level decision making. The councils are composed of nine band members and the tenure of office of both the Chief and council is two years. For Sliammon however, this federally legislated rule expires with the ratification of their treaty. The occupation of the Chief and members of council is not restricted to their political role in the community. Many perform additional tasks within the community or elsewhere.

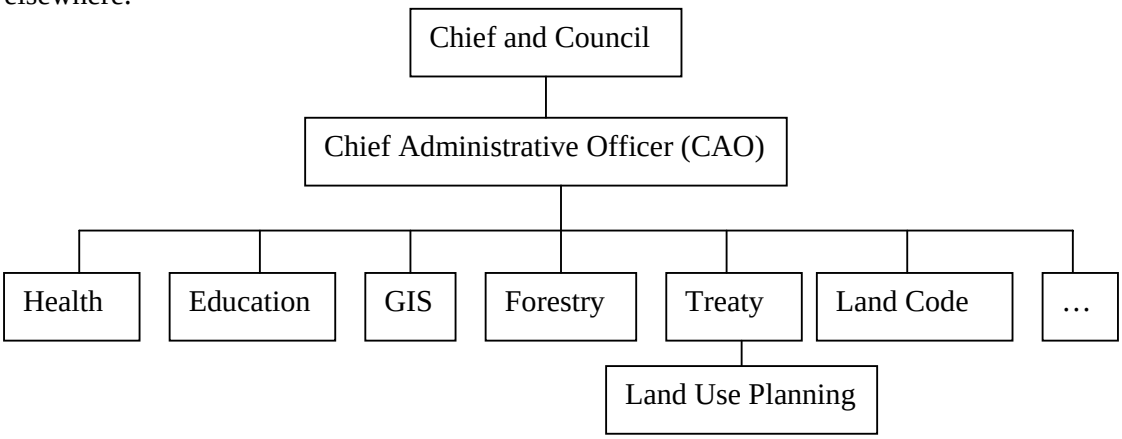

Figure 4.1 Organizational Chart Sliammon First Nation (pre-treaty)

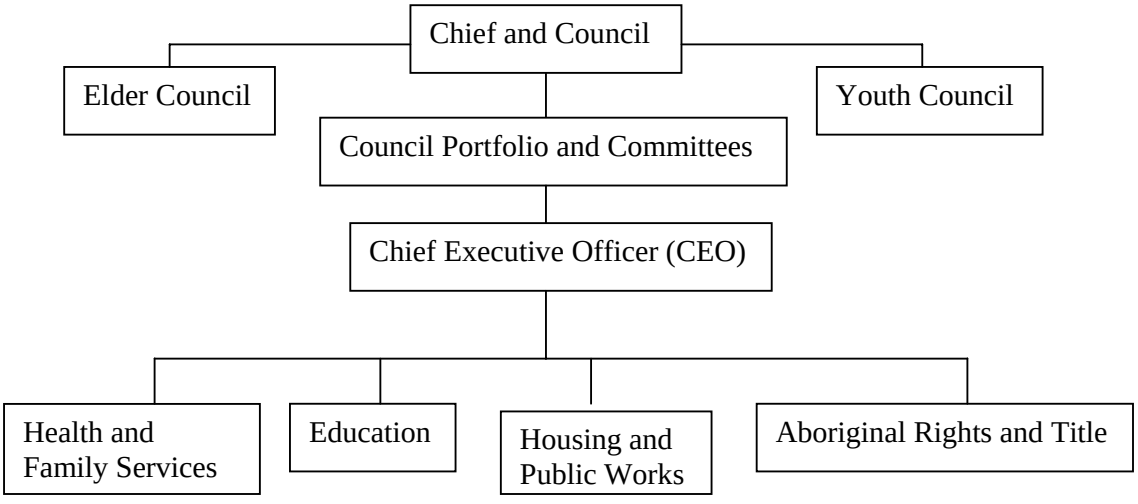

Figure 4.2 Organizational Chart Chehalis First Nation (adopted from: Chehalis 2008)

A Chief Administrative Officer (CAO) or a Chief Executive Officer (CEO) is responsible for the administrative management of the band and reports directly back to Chief and council. They oversee all the community's departments, amongst others Health, Education, GIS, Forestry, Treaty, and Rights and Title. Sliammon's treaty society is ultimately responsible for the community's land use planning. The main difference between the political structure of both communities is the addition of an elder and youth council in Chehalis. Several reorganizations have been proposed to Chehalis' institutional design such as the addition of departments of corporate services and *Snõwoyelh te Émímths* (Family Law) as well as two boards, a clan and a forum.

4.1.2 Employment and Future Growth

Approximately 40-50% of Sliammon's total workforce is unemployed and relies on social assistance. The band office employs 80-90 band members and is therefore the community's largest employer. Others work in seasonal activities such as fishing, oyster collection, hunting and forestry or are employed in local businesses and in hydro power projects. Being a fast growing, relatively young band, many of the developments currently underway in the community are aimed at the long run to create opportunities for the next generations.

Although still a medium sized band on the provincial level, Chehalis also experiences rapid expansion of the community, anticipating a 15-fold growth to about 15.000 members in 2050. Besides causing great pressure on the community's organizational framework, these developments also create ample job opportunities. However, on the short run it is not always possible to hire community members to fill emerging functions. Therefore, the band has hired a number of highly skilled non-community members who have their offices in the band's administration building. Amongst these are Chehalis' forester and the head of the IT department who is also employed in the community's school. Rather than outsourcing these functions to non-community businesses, the band has chosen to hire these individuals on-staff

to build a closer relationship and provide direct knowledge transfer to the band. Through a wide variety of projects in areas such as health, education, economic development, Aboriginal rights and title, community planning, justice, etc. the community strives to improve the well-being of their members and to become self-sufficient in providing community services: a generally similar target Sliammon pursues through, most importantly, their treaty.

4.1.3 Strategic Level Decision Making

Members of both the Sliammon and Chehalis communities described that the ultimate goal for which they wield capacity and pursue empowerment is for the improvement of their community's well-being. To this end, strategic level decision making occurs on three broad levels: political level (including engagement in treaty negotiations and the strengthening of claim to traditional territory), economic level (including the development of natural resources and other economic activities) and community level (including community planning, cultural development and heritage preservation). Most community members see GIS as one tool within a package of tools that can be wielded to facilitate and implement strategic level decision making. This perspective encompasses more than solely forest and land use planning and includes, amongst more, the development of community healthcare services, improvement of education and the creation of business opportunities. For both Nations forest and land use planning is therefore merely a 'piece of the pie', albeit an important one.

4.2 Political Developments Sliammon: Treaty

The gradual recognition of Aboriginal rights and title through court rulings has opened new opportunities for Nations to reassert their historical presence in British Columbia. Consequently, many Nations are involved in treaty negotiations to win formal recognition of the Nation's sovereignty. However, only very few communities, one of which is Sliammon,

are in an advanced stage, close to finalizing their treaty negotiations. Most others are in the initial stages of the negotiations and still have a long road ahead before ratifying their treaty.

4.2.1 The Process towards Treaty Ratification

Sliammon's proximity to resolving their treaty is the single largest development currently underway in the community. Initiated more than 13 years ago, the finalization of the treaty negotiations will have a profound impact on the community's future direction and institutional design. Sliammon is one of three Nations in B.C. that is currently in an advanced stage of negotiations; the other two being the *In-SHUCK-ch* and Yale Nations located in the province's lower mainland, neighbouring the Chehalis First Nation. Out of a total of 203 Nations in the province, so far only the Tsawwassen and Maa-Nulth Nations have signed a full-size treaty. A first community vote on the proposed treaty is expected to take place in spring 2010.

The treaty negotiation process is divided into a total of six stages. A milestone was reached in 2003 when the Sliammon community voted in favour of an Agreement in Principle (AIP) which forms the basis of the final treaty. The AIP lists all the topics which will be incorporated in the final treaty and clarifies the treaty's basic principles. The acceptance of the AIP by Sliammon moved the band into the fifth step of the negotiations, the sixth being implementation of the ratified treaty. Although the AIP provides a basis on which the final treaty will be established, its contents are not final. Several non-community respondents explained the impact of the treaty on their operations therefore depends on the publication of the final treaty, because the contents of the AIP will still be supplemented and adjusted.

4.2.2 Treaty and the Issue of Land

Sliammon's treaty negotiations started in 1996 with a Traditional Use Study (TUS) which formed the basis of the treaty's land claims. The study aimed at mapping Sliammon's

traditional territory through an assessment of culturally and spiritually significant areas such as burial grounds, old village sites, culturally modified trees (CMTs), etc. The treaty settlement lands now being proposed encompass an area of approximately 8000ha of land with a 17km waterfront facing the Georgia Strait which separates Vancouver Island from B.C.'s mainland. The land will be owned in fee simple (privately) by the Sliammon Nation and amounts to approximately 3% of their traditional territory. Since the land will be owned in fee simple, Sliammon has full authority over developments that occur on that land. Besides the treaty settlement lands, Sliammon will own a community forest tenure with a value of 28.000m^3 Annual Allowable Cut (AAC). Their rights and responsibilities that accompany the possession of the forest tenure are equal to that of all other tenure holders in B.C. The community could for example sell parts of the tenure to generate revenue or purchase tenure to expand their forestry operations. The tenure thus provides an important opportunity for Sliammon to fuel their community economy.

Aboriginal rights beyond the treaty settlement lands are not extinguished. Through different arrangements, the Sliammon people can still exercise their traditional activities such as fishing and hunting within the full extent of their territory. Finally, the community has come to agreements with neighbouring Nations as to the access and use of overlapping traditional territories. The negotiations for these agreements were held between the governments of the respective Nations; there was no explicit role played by the Crown government.

The final agreement will thus set a new level of certainty as to the division of authority over the land between Sliammon and the Crown government. However, many questions still remain unanswered. The ratification of treaty means an end to the Forest and Range Agreement (FRA) which provided for upfront economic accommodation of developments that would infringe the Nation's traditional rights and title. However, the level of consultation

and accommodation required post-treaty is still unknown for projects proposed within Sliammon's traditional territory and depends largely on the wording of the treaty itself and possibly on future court rulings. Most non-Aboriginal parties explained that the increased level of certainty over the division of authority and accompanying rights and obligations is their largest benefit of a resolved treaty.

4.2.3. Sliammon as a Government

The resolution of treaty means Sliammon will formally be recognized as a government, thereby significantly decreasing the community's dependence on the federal and provincial governments. The devolution of rights and responsibilities in the hands of the community will require the adoption of a new institutional structure which is currently being designed. It is the community's aim to ultimately function as a municipality including the collection of taxes and the provision of municipal services.

Fundamentally, the new government structure will rest on four main 'pillars': resources, finance, health and community development. To facilitate the design of a new structure, the community has hired contractors whose advice will inform different organizational and legal aspects of the restructuring process. Two community members however, remarked there is considerable reticence within the community towards the restructuring process because the extent of the impact of the changes remains largely unknown. Since all the reserve land is communally owned, none of the land is a band member's private property which means that in order to generate revenue, the band will impose more stringent rental and eviction rules. Furthermore, as the band becomes the tax authority for the reserve, the considerable tax privileges Aboriginals enjoy under the federally administered Indian Act will come to an end.

4.3 Political Developments Chehalis: Strength of Claim

As opposed to Sliammon, the Chehalis First Nation is not involved in the treaty process as they explained the community is unwilling to secede from their traditional territory. Chehalis' traditional territory encompasses a vast stretch of land in an area densely populated by indigenous communities, which has resulted in overlapping stretches of territory to be claimed by several Nations. Overlapping land claims are oftentimes sensitive issues to the Nations involved and it is becoming increasingly acute for Chehalis since two of its neighbouring Nations (the *In-SHUCK-ch* to the north and the Yale to the east) are in advanced stages of their treaty negotiations.

An important way to resolve overlapping claim issues is through so-called 'strength of claim' which refers to the quantity and quality of the available evidence to support claims of traditional use of land. The band has focused its efforts on gathering evidence in a TUS, identical to the study the Sliammon carried out to start their treaty negotiations. The stronger and more complete the evidence of past cultural or spiritual use, the stronger the defence for claims in overlapping areas.

A major point of contention in overlap issues according to one government representative, are the economic benefits that arise from the exploitation of natural resources in an overlapping claim area. Some Nations regard infringements of what they perceive as their traditional territory as an attempt by their neighbouring Nation(s) to gain access to financial compensation at their expense. However, this argument is often used equally by the other Nations that claim the overlapping area. Due to the political sensitivity of the issue, it is unknown to what extent this argument also plays a role in overlapping claim issues in which Chehalis is involved.

Maps are an integral part of the efforts to resolve these overlapping claim issues and to maintain the use of that land for traditional and economic purposes for the band. However, the

fact that surrounding Nations are in advanced stages of their treaty negotiations has so far put Chehalis in a reactionary position rather than a proactive one.

4.4 Building a Community Economy

Generally, the socioeconomic situation of most of Canada's Aboriginal communities is lagging behind the Canadian average (Gysbers and Lee 2003). Commonly observed factors are poverty (Parsons and Prest 2003), low standards of education (Mendelson 2008), a variety of health issues (MacMillan *et al.* 1996), substance abuse (Bohn 2003) and high unemployment rates (Gysbers and Lee 2003). To improve their well-being, many Nations leverage their geographically strategic position and increasing access to, and authority over, the natural resources encompassed in their traditional territories to build a community economy. To generate revenue, training and job opportunities, communities engage in industries such as forestry, fisheries, mining and hydropower through partnerships with existing non-community companies or by establishing their own businesses (Anderson 1997).

4.4.1 Sliammon's Economic Development

The ratification of their treaty is seen by Sliammon as a way to improve their access to natural resources and to engage further in the forestry industry which, by being one of the main economic activities in the area, could potentially become an important pillar in the community's economy. Although currently still relatively small, the total size of the forest tenures Sliammon will possess post-treaty amount to 50.000m^3 AAC. Their engagement in the forestry industry thus potentially provides a valuable instrument to generate employment and revenue. Currently, the community relies on support from external consultants and on partnerships with local forestry companies to share equipment and to assist in the planning and management of their tenures, since only a limited number of band members are

sufficiently technically skilled in this area. However, with the future prospective growth of their tenures, Sliammon expects to generate enough experience and revenue to become more self-reliant.

Another potentially valuable economic opportunity is the development of lots and the construction of houses along part of Sliammon's 17km waterfront property which will create new jobs and revenue to the band. The creation of small-scale community-ran businesses such as shops could be another source of income. However, since the land on which those shops would be placed is communally owned, the division of the revenues the shop would generate could become a point of contention. Further, only few band members possess the skills and financial means to become successful entrepreneurs.

Other economic opportunities are created through partnerships with, amongst others, a large local paper mill and the city of Powell River. Since the paper mill is located on part of Sliammon's traditional territory both parties share an interest in building a good relation. Partly to this end, the paper mill provides employment for a number of band members. Cooperation with the city of Powell River improves political relations, trust and mutual understanding of each other's positions as neighbouring governments. An example of successful cooperation between Sliammon and the city of Powell River was the discovery of a culturally important site during the construction of a sea walk by the municipality. Sliammon was informed of the discovery and successive consultations finally resulted in the creation of a community accord which formally defined their relationship. The accord opened new opportunities for further cooperation and has created a valuable trust relation between both parties.

4.4.2 Chehalis' Economic Development

Traditionally, Chehalis has relied on fishing as their principal economic driver. Lately, projects in, amongst others, forestry, hydropower, gravel extraction and carbon sequestration

have opened new economic opportunities. Similar to overlapping claim issues, Chehalis strives to become more proactive in its dealings with proponents of projects within their traditional territory, thereby empowering itself in economic developments. The band expects in-house GIS will result in the building of new, or the deepening of existing economic partnerships.

One for Chehalis important economic activity is forestry. Currently, the band disposes of 38,700m^3 AAC in its tenures and aims to purchase additional tenures to expand the size to a total of 100.000 m^3 AAC. Since the current size of their tenures is too small to purchase and maintain the needed equipment, all forest operations are now outsourced. The entire management of the tenures however occurs in-house.

4.5 Community Planning

In both Sliammon and Chehalis, a so-called Comprehensive Community Plan (CCP) is being conducted which aims at improving the well-being and self-sufficiency of participating communities through an extensive assessment and planning of an array of community aspects. This principally INAC (Indian and Northern Affairs Canada) driven survey assesses the communities' needs for services in areas such as social well-being, health, economics, education, infrastructure, etc.

For Sliammon, the survey is aimed primarily to support their transition to self-governance. The assessment of the community's needs enables the community's decision makers to identify the areas that require immediate attention which allows them to adjust their institutional design accordingly. With respect to land use planning, the CCP will provide an important basis for the department of land codes which will likely become responsible for all land-related developments on-reserve. Their main task will be to govern developments such

as the (re)construction of houses, residential subdivisions, the construction and maintenance of infrastructure, fire hydrants, etc.

Chehalis wields the CCP as a tool to plan for the consequences of the community's rapid growth. One of the important aspects of the CCP is the assessment of the community's (future) labour force. It is their aim to employ band members wherever possible and to decrease their reliance on outsiders, whether through contractors or on staff. To that end, the assessment yields an accurate estimate of the community's needs in training and employment to further develop their human capital.

5. GIS and Aboriginal Forest and Land Use Planning

Although only a minority of Nations currently dispose of in-house GIS capacity, virtually all Nations in B.C. have to some extent used the system's abilities to, for example, map their traditional territory or to facilitate community planning. The chapter is composed of four main sections, jointly covering the six dimensions of the theoretical framework expounded in chapter 2. The conjunction of dimensions 1 – 4 determine the extent to which the respective communities dispose of and wield GIS capacity. First the functions and strategies the community chooses to pursue and implement (dimensions 3 and 4 of the theoretical framework respectively) are set forth. The extent to which those functions and strategies lead to the development of the characteristics community capacity for GIS (dimensions 1 and 2), is reviewed next. In the second section, a business perspective on Aboriginal GIS is presented. The third section exposes conditioning influences (dimension 5) that may contribute or impede the attainment of community goals (dimension 6). The extent to which GIS capacity has contributed to attaining community goals (i.e. the empowering value of GIS) is reviewed in the final section. These results were obtained from interviews with both community and non-community members who, as mentioned in the previous chapter, will remain anonymous.

5.1 GIS in Sliammon

In contrast to most Nations in B.C., Sliammon disposes of a fully operable in-house GIS. It has however, taken the community considerable effort to develop and maintain the system to the level on which it operates today. This section describes the development of an in-house GIS and starts with expounding the shared vision of the community to wield capacity and therewith the identification of the functions community capacity should serve (the first characteristic of community capacity in dimension 1, and dimension 3 of the theoretical

framework respectively). The following paragraphs describe the implementation of strategies (dimension 4) to pursue those functions which have enabled the community to develop and expand the various characteristics of GIS capacity (dimension 1) by means of engagement in all three levels of social agency (dimension 2).

5.1.1 Functions of Community Capacity for GIS

As expounded in more detail in the previous chapter, Sliammon's long-term vision is aimed at alleviating their now lagging socioeconomic status and pursue greater power and authority and self-governance. To this end, the community has chosen to engage in treaty negotiations. One of the principal functions, that lie at the heart of Sliammon's engagement with GIS, has been the start of treaty negotiations and the execution of the TUS in 1996. However, since its start, the functions GIS serves have expanded. For example, GIS has been used in a traditional place name project to conserve this part of Sliammon's heritage for future generations. Other, more recent functions have been the involvement of GIS in community planning, which is part of the Comprehensive Community Plan (CCP). The GIS work for forestry is not done in-house, but instead it was chosen to outsource this work.

Sliammon's strategy to engage in GIS has resulted in extensive in-house GIS capacity. The maintenance of the system is dependent on resources that originate from both the individual, organizational as well as the community levels of social agency. The functions the department serves however, may change as Sliammon moves towards the resolution of their treaty and undergoes profound restructuring. A strong appeal will possibly be made to GIS to facilitate these developments which would likely mean the department will expand. However, there are currently no concrete plans yet as to the future role of the GIS post-treaty.

5.1.2 Development and Maintenance of GIS Capacity

In 1996 when Sliammon chose to engage in GIS, a course became available that was organized by software developer ESRI and was aimed at training First Nations who were entering the treaty process. Sliammon enrolled four community members. Although the initial plan was to hire two community members, one was eventually hired. This GIS technician still runs the department single-handedly today.

Since the start, the support and maintenance of Sliammon's in-house GIS capacity has mainly relied on the capabilities of their GIS technician. The initial training provided the necessary basis to start the system but later workshops and conferences organized by various organizations during the late '90s, proved essential to maintain and further expand the technician's individual capacities. The sharing of experiences and the maintenance of a professional network that occurred at those events was important in solving technical problems and with keeping up to date with technological developments. Workshops and conferences were regularly organized as treaty processes in numerous Nations progressed, and Aboriginally-managed GIS was still in its infancy. However, the importance of these events for sharing knowledge and networking has decreased since the number of conferences and workshops has diminished from the start of this decade.

Another means through which skills were maintained and built were external consultants. Different consultants were hired for an array of jobs and projects however, experiences have generally been poor. Community members alleged a number of consecutive consultants had exaggerated the complexity of certain software functions to protect or create their own businesses. Cooperation with consultants usually quickly failed because of a lack of cultural and professional understanding. An attempt was also made to hire an assistant to run the department, but that effort failed due to a lack of clarity of the assistant's future role and position.

The progress of technology and the increased importance of GIS for many organizations has offered a new way to build GIS skills. Freely available online manuals and instructions for self-study have provided a new way to learn and solve technical issues. Self-study has been an especially important source of training after 2000 when Sliammon installed an entirely new GIS. Further, occasional GIS projects that occur in cooperation with non-community organizations provide access to resources to build and maintain the technician's GIS skills.

5.1.3 Funding for GIS

From the start in 1996, GIS has played an important role in Sliammon's treaty negotiations. In its initial years, the department was therefore integrated with the treaty office which was also its primary source of funding. As new tasks were taken up after the completion of the TUS, the GIS department separated and integrated with the band office. This reorganization also meant that the treaty office would no longer be the department's main funder, although it continued to provide limited revenue. Instead, the band office took over and has been its largest funder since the department's separation from the treaty office. These funds are allocated by the community's leadership and are part of a larger stream of funds which most of B.C.'s Nations receive from the federal government through Indian and Northern Affairs Canada (INAC). The funding is therefore dependent on the support of the band's leadership, rather than a direct external source.

Another minor source of income are occasional projects which usually happen in cooperation with a single outside partner. The funding of these projects allows for the further development and maintenance of the system as well as support in case of technical complexities. Finally, the department is looking at creating a new source of revenue by taking up projects from neighbouring communities as a commercial side activity. However, the relations between the communities have not made this possible yet.

5.1.4 Technological Developments

The technical requirements of a GIS were little known with the community's decision-makers when the system was first set up. As a consequence, the equipment that was initially installed could not meet the community's needs. Both hard- and software was different than what the training had prepared for, which impeded the system's effectiveness. The state of technology at that time was such that communication with other organizations that used different equipment was problematic and files needed extensive translation in order to fit the different system lay-outs. The Crown government played an exemplary role with respect to system design and lay-out which was followed by most other organizations. Because of the convergence of other organizations to a system used by the Crown government, Sliammon got increasingly isolated from access to data provided by others. In 2000, with the help of an ngo, the band applied for a grant to switch and upgrade their system. The grant also provided for a small training to facilitate the switch. With the new system, Sliammon can now more easily share its data and communicate with both the Crown government as well as other organizations. The new system installed in 2000 has been regularly updated and expanded.

5.1.5 GIS in and beyond the Community

Community members can request maps with a timely notice. However, after their production, little feedback occurs on the effectiveness or quality of the map. The small number of community members who use the maps have gained their skills through their education or separate trainings, workshops or conferences. However, no one besides the GIS technician is intimately familiar with the system and would be able to take up (part of) the technician's tasks. Although some community members are interested in building and expanding their GIS skill set, no further provisions are currently being made to meet those interests.

Sliammon is actively involved in building relations with organizations that also run GIS. Their membership of the Integrated Cadastral Information Society (ICIS) is an example

of freer data exchange between systems in various organisations. ICIS is a network managed by the province of B.C. which aims at combining GIS data provided by its members into one database. At present, practically all organizations that use GIS compile and draw on their own datasets, thereby expending resources and with inevitable discrepancies between datasets that cover overlapping or adjacent areas. Through ICIS, data can be easily shared amongst members, discrepancies are solved and the accuracy of the data is enhanced. Although currently still young, ICIS could become a valuable resource for Sliammon to gain access to otherwise unavailable data and technical assistance.

5.2 GIS in Chehalis

In contrast to Sliammon, the Chehalis community currently does not have operable GIS licenses. Although the planning that is currently being conducted to set up a GIS in the community, is equally aimed at improving the community's socioeconomic status and to increase their power and authority, the functions and strategies with which the community pursues their goals are considerably different as compared to Sliammon.

5.2.1 Functions of Community Capacity for GIS

Currently, Chehalis' GIS capacity is limited to the management of its heritage data by two community members. The data can be used by consultants to compile maps and has so far mainly been used in issues regarding Aboriginal rights and title. These band members have received training in various GIS software packages and through their experiences in working for the band, they have become highly skilled data managers. Other mapping needs in for example forestry are entirely outsourced.

The band refers to the management of land and natural resources on four broad levels: territorial, traditional, contemporary and heritage. Developments on all of these four levels

has significantly increased the demand for the abilities of a GIS which now leads the Nation's leadership to reconsider its current GIS capacity to improve the band's involvement and effectiveness in all four these areas.

5.2.2 Growing Demand for a GIS

As part of the Crown's obligation to consult and accommodate First Nations of possible infringements of their Aboriginal rights due to developments on the Nation's traditional territory, Chehalis currently receives several thousand referrals every year from a vast array of industries that often contain a mapping component. However, Chehalis has so far had to rely mainly on the mapping resources of the projects' proponents because of a lack of in-house capacity. Chehalis regards accurate, complete and on-demand traditional use data as an important way to facilitate the referral process since a GIS would enable a proponent's map to be easily compared with the community's traditional uses through overlay techniques. A review of the resulting map can quickly reveal possible interference of a project with cultural or other important uses of the land. More extensive in-house GIS capacity would thus enable the community to further protect their cultural attachment to, and exploit the economic opportunities of, their territory.

Further, due to the rate at which Chehalis is expanding, most of the community's departments are expected to require modernization. As an example, the housing department was mentioned as a beneficiary of an upgrade of its digital administration. New plots on the reserve are being developed and existing plots are subdivided. The accompanying infrastructure and utilities require mapping. Other departments are also projected to benefit such as the departments of health and education. Many of these data now mainly rely on physical maps and documents and personal memory but given the rapid growth of the community, this administration is expected to grow exponentially and will therefore require digitalization and modernization.

Finally, in the event of emerging judicial tensions over land, the ready availability of traditional use data could significantly strengthen the community's position in court, which is another argument to set up a GIS.

5.2.3 GIS Implementation

Currently, Chehalis plans to implement a decentralized GIS infrastructure as depicted in figure 5.1.

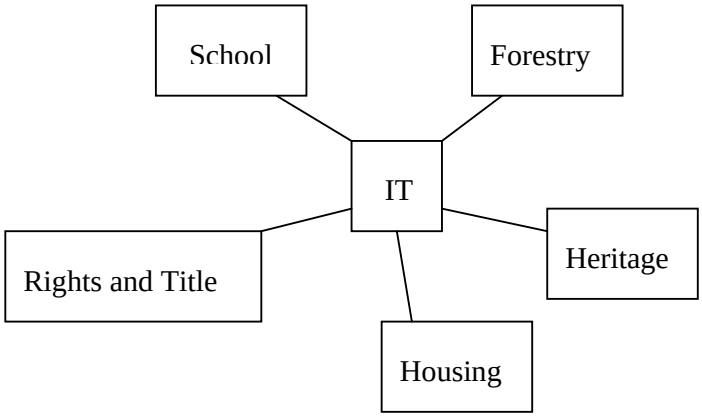

Figure 5.1 Chehalis' planned organization of a GIS

According to the plan, the IT department will take up the responsibility of maintaining and managing the system through a central server. (Parts of) the central server would then become available through 'branches' that extend into the departments that would require GIS. A connection to the community's school is also being considered as the system's capabilities could be a valuable tool in cultural and linguistic education. One GIS 'champion' who will work for the IT department will be trained up to take up responsibility for the implementation, maintenance and support of the system. Those individuals in departments that may benefit from enhanced GIS capacity (such as forestry, heritage, housing, rights and title, etc) will be trained by the GIS 'champion' and/or receive outside training.

To enhance the system's success, a community member has been hired to oversee its implementation. Given the technical complexity and cost intensiveness to successfully implement a GIS, numerous other non-community organizations and individuals are consulted to find the optimal system design, cost estimates and implementation. The initial main source of funding to start the system will be provided through a grant, but substantial pre-research is now being conducted to apply for the grant.

5.3 Aboriginal Land Management from a non-First Nations Perspective

Although the involvement of First Nations in forest and land use planning in B.C. constitutes major developments for Aboriginal communities, the non-Aboriginal respondents in the study who represented the timber industry, the provincial government as well as several (e)ngos emphasized these developments have an equally profound impact on their organizations. The change in legal rights and responsibilities, the reassessment of boundaries of authority and the uncertainty that accompanies treaty resolutions raises many new challenges for these parties to accommodate these developments within their institutions.

5.3.1 A Business Case for Clearer Boundaries

Although the ultimate responsibility to consult and accommodate First Nations of possible infringements of their traditional rights and title rests with the Crown government, the timber industry has generally taken a progressive stance towards the process. Representatives of several companies in the timber sector explained how they build and maintain relations with the Nations in which territories they work to create a more certain business environment. Through contact with the Nations' Chief and council and with their forestry-related technicians they inform the community of the proposed projects and ideally try to secure the community's permission before submitting their request for approval to the provincial

government. These direct relations may greatly facilitate the speed of the company's operations, but consultation and securing the community's approval remains a resource intensive process. Clearer delineation of authority would be especially beneficial in overlap areas where for the same area, multiple Nations must be informed and their agreement won.

The resolution of treaty is one means to carve the limits of authority more clearly. However, some non-community participants emphasized that the installation of Aboriginal governments does not necessarily entail an increased level of certainty for companies who work in the area and could indeed mean the opposite, since each government will have the ability to legislate the areas under their respective jurisdiction. Further, the allocation of community forest tenures to First Nations, reshuffles the division of cut volumes amongst tenure holders. A government representative noted that although every tenure holder in B.C. is legally obliged to pass on a certain percentage of their cut volume to make room for community forest tenures, the reallocation process is nevertheless cause for resistance amongst some parties involved.

Although the practice to consult and accommodate First Nations is currently well established, even the government participants acknowledged it is not always clear when their obligations have been sufficiently complied with. The balance is especially intricate in cases of enduring resistance against a proposal by a Nation. All participants, whether First Nations or representatives of the government or the timber industry acknowledged that in these cases a project was most likely to go ahead if both proponent and government feel sufficient consultation and accommodation has taken place, despite objection by a Nation.

The process of consultation and accommodation does not end with the resolution of a treaty. The government's as well as the industry's rights and responsibilities post-treaty are largely dependent on the wording of the final treaty and possibly future court rulings. Both government and industry representatives concluded that the effects of resolved treaties and the

extent to which treaties will improve certainty remains an open question as long as the final treaty has not been signed.

5.3.2 Aboriginal GIS from a Business Perspective

As seen from a business point of view, the possession by a Nation of in-house GIS is not the decisive factor for successful partnership. Accurate maps are important to effectively communicate and plan any activities, but most non-Aboriginal respondents were indifferent towards the source of the maps; whether directly from the community or through consultants. It was noted that the usefulness of a map does not depend on whether the maker is Aboriginal or not, but depends on the quality of the underlying data as well as the ability of the maker to use GIS as a map-making tool, and therewith wield GIS as a tool for effective communication about geographical spaces, whether with professional partners or with inexperienced community members. Further, non-community respondents generally recognized that relationship building with consultants has been challenging for many Nations in the past. However, these relations seem to have improved to the point where businesses that engage with Nations can now rely more than before on the trust relation between GIS consultants and the community.

5.4 Conditioning Influences

Both community and non-community respondents who were at least minimally familiar with the capabilities of a GIS expressed the empowering value of an effective GIS, whether available in-house or accessed through consultants. Although the system's potential to contribute to the empowerment of First Nations in B.C.'s forest and land use planning arena, is generally recognized, the success of a GIS and therewith the system's empowering value, was found to depend on many factors both within and beyond a community's reach. A

distinction is made between those influences that support (i.e. *enable*) and thwart (i.e. *constrain*) the attainment of communal goals (Chaskin 2001). Table 5.1 provides an overview of conditioning factors grouped according to their origination from the community, industry or government sectors of the forest policy arena.

Table 5.1 Conditioning influences for a successful GIS

Community sector	Funding Political stability Community support Community size Workload Image GIS
Industry (private) sector	Certainty over division of authority Business cycle Merges/splits
Government sector	Government mandate

A number of these conditioning influences have already been implicitly touched upon in the foregoing sections and are not unique to either Sliammon or Chehalis. One non-Aboriginal respondent acknowledged that many factors influencing the system's effectiveness could apply in varying extents across any organization that uses GIS, whether Aboriginal or not. The presentation of conditioning influences dealt with here is based on experiences of respondents in all sectors of the forest policy arena and is focused on influences that originate from, or impact First Nation communities.

5.4.1 Constraining Influences within Communities

Besides the availability of the proper tools such as adequate training, soft- and hardware to manage an in-house GIS, the system's success is reliant most importantly on continuous funding. During interviews, it emerged several times that the maintenance of a GIS is more challenging than merely starting the system and gaining a general understanding of the technical side of making maps. Since GIS maps rely on extensive databases, maintenance comes down principally to successful data management; the complexity of which is

underestimated by many organizations that engage in GIS, as explained by non-Aboriginal GIS technicians in two separate occasions. The continuing success of the system requires a long-term financial and time commitment which most communities are either unaware of at the start or are unwilling or unable to sustain.

Since the community's leadership is ultimately responsible for the allocation of funds, the political unity of the community is essential to maintain a continuous flow of funds to maintain the GIS. As mentioned earlier, the two-year length of the Chief and council's term in office is federally legislated. Depending on the extent to which the community is politically united, a change in leadership may significantly alter directions. These short two-year terms can thus be a considerable constraint to effective policy making within the community, and relationship building with non-community partners. Especially the latter consequence was frequently noted by non-Aboriginal respondents as a significant deterrent to successful business relations with indigenous communities. The support of a GIS department and the consequent financial commitment towards a GIS thus potentially changes as new leadership is elected.

The support for in-house GIS from community members is essential to justify continuous funding by the community's leadership. Especially given the image GIS has as an expensive and complicated system, communication of the results of the system such as putting up traditional use maps, distributing finished reports, or the like, were indentified to be important means to garner and maintain community support and therewith ensure continuous funding. Further, feedback from the community in general and from the users of the GIS end-products can greatly enhance the quality of these products. It was stressed however that achieving this may be easier said than done since many of the community's engagements, whether within or beyond the community's limits, are based principally on personal rather

than professional relations and could therefore be more prone to political and cultural sensitivities.

Besides sustainable funding, the small size of most communities, their heavy workload and the image GIS has as a technically complicated system, were found to restrain successful data management. Most First Nation communities in B.C. are small varying in size from about 2500 to only a handful of members. The average on-reserve population amounts to approximately 250 band members (BC STATS 2006). One respondent who is responsible for his community's long-term planning, including education and training, explained that as a consequence of their sheer size as well as an array of additional complications, only few band members are skilled enough to take up the technically sophisticated and managerial positions in the community. Because of the oftentimes overwhelming quantity of projects and processes communities are engaged in, their human resources are heavily burdened. The strain on a community's manpower prevents the setup of a decentralized GIS system such as the one planned by Chehalis. Rather, most Nations rely on a single or a very limited number of band members to run GIS as the case in Sliammon. Any circumstance that interferes in the technician's occupation or interest such as illness or a change in professional direction was further noted as the cause of an immediate interruption or end to the department's existence.

Finally, several technically skilled band members explained how First Nations are largely unfamiliar with the capabilities of GIS, but are guided mainly by its image of being expensive and technically sophisticated. This compromises the interest band members have to receive GIS training and possibly take on the job as the system's administrator. This knowledge gap also resonates within the leadership of many bands as they are reluctant to invest the band's limited financial resources in a seemingly complicated and expensive system, the abilities of which remain obscure.

5.4.2 Constraining Influences Beyond the Community Level

Additional conditioning influences were observed that originate in the government and industry sectors. Besides political, organizational and economic uncertainties on the community level, non-Aboriginal businesses such as the forestry industry face similar challenges. Firstly, the availability of resources to maintain relationships with First Nations and to fund GIS activities are dependent on the company's financial results and are thus inevitably tied to macroeconomic swings. Virtually all industry representatives explained that as a consequence of the current severe economic downturn in their sector, companies are laying off employees and minimize non-essential investments in for example training programs, travel expenditures and data collection. These cutbacks have hampered sustained relationship building with First Nations which impacts the quality of partnerships and may prolong consultation and accommodation processes.

Further, businesses repeatedly merge and split causing regular changes in corporate philosophy. The policies towards relationship building with First Nations may change considerably as companies merge and split, which is noticeable in the quality and quantity of relationships being maintained. Besides, since building trust relations is to an important extent dependent on personal rather than professional level interaction, the social and cultural skills of a company's liaison officer were deemed critical. Inconsistency on this end contributes to unsatisfactory relations for both the company as well as a Nation.

Finally, a majority of Nations do not dispose of in-house GIS and rely on consultants to do their GIS work and maintain necessary relations with external partners. For businesses, this has complicated relationship building with Nations in the past since not all consultants genuinely reflected the Nation's desires. However, these practices seem to occur increasingly less, enabling better cooperation between the Nation and industrial partners. Unavoidably however, a non-community consultant cannot be aware of all cultural or political sensitivities

incorporated in a community's data, occasionally complicating map design and data exchange.

First Nations interact with the Crown government on many different issues. It was recognized by both Aboriginal and non-Aboriginal respondents that, although in-house GIS provides Nations with significant political leverage, often, the Crown government's negotiators are not entitled with the right mandates to come to satisfactory agreements. This was for example reflected in the challenge endured to reach Forest and Range Agreements or in aspects of treaty negotiations. Diverting negotiators or government representatives and seeking higher level authority often proved fruitless. As one respondent replied "*A small community like ours is an insignificant noise to the bureaucratic machine*". Many respondents however were careful to stress that the inability to reach higher level authority within the provincial or federal government was not necessarily tied to a First Nation's ethnical background but is probably experienced by most Aboriginal and non-Aboriginal organizations.

5.4.3 Enabling Influences

One respondent referred to the need for maps by remarking "*Canada is a young country. The lines on our maps are drawn today and have yet to dry*". Clearly, maps play a vital role on many different levels from community planning and treaty negotiations to forest harvest plans and large scale land use planning.

The need for accurate maps has grown significantly over the past decades as more and more organizations have accessed GIS as a tool to facilitate their work. Irrespective of the type of organization, a productive GIS offers many advantages to those affected by its abilities. However, those participants who operate the system explained they have faced and continually face steep learning curves while mastering the system's intricacies. The sharing of technical expertise, whether through formal training, conferences, workshops, partnerships or

the like, is very important to sustain the system's effectiveness and to keep up to date with technological developments. Several respondents mentioned examples where specific substantive problems or certain more procedural problems were solved by means of expertise sharing through their professional network.

Since GIS is increasingly used in an array of organizations, different databases may cover overlapping or adjacent areas. Through new developments in for example software, open access sources such as provided by a number of government agencies and the setup of networks such as ICIS, data now becomes more easily available to build and complement datasets and to solve discrepancies. Besides curbing the otherwise high costs of building these datasets, these developments contribute to enhancing the quality of the system's end-products.

5.5 The Empowering Value of GIS Capacity

The foregoing assessment of community capacity for GIS allows a comprehensive analysis of the empowering value of a GIS here. The data on which the analysis is based, is derived from interviews with both community and non-community members and provides insight into the various aspects of empowerment as experienced by a broad range of Nations in B.C. First, the conceptualization of empowerment as expounded in chapter 2 is briefly recaptured. A review of the empowering effects of a GIS in the section that follows is founded on the concept's various properties. The analysis is a precursor of a more broadly oriented discussion that is centred around the involvement of First Nations in forest and land use planning in the next chapter.

5.5.1 Recapturing the Concept of Empowerment

Two main properties were distinguished in the conceptualization of empowerment. First, it was determined that community capacity and empowerment are *reciprocal concepts*. Second,

empowerment is seen as both an *outcome* and a *process* (Thomas and Velthouse 1990; Laverack and Wallerstein 2001). Finally, the effects of empowerment (whether as process or as outcome) may be different on different *levels of analysis*, even though they may be studied within the same context (Fawcett *et al.* 1995). Chaskin (2001) distinguishes the individual, organizational and community levels of analysis. These properties are applied in the analysis that follows next.

5.5.2 Reciprocity Empowerment and Community Capacity

Even though only Sliammon currently disposes of extensive in-house GIS capacity, the extent to which GIS capacity does (and, in the case of Chehalis, in the future is expected to), contribute to their community's goal to increase their power and authority in forest and land use planning was clearly expressed by members of both Sliammon and Chehalis. The discussions with members of both communities as well as with representatives of non-community organizations, that dealt with the empowering value of GIS also confirmed the reciprocity between the concepts community capacity and empowerment.

Sliammon's community members described two main empowering effects of their in-house GIS capacity. Firstly, the successful operation of a GIS has advanced the community's position at the various negotiating tables in which it is involved. Sliammon's ability to collect and easily exchange and verify data with various organizations, including the provincial government, has facilitated their communication about geographical spaces and has consequently greatly enhanced Sliammon's political sway. Secondly, these in-house abilities have allowed Sliammon to become more independent from data and maps provided by outside organizations. This independence has allowed technicians and negotiators at various levels of the community to take a more proactive rather than a reactive stance towards the processes in which they are involved. Various community members described how these

abilities have generally contributed to Sliammon's recognition as a serious negotiating partner and how more specifically, GIS has been "*hugely advantageous*" in treaty negotiations.

From conversations with both community and non-community members, it became apparent that the process of empowerment is not only fuelled by increased community capacity, but the process itself leads to the generation of capacity. The establishment of consultation and accommodation processes with First Nations has resulted in a large flow of referrals to communities, amounting to up to several thousand referrals per year depending mostly on the location of a community and the size of their traditional territory. Although the recognition of traditional rights and title, which lies at the foundation of these processes, was generally recognized as a signal of increasing Aboriginal power and authority, many communities struggle to respond to all the referrals. Chehalis regards the expansion of their in-house GIS capacity as an important means to facilitate the referral process since comparison of different maps by means of GIS could quickly reveal possible conflicts between the various uses of the land and would thereby reduce the time necessary to respond. Further, through for example a Comprehensive Community Plan, First Nation communities are given increasing opportunities to take control of their own development. Both Sliammon and Chehalis emphasize the importance of their CCP to grow more independent and aim to provide otherwise municipal services to their communities in the future. GIS is seen as one of the tools to facilitate these processes.

5.5.3 Empowerment as Process and Outcome

The observation of the effects of empowerment, whether as process or outcome is dependent on the level of analysis (Fawcett *et al.* 1995). The outcomes of empowerment were mainly observed on the individual and organizational levels of analysis and result directly from (the pursuit of) increased power and authority or indirectly through processes to accommodate increased power and authority (e.g. the management of a GIS).

Members of both communities described how empowerment on the individual level has mainly enhanced opportunities for training and employment. A prime example to illustrate these effects is, again, the CCP. Chehalis' assessment of their workforce and the consequent provision of training to meet demand is a direct outcome of the community's pursuit of self-governance. Further, the possible implementation of a GIS will provide employment for several band members who will be engaged in the maintenance and operation of the system.

On the organizational level, the clearest manifestation of empowerment was described as the facilitation of the tasks of Sliammon's technicians and negotiators. These advantages are also expected by members of Chehalis as they plan their implementation of a system. Further, one Sliammon community member described how at the start of the decade traditional use maps were put up in Sliammon's school. These maps were not only instructive to students but also generated a sense of pride and cultural consciousness amongst students and community members. The possible extension of GIS to Chehalis' school aims to generate the same results as well as to provide support for linguistic education.

Finally, for both Sliammon and Chehalis the process that empowerment entails is most clearly observed on the community level and is embedded in the interaction between the community and other non-community parties. For Sliammon, the most proximate milestone is undoubtedly the resolution of treaty and albeit defining, one community member stressed this milestone will merely be a next, rather than a final, step in their pursuit of power and authority. For Chehalis, the process concentrates mainly on the protection of their traditional territory through strength of claim and the development of their institutional setup to grow as an independent and self-sufficient community. Although the processes of empowerment in Sliammon and Chehalis are substantively somewhat different, they are both comparable on

the contextual level in that the division of power is continuously challenged through incessant action and interaction of the parties involved.

6. Discussion

The empowerment of First Nation communities is a topical and contentious issue in B.C. politics (Clogg 1999). The recognition of Aboriginal rights and title and increasing self-governance through ever evolving political and judicial processes is seen by many as a way to break new ground to alleviate the now lagging social and economic well-being of indigenous communities (Ross and Smith 2002; Gysbers and Lee 2003). However, the controversial legacy of colonization and marginalization lead some (e.g.: Bradshaw 2003) to raise questions about the extent to which communities possess the capacities to successfully accommodate the powers that are gradually devolved to them. The aim of this study was to contribute to the understanding of the disposition, development, use and retention of First Nations community capacity and was focused on the use of Geographic Information Systems. This chapter first reflects upon the results of the study. The final section discusses the impact of the chosen theory for the quality and quantity of this study's conclusions.

6.1 Reflection upon the Results

In this section, the results of this study are placed in light of previous research. Besides merely discussing the possession of community capacity, this chapter further discusses how communities determine the appropriate level and composition of their GIS capacity by considering the make-buy decision. Finally the relation between capacity and empowerment is discussed.

6.1.1 Community Capacity

Although the recognition of Aboriginal rights and title in political circles has initially been driven by court rulings, an increasing number of initiatives led by different parties amongst

which the Crown government and First Nations themselves, now emerge that advance the cause for Aboriginal empowerment. Building community capacity has taken centre stage in a majority of these initiatives with the aim of increasing the individual's or community's leverage within the realm being addressed (Thomson and Pepperdine 2003). The increased involvement of First Nations in forest and land use management is perhaps the clearest demonstration of advancing Aboriginal empowerment (Anderson *et al.* 2006).

Similar to findings by Mabee and Hoberg (2006) it was found that the technical sophistication of forest and land use management and its associated tools are a barrier for communities to be successful in this regard. However, technicality is only one factor that prevents a Nation from active participation and should be considered amidst other conditioning influences within and beyond a community's reach. The case studies showed that both Nations were able to at least partially overcome these obstacles by for example supplementing their technical abilities with resources beyond the limits of their communities through for example consultants, by hiring skilled non-community members on staff and through (economic) partnerships (Hickey and Nelson 2005). This observation tallies with observations by Thomson and Pepperdine (2003) who stressed the interchangeability of different forms of capital to compensate for possible gaps.

Further, a more nuanced consideration of the role of a community's leadership is advocated. All too easily is the political unity of a community assumed (Fawcett *et al.* 1995; Labonte and Laverack 2001a; Kyem and Saku 2009) however, this assumption is in many cases likely unjustified. A strong community leadership is a prerequisite for clear policy making and implementation, and consequently a guidance for capacity building initiatives as for example observed in Chehalis' efforts to setup a GIS system. Lacking leadership or political disunity within a community is a real phenomenon that potentially disrupts efforts to wield capacity and may even contradict these efforts. Albeit a highly sensitive topic, every

capacity-building effort should on at least a rudimentary level develop an understanding of the political situation within a community since this may be more important for the success of the effort than sometimes assumed.

Finally, this study adds to the already extensive literature that stresses the failure of top-down approaches for capacity building or natural resource management more generally (Bradshaw 2003; Stevenson 2006; Varghese *et al.* 2006). Given the large body of available literature in this regard it suffices to stress that the success of attaining any goal on the community level hinges on the commitment of the members of a community and should therefore be generated from within the community rather than being imposed in a top-down manner (Stevenson and Perreault 2008).

6.1.2 Contracting and the Make-Buy Decision

The disposition and use of GIS capacity, however accessed, was found by both Nations in the study to be unquestionably empowering, for example because both Aboriginal and non-Aboriginal respondents felt GIS had improved the position of First Nations at negotiating tables. Both communities preferred in-house capacity over capacity accessed outside the community wherever possible. With these insights into the benefits of community capacity, it remains to ask what factors determine the level and composition of community capacity, not only limited to capacity for GIS, but for a wide array of different skills and abilities.

On the basis of observations in both case studies it is hypothesized that the level of community capacity for any given ability within a Nation, is at least partially the result of conscious decisions made by the community to pursue certain ends rather than others. For example, although GIS may potentially facilitate many of the community's activities and provide the community with significant political leverage at negotiating tables, most communities are expected to face considerable discrepancy between their small size and the activities they are engaged in, and the costs associated with starting and maintaining the

system. Most Nations do not generate sufficient demand for the system's abilities to maximize the return of their investments to setup and maintain a GIS. Although no detailed economic analysis was performed to test the hypothesis, it is expected that many Nations are financially better off outsourcing their GIS activities rather than building and maintaining in-house capacity. The absence of in-house GIS capacity in some Nations may thus not be the result of the incapability of the Nation to generate the capacity, but rather reflects a consciously chosen (in this case economic) optimum. Within this same line of reasoning, we could interpret Chehalis' consideration to implement a GIS at this stage of their development as a result of their rapidly increasing demand for the system's abilities. The increasing demand ensures a greater return on the possible investments which may render in-house GIS economically attractive.

The consideration of the level of community capacity as the result of conscious decision making, raises new questions. Given their unique circumstances and priorities, how does a community determine what the appropriate level of in-house GIS capacity is and, consequently, what should be outsourced? The large differences in an array of community characteristics and long-term visions and priorities, as well as the varying impact of conditioning influences leads to a distribution of communities along a continuum from minimal map literacy to a fully operable GIS, managed by highly skilled experts.

Given the importance of land and maps in the wide range of negotiations and projects most communities in B.C. are engaged in, their capacity should at the very least allow them to read maps. Even in circumstances where all the GIS work is outsourced to an external agent, there must be community members who are skilled and comfortable enough with maps to effectively engage them in their work. Several non-community respondents confirmed that although some individual, especially older, community members may find interpreting maps difficult, in general they had little experience with Nations who were unable to read and relate

to maps. Map illiteracy is therefore not considered to be a significant restraint. Lewis and Sheppard (2006) however do note that the more realistic the representation of the landscape is (e.g. through advanced 3D techniques), the easier it is for First Nations of all ages to interpret and relate to.

The consideration whether to outsource GIS needs rather than to produce maps in-house, is called the make-buy decision and originates from the principal-agent dillema (Kelman 2002). In this case, a First Nation community is the principal considering to outsource GIS work to an agent (i.e. a GIS consultant). Both Donahue (1989) and Kelman (2002) describe circumstances in which contracting would be preferable over in-house production. Donahue takes a pragmatic approach by focusing on the ease with which the order can be specified in terms of expected quality and quantity as well as the possibility to evaluate the agent's performance after delivery of the products (Donahue 1989). Kelman describes these circumstances from an organizational point of view by considering the compatibility of the work that may be outsourced within the principal's organization and the continuity of the work after completion of the initial order (Kelman 2002).

Although an extensive discussion of the principal-agent theory in the context of GIS and First Nation communities would be a useful exercise, it goes beyond the scope of this thesis. The discussion is therefore limited to the conclusion that the circumstances Donahue (1989) and Kelman (2002) describe in which outsourcing would be preferable over in-house provision, almost universally apply to most First Nations GIS case, implying that for many Nations, contracting would be the most sensible decision. Almost, because these circumstances do not take privacy concerns or cultural tensions into consideration which in this case are of essential importance to the First Nations. Several Aboriginal respondents remarked that their decision to outsource work was partially determined by the cultural and political sensitivity of the data concerned, and the purposes for which the maps were being

made. Cooperation between Nations to set up and maintain GIS jointly only rarely occurs precisely because of these inter-community sensitivities. Extensive relationship building between communities and the external agent is therefore vitally important to build trust to ensure the work that is being outsourced meets all the community's requirements, both in terms of quality as well as privacy and confidentiality. However, although previously this relationship building has been problematic for many communities, the experiences of non-Aboriginal participants with external GIS consultants who work in service of First Nations, do signal improvement. These improvements may allow more Nations to favour outsourcing over in-house provision.

6.1.3 Engagement of, and Empowerment through Community Capacity

The efforts of many Nations to advance their well-being and to become more economically self-reliant are concentrated on building a viable community economy. The geographically strategic location of many Nations close to valuable natural resources, therefore harbours many opportunities for economic development (Anderson and Bone 1995). At least partially to the end of gaining and assuring access to these resources, Sliammon has chosen to invest in treaty negotiations whereas Chehalis strives for independent growth of the community. It should however be reminded that for many Nations, forest and land use management is merely a 'piece of the (economic) pie'. The level and composition of community capacity (i.e. the set of instruments Nations gather to build successful economies) thus to an important extent reflects the long-term vision of the community and is therewith the results of higher level decision making.

It remains to be questioned however, to what extent these choices are truly conscious and what the impact of community capacity and conditioning influences is on the attainment of intended outcomes (Fawcett *et al.* 1995). Further, the differences between the results of empowerment on different levels within a community raises questions as to what individuals

or groups within a community should benefit from empowerment (Fawcett *et al.* 1993). These uncertainties enforce suggestions made by Baker and Teaser-Polk (1998) and Fraser *et al.* (2006) who argue that scientists and highly skilled outsiders should take a more reserved stance towards a community and should inform, rather than lead change processes. For example, during the '90s, an effort was done by the provincial government to empower communities by distributing GIS hard- and software. The massive failure of the project and consequent waste of resources is ill-reported but one study participant suggested this was likely due to the absence of synthesis between the communities' and government's visions and priorities. Non-community parties should limit their efforts to informing a community and should *suggest* and *facilitate* rather than *provide* ways for change (Baker and Teaser-Polk 1998). At least the communities in this research proved very capable in accessing the resources they needed to provoke change and would possibly be more successful if *enabled* (by for example information or institutional adjustments) to do so.

These cautions however are not meant to argue against capacity building initiatives for change, rather they serve to stimulate the ongoing debate that evolves around community capacity and empowerment and advocates consciousness towards the motives that underlie the circumstances in and around a community that determine the (im)possibilities of pursuing change (Israel *et al.* 1994; Perkins and Zimmerman 1995). Finally, although some parties only reluctantly adjust to advancing Aboriginal power and authority, it is on the basis of the observations made in this study not justified to conclude that their resistance is a manifestation of the reinforcement of the power structures as suggested by Castro and Nielsen (2001). Rather, they seem to signal the nature of change which inevitably implies conflict (Castro and Nielsen 2001).

6.2 Theoretical Considerations

Several factors have complicated effective data gathering and their amelioration or prevention would have improved and enriched the conclusions of this research. These factors can in varying extents be attributed to the author's personal inexperience and naïveté in doing Aboriginal research. Thorough preparation and active consultation with those who are experienced in conducting this type of research is therefore strongly recommended to anyone who plans a similar endeavour.

Firstly, given financial and time constraints it was not possible to investigate more than two cases. As was already mentioned in chapter 3, this limits the external validity of the study's results. The inclusion of more Nations would have enriched the data, allowing for example a more detailed analysis of the subtleties that guide a community's decision-making and the conditioning influences to which their strategies are exposed. However, although more cases would have provided richer data, the two cases presented here, in combination with interviews with non-community members, have nevertheless yielded rich data. The data was diverse and covered the entire theoretical framework, thereby allowing a comprehensive comparison of the phenomena of interest in both cases.

Secondly, both Nations included in this study were located in south-western B.C., relatively close to Vancouver. The geographic location of the Nations was chosen mainly because of financial constraints. This however, is not believed to have significantly impeded the external validity of the study's conclusions. In contrast, the similar (medium) size of both Nations and their proximity to urban areas, and their divergence in those variables of our interest, most importantly political orientation, institutional setup and technological capabilities, have provided for rich comparative data. They can therefore very reasonably represent a major section of B.C.'s indigenous communities. Admittedly, a research with less

stringent financial and time constraints would likely be able to represent a larger section of communities, possibly even extending beyond the provincial limits.

Thirdly, the use of semi-structured interviews proved fruitful in generating data in a comfortable and culturally respectful manner. However, some, mainly Aboriginal respondents and civil servants only reluctantly agreed to be audio-taped. Two respondents eventually refused; one of whom refused an interview altogether. Although audio-taping a conversation may prevent the need for elaborate hand-written notes and provide richer data to the researcher, the method proved a significant impediment for some respondents to openly discuss the topics at hand. Several attempts to circumvent this problem were made by putting the audio-recorder out of the respondent's immediate eyesight. However, it was finally decided not to audio-tape any more conversations but to take notes instead. These notes consisted mainly of catchwords describing expressions or opinions and, with all conversations processed within a day after completion, they proved highly efficient and accurate in recording data. It is not believed that audio-taping has impacted the accuracy of the study's data since conversations before and after the actual interview in many instances revealed additional data not mentioned during the interview. Besides, little new data was gathered during the second round of interviews, which indicated a certain level of saturation was reached and that the data from the initial round of the interviews had been sufficiently exhaustive.

Fourthly, the reluctance of many communities to participate in academic research may have acted as an unintended selection process between communities that are more and less successful in forest and land use management. This risk was pointed out by a non-Aboriginal respondent who remarked that Nations may be reluctant to participate in research because they do not wish to admit their poor achievements in managing their land base. Admittedly, there are no indications that suggest forest and land use management in either of the two cases

that were included here, has failed. Conversely, both cases also lack reason to suspect they are entirely successful. It is therefore expected that the cases represent the centre of the continuum from success to failure, rather than any of the two extremes.

Finally, no collective consultation has taken place to review the study's conclusions. Several authors (Doak and Kusel 1996; Labonte and Laverack 2001b; Gibbon *et al.* 2002) recommend collective consultation as an important way to enhance the data's reliability and garner support for the study's conclusions amongst community members. However, successful collective consultation requires the active support of a group of knowledgeable community members willing to devote their time and effort to reflect on the conclusions proposed. Although the benefits of collective consultation are clear, this project lacked the political importance to organize collective consultation successfully. Instead, individual consultation was sought with respondents in both communities. The consultation led to several recommendations for minor adjustments to parts of chapter 4 and 5 and ensured sufficient consultation of the results and conclusions had taken place with both communities before publication of the thesis.

7. Conclusions and Recommendations

The main question around which this research evolved reads: *"What role does First Nations community capacity play in support of the process of empowerment in forest and land use planning in B.C., Canada?"*. The foregoing assessment and analysis of community capacity for GIS and Aboriginal empowerment in forest and land use planning in B.C. enables the distillation of four main conclusions. They reflect the research questions identified in chapter 1 and are grouped accordingly.

The extent to which communities dispose of community capacity to produce GIS maps is dependent on a mix of conscious community-level decision making and conditioning influences. It is therefore unjust to assume a capacity deficit in Nations that are to some extent dependent on GIS consultants. Consequently, the pursuit of a fully operable, in-house GIS for every Nation is inappropriate and potentially wasteful. It should be borne in mind that given the small size of many communities and their limited demand for GIS maps (albeit it for the community of significant importance), many Nations may not be able to economically justify large investments in setting up and maintaining the system. Consequently, First Nation communities are distributed by their level of GIS capacity along a continuum from minimal map literacy on one extreme to the availability of a fully operable in-house system on the other. Efforts to move communities along that continuum should be generated bottom-up by those Nations who have identified GIS as a potentially valuable tool to support their community's strategies. External contractors thus play a vital role in meeting the demand for GIS to Nations that have no, or limited in-house GIS capacity. Although the successful management of in-house GIS by some Nations is a signal of progressing Aboriginal empowerment in forest and land use management in B.C., the fact that Nations can

increasingly rely on consultants to meet their GIS needs through extensive relationship building is perhaps an even bigger achievement in the empowerment of First Nations that is worth considering.

The motivation of communities to wield and retain community capacity for GIS is at least partially the result of the contribution GIS can make towards the implementation of the strategies with which the community's leadership chooses to pursue its long-term vision. GIS capacity building initiatives must therefore be sensitive of the community's long term vision and priorities. The extent to which communities engage with GIS, whether in-house or outsourced, reflects political-, economic- and community-level strategies. The availability of human, social, economic and physical resources within the communities determine the scope within which the Nations deploy strategies in pursuit of communal goals. Their availability challenge a community to make choices on how to direct time, money and effort. Communities supplement and develop their resources by means of extra-community links, for example through consultants, economic partnerships and by hiring skilled non-community members on staff. The efficiency with which these strategies are pursued (and thus the efficiency with which limited resources contribute to the attainment of community goals) is to an important extent dependent on the leadership of a community. Care should be taken when assuming the political unity of a community since this assumption may prove unfounded. Conflicting visions as to the long-term direction of the community potentially significantly disrupt efforts to build and maintain community capacity.

The extent in which the development, use and maintenance of GIS capacity contributes to attaining community goals is dependent on an array of conditioning influences. Factors that enable the effectiveness of community capacity for GIS are the high demand for maps and the

increased sharing of technical expertise and data. Constraining factors that are within the community's realm include the viability of financial resources to maintain the system, the political unity of the community and community support. Other factors include the small size and heavy workload of communities which constrains their human resources, the image GIS has as an expensive and technically complicated system, and limited access to the Crown government. Other constraining factors originate beyond the community level and include the uncertainty over the division of authority which creates an uncertain business environment, the dependence of industry on macroeconomic circumstances and inconsistency in corporate philosophy due to continuous merges and splits which complicate relationship building. Finally, government negotiators are not always entitled with the right mandates to come to satisfactory agreements with the Nations.

Access to GIS is indispensable for First Nation communities in B.C. to successfully accommodate their increasing power and authority in forest and land use planning. The system's abilities to manage and display geographic information are of great empowering value to those Nations who are successful in using GIS maps at negotiating tables in the forest and land use planning arena, whether for the protection of traditional territory, for the exploitation of natural resources for economic purposes, or other community goals. Efforts by non-community parties to build community capacity for GIS may thus be important for those Nations that wish to engage further in forest and land use planning. However, efforts to build GIS capacity in Nations with different priorities, in areas other than forest and land use planning, are at risk of failure. These capacity building initiatives should carefully consider the community's priorities as well as the availability of resources within the community to retain the capacity after is has been built.

Bibliography

Aboriginal Strategy Group (2007). *A Quantitative Assessment of Aboriginal Involvement in the Canadian Forestry Sector*.

Aghion, P. and Tirole, J. (1997). "Formal and Real Authority in Organizations." *Journal of Political Economy* 105(1): 1.

Alsop, R. and Heinsohn, N. (2005). *Measuring Empowerment in Practice: Structuring Analysis and Framing Indicators*. World Bank Policy Research Working Paper No. 3510.

Anderson, R.B. (1997). "Corporate/Indigenous Partnerships in Economic Development: The First Nations in Canada." *World Development* 25(9): 1483-1503.

Anderson, R.B. and Bone, R.M. (1995). "First Nations Economic Development: A Contingency Perspective." *The Canadian Geographer* 39(2): 120-130.

Anderson, R.B., Dana, L.P. and Dana, T.E. (2006). "Indigenous Land Rights, Entrepreneurship, and Economic Development in Canada: "Opting-In" To the Global Economy." *Journal of World Business* 41(1): 45-55.

Babu, S.C. and Mthindi, G.B. (1995). "Developing Decentralized Capacity for Disaster Prevention: Lessons from Food Security and Nutrition Monitoring in Malawi." *Disasters* 19(2): 127-139.

Baker, E.A. and Teaser-Polk, C. (1998). "Measuring Community Capacity: Where Do We Go from Here?" *Health Educ Behav* 25(3): 279-283.

Bandura, A. (1989). "Human Agency in Social Cognitive Theory." *American Psychologist* 44(9): 1175-1184.

BC STATS (2006). *"Statistical Profiles of Aboriginal Peoples."* Retrieved 4 January 2010, from http://www.bcstats.gov.bc.ca/data/cen01/abor/ap_main.asp.

Beckley, T., Martz, D., Nadeau, S., Wall, E. and Reimer, B. (2009). "Multiple Capacities, Multiple Outcomes: Delving Deeper into the Meaning of Community Capacity." *Journal of Rural and Community Development [Online]* 3(3): 56-75.

Berkes, F. (1994). "Co-Management: Briding the Two Solitudes." *Northern Perspectives* 22(2-3): 18-20.

Bierstedt, R. (1950). "An Analysis of Social Power." *American Sociological Review* 15(6): 730-738.

Bohn, D.K. (2003). "Lifetime Physical and Sexual Abuse, Substance Abuse, Depression, and Suicide Attempts among Native American Women." *Issues in Mental Health Nursing* 24(3): 333-352.

Boldt, M. (1993). *Chapter 1. Justice.* In: (Eds.), Surviving as Indians: The Challenge of Self-Government. Toronto, Canada, University of Toronto Press Incorporated.

Bowen, G.L., Martin, J.A., Mancini, J.A. and Nelson, J.P. (2000). "Community Capacity: Antecedents and Consequences." *Journal of Community Practice* 8(2): 1 - 21.

Bradshaw, B. (2003). "Questioning the Credibility and Capacity of Community-Based Resource Management." *The Canadian Geographer* 47(2): 137-150.

Brealey, K.G. (1995). "Mapping Them 'out': Euro-Canadian Carthography and the Appropriation of the Nuxalk and Ts'ilhqot'in First Nations' Territories, 1793-1916." *The Canadian Geographer* 39(2): 140-156.

Castro, A.P. and Nielsen, E. (2001). "Indigenous People and Co-Management: Implications for Conflict Management." *Environmental Science & Policy* 4(4-5): 229-239.

Chaskin, R.J. (2001). "Building Community Capacity: A Definitional Framework and Case Studies from a Comprehensive Community Initiative." *Urban Affairs Review* 36(3): 291-323.

Chehalis (2008). *Sts'ailes Progress Report 2003-2008*. Aggasiz, Chehalis First Nation.

Clogg, J. (1999). *Maintaining Cultural and Ecological Diversity on the Central Coast: Co-Management Options*. Vancouver, BC. West Coast Environmental Law research Foundation.

Cornell Empowerment Group (1989). "Empowerment and Family Support." *Networking Bulletin* 1(2): 1-23.

Crisp, B.R., Swerissen, H. and Duckett, S.J. (2000). "Four Approaches to Capacity Building in Health: Consequences for Measurement and Accountability." *Health Promot. Int.* 15(2): 99-107.

Dickason, O.P. (2002). *Canada's First Nations. A History of Founding Peoples from Earliest Times*. Don Mills, Ontario, Oxford University Press Canada.

Doak, S.C. and Kusel, J. (1996). *Well-Being in Forest-Dependent Communities, Part Ii: A Social Assessment Focus. Sierra Nevada Ecosystem Project: Final Report to Congress*. Assessments and Scientific Basis for Management Options. Davis, Centers for Water and Wildland Resources, University of California.

Dobres, M.-A. (2000). *Technology and Social Agency*. Oxford, Blackwell Publishers ltd.

Donahue, J. (1989). *The Privatization Decision*. New York, Basic Books.

Emerson, R.M. (1962). "Power-Dependence Relations." *American Sociological Review* 27(1): 31-41.

Fawcett, S., Paine-Andrews, A., Francisco, V., Schultz, J., Richter, K., Lewis, R., Williams, E., Harris, K., Berkley, J., Fisher, J. and Lopez, C. (1995). "Using Empowerment Theory in Collaborative Partnerships for Community Health and Development." *American Journal of Community Psychology* 23(5): 677-697.

Fawcett, S.B., Paine, A.L., Francisco, V.T. and Vliet, M. (1993). *Promoting Health through Community Development.* In: D. Glenwick and L. A. Jason (Eds.), Promoting Health and Mental Health: Behavioural Approaches to Prevention. New York, Haworth.

Forsyth, J.P. (2006). *The Balance of Power: Assessing Conflict and Collaboration in Aboriginal Forest Management*. Vancoucer, Canada, University of British Columbia. Faculty of Graduate Studies. Masters Thesis.

Fraser, E.D.G., Dougill, A.J., Mabee, W.E., Reed, M. and McAlpine, P. (2006). "Bottom up and Top Down: Analysis of Participatory Processes for Sustainability Indicator Identification as a Pathway to Community Empowerment and Sustainable Environmental Management." *Journal of Environmental Management* 78(2): 114-127.

Gibbon, M., Labonte, R. and Laverack, G. (2002). "Evaluating Community Capacity." *Health & Social Care in the Community* 10(6): 485-491.

Goodman, R.M., Speers, M.A., McLeroy, K., Fawcett, S., Kegler, M., Parker, E., Smith, S.R., Sterling, T.D. and Wallerstein, N. (1998). "Identifying and Defining the Dimensions of Community Capacity to Provide a Basis for Measurement." *Health Educ Behav* 25(3): 258-278.

Gysbers, J.D. and Lee, P. (2003). *Aboriginal Communities in Forest Regions in Canada. Disparities in Socio-Economic Conditions.* Edmonton, Canada, Global Forest Watch.

Harley, J.B. (2009). *Chapter 8: Maps, Knowledge and Power.* In: G. Henderson and M. Waterstone (Eds.), Geographic Thought. New York, Routledge**:** 129-148.

Hickey, C.G. and Nelson, M. (2005). *Partnerships between First Nations and the Forest Sector: A National Survey*. Knowledge Exchange and Technology Extension Program (KETE) Sustainable Forest Management Network. Edmonton, Alberta, Department of Anthropology, University of Alberta.

Hoberg, G. and Morawski, E. (1997). "Policy Change through Sector Intersection: Forest and Aboriginal Policy in Clayoquot Sound." *Canadian Public Administration* 40(3): 387-414.

Hunter, J. (2009). Aboriginal Law, 'Dead', New Relationship in Peril. *The Globe and Mail.* August 29, 2009 (Document ID: 1849063241).

Hur, M.H. (2006). "Empowerment in Terms of Theoretical Perspectives: Exploring a Typology of the Process and Components across Disciplines." *Journal of Community Psychology* 34(5): 523-540.

Israel, B.A., Checkoway, B., Schulz, A. and Zimmerman, M. (1994). "Health Education and Community Empowerment: Conceptualizing and Measuring Perceptions of Individual, Organizational, and Community Control." *Health Educ Behav* 21(2): 149-170.

Kelman, S.J. (2002). *Chapter 9. Contracting.* In: L. M. Salamon (Eds.), The Tools of Government: A Guide to the New Governance. Toronto, Oxford University Press**:** 282-318.

Kumar, R. (2005). *Research Methodology: A Step-by-Step Guide for Beginners*. London, SAGE Publications Ltd.

Kusel, J. (1996). *Well-Being in Forest-Dependent Communities, Part. I: A New Approach. Sierra Nevada Ecosystem Project: Final Report to Congress*. Assessments and scientific basis for management options. Davis, Centers for Water and Wildland Resources, University of California.

Kyem, P.A.K. and Saku, J.C. (2009). "Web-Based Gis and the Future of Participatory Gis Applications within Local and Indigenous Communities." *The Electronic Journal on Information Systems in Developing Countries* 38(7): 1-16.

Labonte, R. and Laverack, G. (2001a). "Capacity Building in Health Promotion, Part 1: For Whom? And for What Purpose?" *Critical Public Health* 11(2): 111 - 127.

Labonte, R. and Laverack, G. (2001b). "Capacity Building in Health Promotion, Part 2: Whose Use? And with What Measurement?" *Critical Public Health* 11(2): 129 - 138.

Laverack, G. (1999). *Addressing the Contradiction between Discourse and Practice in Health Promotion*. Melbourne, Australia, Deakin University. Dissertation.

Laverack, G. and Wallerstein, N. (2001). "Measuring Community Empowerment: A Fresh Look at Organizational Domains." *Health Promot. Int.* 16(2): 179-185.

Lewis, J.L. and Sheppard, S.R.J. (2006). "Culture and Communication: Can Landscape Visualization Improve Forest Management Consultation with Indigenous Communities?" *Landscape and Urban Planning* 77(3): 291-313.

Lindsay, K.M. and Smith, D.W. (2001). "Evaluation of British Columbia Ministry of Forests Aboriginal Rights and Title-Consultation Guidelines - the Ditidaht Case Study." *Environmental Engineering and Policy* 2(4): 191-201.

Mabee, H.S. and Hoberg, G. (2004). "Protecting Culturally Significant Areas through Watershed Planning in Clayoquot Sound." *The Forestry Chronicle* 80(2): 229-240.

Mabee, H.S. and Hoberg, G. (2006). "Equal Partners? Assessing Comanagement of Forest Resources in Clayoquot Sound." *Society & Natural Resources: An International Journal* 19(10): 875 - 888.

MacEachren, A.M. (2000). "Cartography and Gis: Facilitating Collaboration." *Progress in Human Geography* 24(3): 445-456.

Maclellan-Wright, M.F., Anderson, D., Barber, S., Smith, N., Cantin, B., Felix, R. and Raine, K. (2007). "The Development of Measures of Community Capacity for Community-Based Funding Programs in Canada." *Health Promot. Int.* 22(4): 299-306.

MacMillan, H.L., MacMillan, A.B., Offord, D.R. and Dingle, J.L. (1996). "Aboriginal Health." *Canadian Medical Association* 155(11): 1569-1578.

McDonald, J.A. (2004). "The Tsimshian Protocols: Locating and Empowering Community-Based Research." *Canadian Journal of Native Education* 28(1 and 2): 80-91.

McNeil, K. (2005). "Aboriginal Rights, Resource Development, and the Source of the Provincial Duty to Consult in *Haida Nation* and *Taku River*." *Supreme Court Law Review* 29(2): 447-460.

Mendelson, M. (2008). *Improving Education on Reserves: A First Nations Education Authority Act*. Ottawa, Canada, The Caledon Institute of Social Policy.

Ministry of Forest and Range (2004). *"Forest and Range Agreements. Frequently Asked Questions."* Retrieved 30 November 2009, from http://www.for.gov.bc.ca/haa/Docs/Public_Q&A_Oct27_2004.htm#general1.

Parsons, R. and Prest, G. (2003). "Aboriginal Forestry in Canada." *The Forestry Chronicle* 79(4): 779-784.

Parsons, T. (1963). "On the Concept of Political Power." *Proceedings of the American Philosophical Society* 107(3): 232-262.

Pearse, P.H. and Wilson, J.R. (1999). "Local Co-Management of Fish and Wildlife: The Quebec Experience." *Wildlife Society Bulletin* 27(3): 676-691.

Penner, D. (2009). Six Coastal First Nations Sign Resource Sharing Deal. *Vancouver Sun.* December 10, 2009

Perkins, D. (1995). "Speaking Truth to Power: Empowerment Ideology as Social Intervention and Policy." *American Journal of Community Psychology* 23(5): 765-794.

Perkins, D. and Zimmerman, M. (1995). "Empowerment Theory, Research, and Application." *American Journal of Community Psychology* 23(5): 569-579.

Price, K., Roburn, A. and MacKinnon, A. (2009). "Ecosystem-Based Management in the Great Bear Rainforest." *Forest Ecology and Management* 258(4): 495-503.

Reynolds, J.I. (2005). "The Impact of the *Guerin* Case on Aboriginal and Fiduciary Law." *The Advocate* 63(3): 365-372.

Rogers, E.S., Chamberlin, J., Ellison, M.L. and Crean, T. (1997). "A Consumer-Constructed Scale to Measure Empowerment among Users of Mental Health Services." *Psychiatr Serv* 48(8): 1042-1047.

Ross, M.M. and Smith, P. (2002). *Accommodation of Aboriginal Rights: The Need for an Aboriginal Forest Tenure (Synthesis Report)*. Edmonton, Alberta, Sustainable Forest Management Network, University of Alberta.

Sharvit, C., Robinson, M. and Ross, M.M. (1999). *Resource Developments on Traditional Lands: The Duty to Consult*. CIRL Occasional Paper #6. Calgary, Canadian Institute of Resources Law (CIRL).

Shepert, M. (2008). *Oral History and Traditional Ecological Knowledge.* In: (Eds.), Aquaculture, Innovation and Social Transformation. 205-216.

Stevenson, M.G. (2006). "The Possibility of Difference: Rethinking Co-Management." *Human Organization* 65(2).

Stevenson, M.G. and Perreault, P. (2008). *Capacity for What? Capacity for Whom? Aboriginal Capacity and Canada's Forest Sector*. Knowledge Exchange and Technology Extension Program (KETE). Edmonton, Alberta, Sustainable Forest Management Network.

Tennant, P. (1996). *Aboriginal Peoples and Aboriginal Title in British Columbia Politics.* In: R. K. Carty (Eds.), In: Politics, Policy, and Government in British Columbia. Vancouver, University of British Columbia Press.

Thomas, K.W. and Velthouse, B.A. (1990). "Cognitive Elements of Empowerment: An "Interpretive" Model of Intrinsic Task Motivation." *The Academy of Management Review* 15(4): 666-681.

Thomson, D. and Pepperdine, S. (2003). *Assessing Community Capacity for Riparian Restoration*. Canberra, Australia, Landscape & Social Research Pty Ltd; Land & Water Australia.

Tobias, T.N. (2000). *Chief Kerry's Moose. A Guidebook to Land Use and Occupancy Mapping, Research Design and Data Collection*. Vancouver, B.C., A Joint Publication of the Union of BC Indian Chiefs and Ecotrust Canada.

Treseder, L. and Krogman, N.T. (2000). *The Effectiveness and Potential of the Caribou – Lower Peace Cooperative Forest Management Board*. Edmonton, Alberta, Sustainable Forest Management Network, University of Alberta.

Varghese, J., Krogman, N.T., Beckley, T.M. and Nadeau, S. (2006). "Critical Analysis of the Relationship between Local Ownership and Community Resiliency." *Rural Sociology* 71(3): 505-527.

Wiber, M., Charles, A., Kearney, J. and Berkes, F. (2009). "Enhancing Community Empowerment through Participatory Fisheries Research." *Marine Policy* 33(1): 172-179.

Zimmerman, M. (1995). "Psychological Empowerment: Issues and Illustrations." *American Journal of Community Psychology* 23(5): 581-599.

Appendix 1. Study Area Maps

Figure A1.1. Maps detailing location of Sliammon and Chehalis First Nations

Appendix 2. Interview scripts[4]

Community Interview Script

Introductory questions
- What other tasks, either professionally or voluntarily, do you have?
- Do you feel you have enough time to perform your GIS work satisfactorily?

Community support and communal goals
- How does the wider community feel about the importance of producing GIS maps?
- Do you think there is enough cooperation within the community to support GIS?
- What purposes do the maps the community produces serve?
- Do you feel this perspective is commonly shared within the community?

Personal motivation
- Can you describe your personal motivation to work with GIS?
- Can you describe your personal strengths and weaknesses in GIS?

Conditioning Influences
- To what extent do the skills, knowledge and technical capacity of the community support or undermine the GIS process?
- Can you give examples? How does this affect you?
- What do you feel is missing or should be improved?

Levels of social agency and resources
- Can you describe with whom you cooperate in GIS work? (both in- and outside the community)
- How frequent is your contact? What advantages does cooperation bring you?
- Do you feel cooperation has served broader purposes beyond merely supporting GIS activities?

Functionality of GIS
- What benefits has the community had of using GIS?
- What outcomes (both positive and negative) did you experience that were not initially intended?

Concluding Questions
- How do you see the future of GIS in your community?
- What are the main opportunities/threats for the future?

[4] As already mentioned in chapter 3, the interview scripts provided here are an approximation of the questions that were discussed during the interviews. Each interview was adjusted to fit the participant's specific professional occupation or position within the organization he/she represented.

Appendix 2 (Continued). Interview scripts

Non-Community Interview Script

Community capacity

- To what extent do communities dispose of the required capacities to be an effective participant in issues concerning forest and land use planning?
- Are First Nations able to access the proper resources (i.e. social and human capital, financial and natural resources) to be effective partners in forest management?
- What experiences do you have with community's leadership? Are they able to foster successful forest management?
- How do these factors contribute or hamper their efforts to be effective forest and land use managers?

Social engagement

- Do you feel First Nation are able to connect with the right people outside their community to engage in forest and land use management?

Conditioning influences

- How does your organization take account of First Nation's interests?
- Can you explain how you have arrived at this strategy?
- In what way do you feel this strategy is effective?
- What role do political processes play in your cooperation with Nations? What is your view on the current political climate concerning First Nations in B.C.?
- Do you think First Nations are respected as serious partners in this realm?

Empowerment

- Do you think it is important that First Nations are empowered in managing forests and lands in B.C.?
- What factors currently enable or constrain equality in decision-making?
- What are the main opportunities and threats for your future cooperation with First Nations?
- Do you think this will change when treaties are signed?
- What do you expect communities to do to make empowerment successful?