Communicating 'Forest': Co-managing Crises and Opportunities with Northern Secwepemc First Nations and the Province of British Columbia

by

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Abstract:

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The following research inquires about the communication challenges for co-management of natural resources in traditional territories of Secwepemc First Nations. The results will be of interest to First Nations, lands and resource planners of British Columbia and others who are interested in developing acceptable strategies for co-management of indigenous lands with 'post-colonial' governments. The purpose of the study is to find out how co-management can occur so that learning and continual adaptation to new knowledge is planned. Communication by speaking and listening and by sharing stories continues to be important for maintaining culture- but communication by reading and writing is the dominant method currently used by management authorities. Communication crises occur when traditional ecological knowledge is required to fit within a rigid technology of literacy (Nadasdy 1999). There is little presently known about how the Province of British Columbia and First Nations can communicate so that acceptable co-management of forests can be achieved. Nevertheless, co-management is required as the method for resolving the Canadian constitutional conflict between First Nations' title and rights and the natural resources jurisdiction of the Province.

A hypothesis is tested that the Northern Secwepemc First Nations are leading transformation initiatives toward sustainable management in their territories and that shared knowledge emerges from new growth opportunities in crisis situations. Crises in forest management can create opportunities for cross-scale institutional improvement of co-management if First Nations and Provincial decision-making is shared in learning organizations. The project used the case study survey method for inquiry. Community contact persons provided direction in finding acceptable terms of reference for the project and the cases for study. Interviews were based on questions derived from the current provincial forest-planning framework, the communities' vision for co-management and from the research of common property resource management by Ostrom (1990) and Pinkerton (1992). The analysis used in this research was tailored to the grounded theory method for data analysis (Glaser 1998). Research findings indicated that there is potential for transformation of forest management in Northern Secwepemc territories in times of crises, however certain conditions, such as adequate staffing, funding and training, must first exist at the site level of management in order to make the best use of emergent opportunities for collaboration. Systemic and democratic conversation among First Nations and provincial planners in British Columbia must be encouraged. This should be accomplished in institutional frameworks that are well supported for local learning organizations to inform management continuously and adaptively, across scales from the site level to the provincial level.

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1.0 Introduction

Being, changing and seeing. It's that simple, with or without writing. Whether it is called reflective observation, praxis, or adaptive management we must constantly change and adapt our actions to ensure a sustainable future for forests and forest-based communities. For indigenous communities, the rationality of continual adaptation and changing with environmental constraints is obvious. An evolving learning cycle of continuous being, changing and seeing with nature has ensured survival for indigenous people for millennia. "Adaptive environmental assessment and management", is only recently being acknowledged by foresters as ecosystem-based forestry and the 'way of the future' (and not the present); but it is a principle so basic in traditional North Shuswap knowledge as to be obvious. The Shuswap word "Secwepemculecw" stands for "Shuswap territory"; but at a deeper level still known to some, it may imply 'the land and the people, and all their relations taken as one'. Implicit in this relationship is a sacred responsibility of the Shuswap people to continually care for lands and resources of their traditional territories for the benefit of all – including those of future generations. The problem of communicating across cultures is found mostly in sorting out the complex and tangled webs of meaning that have been made out of written English words over the past few hundred years. It can also be difficult to fully understand in English why connotations of a term like "management" or "control" are problematic from the perspective of First Nations language and culture. A focus on team-work and problem-based learning could nurture listening and helping skills in individuals; but these approaches to learning are not yet central in the curriculum of most colleges and universities. In Western culture, we take such pride in our abilities to measure, control and dominate that we have become less able to listen, to wait and to adapt to what nature is 'telling' us. It has been said that very literate people are like spiders, in that they spin webs in a solitary way from the written words that they can conjure from papers. To learn humility about my 'powers of literacy' and my associated weakness in orality, I find this image useful. Instead of living and continually interacting through speech and story telling, mutually supported in a network of relationships in the 'here and now', literate people like myself relate best to their webs, and perhaps to their unsuspecting victims, who could become trapped among what might become 'word games'. Socrates

noted that writing has this strange quality about it "leading us to imagine that its words speak as though they made sense, but if you ask them anything about what they are saying, if you wish an explanation, they go on telling you the same thing, over and over forever". Such is the purposeless and bewildering effect of print media when it is disrespectfully imposed on people (Bernier 1995, Freire and Macedo 1987).

Indigenous people and others struggling to achieve the sustainability of their forest-based communities know that a relationship of care and respect between the spoken word and the written word is what we must keep a wary eye on. I am grateful to the Northern Shuswap people – the Northern Secwepemc te Qelmucw for helping me in this research project and for helping me to learn how to apply 'praxis' to 'open just the right doors at the right time'. One must proceed carefully in making and interpreting meanings – but we must do it nonetheless. I want it to be clear that this paper is just academic research. It is my doctoral dissertation and is in no way connected with the Province of British Columbia or with on-going treaty negotiations with the Northern Secwepemc te Qelmucw (NStQ). Formally, none of this research can be considered "consultation". The grounded theory has been developed here with the Northern Secwepemc te Qelmucw from hundreds of hours of discussions and interviews. The case study research provides snapshots of the current crises of co-managing in NStQ territory and then builds a basis for improving natural resource management communications. I hope that this research will provide empowering concepts for all 'economic actors' and human beings who are trying to improve the way co-managing is done in Northern Secwepemc territory. A transformation is needed, from old methods based on 19th century science to new methods that are continuously adaptive to non-linear, long-term social-ecological processes. If parties do want to work in a respectful relationship with the NStQ they will need to learn more about the biases of their own culture. For many, this will perhaps be the most difficult lesson to be learned.

Valuable lessons can be learned when personal and cultural biases are put aside for the greater good of co-managing natural resources. Again, I would like to express my gratitude and respect for the NStQ natural resources managers and to community members who freely gave me their time and showed me much generosity and patience in

explaining the crises of co-managing in NStQ territories. Natural resources planning participants of the NStQ, the provincial government, forestry and tourism industry organizations, as well as elders interviewed, have trusted me to represent their ideas properly in this research. To honour this trust I have done much talking and listening, in addition to library research and the expected follow-up consultation. The empirical part of this paper documents and interprets the ideas of the NStQ, government and industry natural resources managers. The body of the thesis is organized in five chapters. Chapter one is an introduction to the study and it provides a brief discussion of the philosophic and historic context for the research. Chapter two explains the research purpose, the survey and analysis method, as well as the ethical considerations. Chapter three presents research findings from the case studies. The findings are organized as emergent themes from interviews and are supported in Appendix 2 by theoretical codes grounded in the interview data. Chapter four provides a discussion of the survey results. Chapter five concludes the study by referring to the current context of sustainable forest management in British Columbia and by identifying areas for further research. There seems to be a strong will and capability among community leaders for co-managing natural resources with the NStQ, the Province and Canada. It is my goal to understand the interviewees' ideas as fully as I can, before trying to represent them in writing. I believe that this project has formed an acceptable place *to begin* to understand forest co-management communication crises in NStQ territories. However, it is only a beginning.

Western culture has dominated natural resource management decision-making in British Columbia. An understanding of the history and philosophy of Western hegemony can be useful in identifying the types of problems that are likely to occur in sustainable forest management and co-management initiatives.

1.1 Philosophy as Critical Theory

Although some would argue against philosophy claiming that this abstract musing does more to restrict than to illustrate opportunities, I argue that there are good reasons to learn from history and to use philosophy and science rather than an anti-philosophical approach. The first reason is strategic. There can be no basis on which to influence current methods and practices unless an analysis of underlying philosophy is made.

Secondly, an ignorance of philosophy can lead to acceptance of methods that may appear to be superficially useful but which actually harbor potentially dangerous assumptions. For example, critical thinking and philosophical reflection in co-managing from both indigenous and western contexts can be useful to expose and address potential underlying historic or philosophical conflicts. When this is encouraged first before planning begins, then differences can be openly discussed, so that dissent does not grow to plague and ultimately undermine negotiations. For example Western societies are organized according to 'command and control' authorities that are supposed to respect a pre-defined code of rights of self-directed individuals. On the other hand, indigenous societies have evolved respecting tacit rights and responsibilities of self-organizing members. Submitting to the authority of a highly centralized decision-making organization seems natural in western society. However, in co-managing processes with First Nations a 'command and control' approach is not appropriate (Smith 2001). Also, Western people have come to know themselves and their natural world in relation to a technology of literacy and this can tend to influence their knowledge as apart *from* nature rather than as a part *of* nature. On the other hand traditional ecological knowledge does not separate itself from nature. There is much potential for generating conflict and misunderstanding between First Nations and the Province; but there is presently very little done to ensure that trusted co-managing relationships grow and develop. I would not minimize the difficulty of this task. However to initiate learning about the historic reasons for lack of trust would be a reasonable start. The foundation for co-management process on which aboriginal justice can be claimed must first be found in acknowledging current and historic injustices. Cases involving provincial government neglect of co-management responsibilities before the B.C. Supreme Court, and the frequent incidences of natural resource use conflicts among resource licensees, First Nations and the Province indicate that current natural resources planning processes are not working[1].

[1] In a BC Supreme Court Decision *Haida vs Weyerhauser and the Province of BC* it was found that proper consultation was not given to Haida prior to making a forest license transfer. Subsequent Supreme Court decisions with regard to the Taku First Nation (Skeena) rights and title issues and with the Hy-ay-aht First Nation of the central coast also found that proper consultation and accommodation was not made prior to logging in traditional territories. The case studies presented here describe in detail the current problems in co-management processes in territories of the Northern Secwepemc te Qelmucw.

In presenting a brief philosophy and history of barriers to co-managing natural resources I am also including stories of my own development as a 'story-teller'. There are two reasons for this: one is to try to understand colonialism from the researcher's perspective in an interesting and more personal way; second it is to try to show the bias of the researcher in this study and to invite the reader to explore with him the sense of his claim to 'objectivity'. My own story is systemically linked to broader social and historical processes and perhaps there are cross scale observations that can be made with general management concepts and to those applied in BC forests. And so as we go to the library documents to do historical and philosophic inquiry in subsequent sections, I also invite the reader to examine my autobiographical sketches.

Autobiographical Note:

In addition to problems associated with poverty, the indigenous peoples also suffered ravages of diseases inflicted by historic contact with pioneers and family dislocations caused by the residential schooling system. Tuberculosis, alcoholism, youth suicide and infant mortality continued to plague Carrier and Sekani peoples from whose ancestral lands much wealth was being extracted. The Carrier and Sekani peoples now living on the reserves of Ingenika and Fort Ware had been fur traders and trappers along the Finlay, Parsnip and Peace rivers of the Mackenzie forest district. Trading routes which were also ancestral food gathering and hunting areas were mostly destroyed when rivers were flooded catastrophically during the construction of the WAC Bennett Dam at Hudson's Hope on the Peace River in the 1960s. A publication of the Pulp and Paper Workers Union of Canada chronicles the tragic haste in this provincial government mega-project and re-election strategy that produced catastrophic effects on indigenous people living and working in the area. In the early 1980s and even today there is little exchange between the residents of Mackenzie and the communities of Ingenika and Fort Ware. Since Mackenzie was a concept of foreign developers it was not a welcoming place for indigenous peoples. Seasonal loggers and firefighters from indigenous communities did not spend much time in Mackenzie. Occasionally, I noticed a small plume of smoke from a cooking fire in patches of timber from within the city limits. Sometimes families would gather to support a relative who had been summoned to the provincial court in Mackenzie. Or, firefighters would camp out near the forest district office while waiting for pay from the social service ministry or from seasonal firefighting work within the Forest District.

My involvement in this process was with the BC Forest Service. We were typical detached geographers: sovereign, adventurers and surveyors. We participated in the plunder of natural resources and the 'development' of rural communities only

from the periphery, in 'good style' and with a healthy budget. It was our job to improve timber species classification, volume, growth, yield and decay information and to assist logging companies and government exploit timber resources. Our conversations on the topic of forest inventory were technical and occurred mostly among ourselves. We had a kind of 'rational', military presence in the community with aircraft, tents and 4 wheel drive vehicles. We completed our mapping projects on lands without acknowledging the long history of occupation of those lands by indigenous people and we worked only with provincial authority delegated from Victoria. We were an anachronism to the local areas where we worked. Wherever I met aboriginal people it seemed there was very little for us to talk about. Although at the time there was not obvious resentment against us, there was no reason for much respect either. I recall that the closest association we had with a native community was in the village of Lytton where we were stationed for four months in the summer of 1978. In the neighbourhood pub, the people of Kumsheen smiled at us in a friendly, self-confident and teasing way and they called us "the Whitecaps" – the name of a popular Vancouver soccer team. Despite friendly invitations for us to begin a more formal conversation with them – we did not pursue the opportunities. We had no mandate to discuss forest inventory with local people. Our job was to classify timber types to develop reconnaissance maps, and to assist in preparation of data for PSYU annual allowable cut calculation. My job in particular was to drive the truck, follow a compass, and tie plastic ribbons on trees. As employees, none of us individually were responsible for the government at all, and yet in an important way to local people, we were the government.

1.2 'Command and Control' History

The widespread use of a 'command and control' conception of social order with roots in colonialism reinforces linear and mechanical ways of thinking. Management bureaucracies that exclude communities and other "ill-defined associations" are the logical result. Although we still cling to these mechanically ordered 'command and control' bureaucracies for organizing decision-making information, today in an era of instantaneous electronic communication they are now inappropriate and counter-productive for learning and developing agreements within and between communities. (Senge 1994, Tyner 1998). Applied ecologists indicate that sustainable development initiatives are more effective when they are developed adaptively from the landscape level with a diversity of community interests across management scales 'downward' to the level of jurisdiction of the province or nation (Gunderson and Holling 2002). Electronic communication technology can link communities across geographic distances

and management scales to provide the greatest variety and relevance of information for co-managing decision-making. Cross-scale co-managing processes have potential to achieve common sustainability goals. In practice however, co-management still defers to 'command and control' prescriptions defined by provincial authorities from the center.

In Europe in the late 1600s and early 1700s discoveries were made in the natural sciences that assisted in projects of industrialism and colonialism. Newton, Leibniz, Descartes, Bacon, and others developed a popular epistemological foundation for practice of science and the application of technology (Midgely 2000). Methods of inquiry in the physical sciences had useful applications in the industrial revolution and philosophers tried to make scientific and engineering approaches work for theories of society and morality. Enlightenment philosophy pronounced that all things in the world *including human beings, organizations and societies* are like mechanical toys. If it could be deduced how they work, then it followed that they could be changed according to 'our will', within the limits of the natural laws that they conform to. Philosophers worked to structure a concept of the beginning of history as the dawn of reason and scientific progress. A conception of the atomistic, command and control individual, who enters into contracts with others for self-protection was originally and comprehensively charted by Thomas Hobbes (1588-1679). Hobbes' basic assumptions about humans' individuality, isolation and self-interest construct a stark self image for people today. The assumption is perplexing for groups that thrive by unwritten codes of respect and reciprocity. Essentially a creed that could work for pirates or philosophers, (but not for 'unreasonable' people in 'ill-defined' associations such as among women or indigenous people) the Hobbesian view was modified little by those that followed him, including those who would have the greatest influence on the development of the market society. James Mill (1773-1836) believed that society should be composed of persons who act solely out of the rational pursuit of their own self-interest. Mill concluded that only those deemed competent to know and act upon their rational self-interest should have any say in government. This meant to Mill, only those with property. "Only adult males, age forty, with a substantial amount of property, qualify because age and wealth are the best evidence of rationality." (Mill 38) Liberal philosophy as outlined by Mill required

government to govern according to the interests of the most powerful in society. The stories developed by these enlightenment philosophers were widely promoted as universal laws of knowledge. Yet they published no insight about how their writings might be limited or affected by their gender, ethnicity and situation as scientist-philosophers in 17th century European society. 'Command and control' approaches to social organization realized tremendous efficiencies in production but the benefits and costs of this production were not fairly distributed. The ethics of the approach was not widely discussed and Social Darwinists argued that 'command and control' by genocide was justifiable. The ethics and 'efficiency' of 'co-management processes' using 'command and control' approaches are increasingly questioned as First Nations in British Columbia grow to trust in the self-organizing components of their self-government and natural resources co-managing proposals. As alternative community-based management methods are being proposed and tried, new models for community self-determination in a redefinition of the central role of the state can be envisioned. (Friedmann 1981, Freire and Macedo 1987, Berkes 1989, Senge 1994, Gunderson and Holling 2002).

1.3 Literacy History

As population centres grew in Europe, so too did the need for central governments and for forms of writing. Dependency on 'command and control' of basic life requirements increased as people became subjects of cities and states. Oral traditions remained strong in cities, in rural areas and in traditional territories, for thousands of years before technological and social changes occurred that facilitated the widespread use of writing (Innis 1973, Heyer 1988). It has only been about three centuries since widespread literacy and learning became prevalent in Europe and its colonies. Changes in the technology of printing made books more affordable. These technological changes were accompanied with the rise of a merchant class that linked their wealth and power to literacy and reason (Eisenstein 1980, Heyer 1988). A general readership also increased with the service of lending libraries, often associated with universities. 'Enlightenment' was available to people who could read, and lived in cities near lending libraries. Literacy levels increased with migration to cities and increased productivity associated with the

beginning of an industrial revolution. Exploitation of labour and environments in Europe as well as people in other lands and in growing colonies helped to finance the new prosperity of the 'enlightenment' in Europe (Innis 1973). Philosophers of this "age of enlightenment" were excited about the new opportunities associated with literacy and regarded scientific and technological progress as a good thing; but they were apparently not aware of the impacts associated with such 'progress'. Now when we find it necessary to co-manage natural resources with indigenous peoples we are beginning to discover that our communication technology that facilitates control and domination is inappropriate. Although technology and literacy supports communication it cannot replace or provide a technical substitute for trust building that emerges from humans speaking and listening to each other in real, problem based learning contexts.

The belief that literacy has a great potential to do harm to society is well documented. Plato (427?-347BC) expressed serious reservations about writing. In the *Phaedrus* and in his *Seventh Letter,* Plato regards writing "as a mechanical, inhuman way of processing knowledge, unresponsive to questions and destructive of memory" (Ong 24). Paradoxically however, the oral method of philosophical thinking that Plato fought for maintained its influence to a large degree because of his writing on the subject (Ong 1982). For Jean Jacques Rousseau, although he was uncommonly suspicious of reason and progress, he regarded the development of writing as "a natural evolution tied to increased social necessity". (Heyer 47) Derrida points out that this so-called "natural progress" is a dangerous one since it is tied to the unquestioned dominance of reason. Derrida stated that for Rousseau "progress as regression is the growth of reason in writing". (Ong 22) He notes a paradox that "Rousseau condemns the evil of writing and looks for a haven within it". (23) Michael Harbsmeier warns of the danger in making literacy a "mode of excommunication" as he cites the diaries of early travellers who did not "make literacy and writing part of the definition of his own society as against some other". "Oral and written modes of communication", he says, "existed for them side by side without excluding each other" (Harbsmeier 1989). Harbsmeier echoes Derrida emphasizing that the violence of imposing literacy on oral cultures is even more terrible as it is done in the cause of 'progress' as "an imaginary product of the ethnocentrism of alphabetical writing and logocentric metaphysics". (200)

The 'worlds of sound' that compose social realities through oral tradition now bear a difficult relationship with writings (Ong 1982, Battiste and Henderson 2000). The founder of modern linguistics, Ferdinand de Saussure (1857-1913), called attention to the primacy of oral speech in human languages. He noted that although writing has usefulness, it also has 'shortcomings and dangers'. For Saussure, writing is a kind of a complement to verbal speech and it should not be regarded as a transformer of verbalization (Ong 1982). Though literacy has brought many benefits, Paul Heyer notes that human society cannot fully develop if the whole use of language is not realized:

> ...the richness of oral discourse far exceeds the ability of any writing system to give it accurate representation, and that while the alphabet accentuates developments in certain areas, science and technology for example, its reductive, analytic character sacrifices the fuller communicative range of oral discourse. As a result, progress founded on it is never complete. (27)

There is an unspoken bias of science and legal practitioners toward literate forms of communication (Heyer 1988, Cruikshank 1998, Thom 2001, Nadasdy 1999, 2003). As a result, disrespect can be shown to those whose cultures are sustained by sharing knowledge through conversation and oral tradition. Although orality and literacy form a continuum in language, there is a disincentive to engage in conversation, since written forms of communication imbue prestige on those who are more skilled in its use (Foley 1997, Baynham 1995). In an effort to improve information sharing with First Nations in British Columbia, forest managers should become aware of discourses in their professions that articulate ideological positions. As Baynham (1995) points out:

> Uses of literacy are not neutral, technical channels of communication, but are informed by deeply seated ideological positions, some explicit, some implicit. The relative dominance of certain genres of written language is 'naturalized' within the education system. (3)

Plato and Rousseau may be expressing their concern for the loss of a haven of orality in society – a loss of their sense of place in nature and culture. Ong (1982) warns that "literacy... consumes its own oral antecedents and unless it is carefully monitored even destroys their memory". But he also claims that literacy is infinitely adaptable and can be used to restore memory too. In *Protecting Indigenous Knowledge and Heritage -A*

Global Challenge, Batiste and Henderson (2000) point out that the havens for individual and community development are those that have developed as traditions over many generations within communities that strive to understand local ecosystems and all their relationships. Power to effect political change is within the grasp of indigenous leaders who use literacy as a tool to assist their communities to redefine self-governance and sustainability (Freire and Macedo 1987).

Autobiographical Note:

Unaware that I was following in a tradition of colonial government land management policy, I was dispatched from the center of power in Victoria to chart new territories for provincial and international exploitation.[2] *Over the course of six field seasons I lived in forest service inventory tent camps stationed at Narcosli creek west of Quesnel (Traditional territories of Carrier and Tshilqotin), Tyee Lake at Smithers and Fred Wright Lake near Stuart (Gitksan, Wetsuweten and Ni'isga territories) in northwest BC, Port McNeil and Holberg on Vancouver Island (Nuchalnuth territories), Lytton (Salish territories), Paul Lake near Kamloops (Secwepemcul'ecw), Williams Lake and Alexis Creek (Secwepemc and Tshilqotin territory) and Fort Nelson (Kaska- Dene). During that time I was unaware of any discussion about forest resources with the indigenous people or with any other people living in the local area. Through their local involvement and through their conversations with people in the communities and through contact with the Department of Indian and Northern Affairs, it is likely that district ranger staff were aware of some areas of important indigenous values, such as grave sites and other places where special claims had been made by Indian Bands. However, the necessary information to protect traditional uses of the land was not known to the BC Forest Service.*

Absurdly it seemed, we had no understanding of how our work related to the local community. Our formal relations with people remained as distant as our headquarters in Victoria. Informally, a few of us awkwardly participated in some traditional activities when invited, such as digging potatoes and berry picking in the mountains. We did not know how to speak about our work with community residents, and there was a corresponding silence amongst them that reflected their anxiety about our classification and reconnaissance mission. Why could we not share our knowledge and participate with people in the community development of villages and towns within the Fraser Canyon? This was a simple question; yet it always seemed to lack legitimacy when I asked it. The answer in part, is that there was no recognition by the forest industry and government of a responsibility as developers in rural communities to sincerely engage

[2] Derek Gregory (1994) describes these characteristics as typical for geographers: "surveyors, sovereign and adventurers" in their project of colonization.

systematically province-wide in oral communication about change in local communities. Although this seemed to be a naïve observation given the history of colonialism in Canada, it was nonetheless essential if we wanted to build sustainable communities in rural British Columbia. First Nations with aboriginal rights to the land, as well as municipal governments, and regional districts were assumed to be collaborating with provincial government in development initiatives but they were effectively denied access to the forest planning process.

1.4 Science History

The technology of the written word has facilitated scientific approaches to management (Ong 1982, Heyer 1988, Innis 1973). Information storage, display and retrieval continue to evolve so that management literacy is increasingly dependent on computers. However, rapid adaptation to change is also facilitated by conversation, downward delegation of power and systemic knowledge (Senge et al.1994, Holling et al. 1995). Computers and precise scientific language facilitates explanation among specialists but these technologies can also centralize power, restrict conversation and undermine systemic knowledge (Foucault 1980, Innis 1973, Heyer 1988). Forest managers' dependency on a technology of literacy can diminish problem solving at the field forestry level. Nevertheless a program for transformation can begin if the challenge of learning from communication crises is accepted and widely practiced.

Coupled with the industrial revolution, literacy and the science and technology for domination of nature was ripe for uncontrolled growth into the 'new world'. Emerging from a time where dependencies on 'superstition', feudal and community authority were giving way to free individuals empowered by reason and knowledge, in the 17th century until modernity, there was optimism in the application of science and reason. Scientific thinking was synonymous with mechanistic thinking and reductionism. The approach of "positivism" as described by August Comte, was the pursuit of positive knowledge by establishing facts through objective, reductive inquiry. Everything was reduced to smallest parts and observed and described as if it were a machine. The mechanisms – discrete objects of inquiry that were to be known - were predictable, functional, and inherently understandable objects and were seen from a distance by rational man. Rational men were persons who were the knowers, the observers and independent

subjects. Detailed measurements of objects provided data for quantitative analyses that allowed the reproducibility of experiments and the extrication of the observer from the observed. Mechanism assumed that our knowledge of the world and the language we use to frame this knowledge produced an accurate reflection of reality. Paradoxically, with its insistence of 'objectivity', scientific practice estranged people from their surroundings and from themselves, rather than making them more familiar through a progressive development of knowledge. The dissection of the universe into knowing subjects and known objects facilitated the externalization of a world and the creation of individual psyches. The results of historic developments founded in the philosophy of positivism have produced an objectivity that continues to impose catastrophic consequences on indigenous communities and ecosystems.

The practice of industrial development in British Columbia seems to be a proper application of science and technology as it was known to the philosophers of the Age of Enlightenment. There is still much the same enthusiasm for expansive use of natural resources without concern for environmental costs. Although there has been much learned through 350 years of science and technological developments, it is becoming increasingly obvious that environmental and social costs are monumental and still mostly unaccounted for. Social scientists and policy makers are not well equipped to solve the problems associated with destructive growth and to engage in adaptive transformation of practices. In British Columbia it has only been in the last decade that forest planners have seriously addressed diverse community concerns. The task of working with First Nations as equal partners in developing sustainability of forest resources is still not well understood in British Columbia. Adaptive and responsive problem solving with communities will require integrating communication media in human-to-human learning contexts so that western science and traditional ecological knowledge can begin to show opportunity rather than barriers for sharing common interests.

Autobiographical Note:

As forest development kept pushing further up the valleys, indigenous people were pushed further into the mountains. In the ancient meeting places of the prime valley floodplain areas, family homes, cultural values and traditional lifestyles were fragmented and often destroyed by roads. The subsequent landscape

disturbances caused by logging machinery and increased public access irreversibly changed and minimized the lives of indigenous families dependent on diverse forest values. Thirty years of logging developments between 1960 and 1990 caused massive unplanned cumulative impacts to local communities in British Columbia. It has only been in the last decade that the forest industry has begun to hear the voices of protest. During this process of road building and logging within the highest value forest ecosystems of the province, there was no serious discussion of mitigation and compensation for losses to indigenous communities. Despite outstanding land claims and repeated calls of aboriginal communities for treaty making since the early 1900s, the provincial government of BC continued to force their objectives of industrialization onto traditional territories. There was a subtle idea in BC society that the visible signs of progress are the impacts of road and logging development and that people 'naturally' resist changes that are 'good' for them. People that opposed such 'progress' were considered to be 'other than' and were easily ignored by 'right wing' political parties supported by timber developers and 'left wing' political parties supported by the woodworkers.

A recent legal requirement to negotiate terms of sustainable forest management with aboriginal title-holders and the Crown is focusing attention on the task of continued and informed discourse in a long term co-management relationship with aboriginal communities (Delgamuukw vs British Columbia 1997, cited in Thom 2001). The British Columbia Forest Research Extension Partnership FORREX, conducted a focus group survey in 2002 to determine natural resource information needs of aboriginal communities in the southern interior of British Columbia. The overall response to the survey indicated that aboriginal communities and their governments wish to co-manage their traditional territories with provincial authorities, but do not have the power to participate effectively (Michel et al. 2002). The isolation of aboriginal communities from problem solving processes in traditional territories is a significant cause of forest co-management crises. Results from the FORREX survey suggested that access to technology, scientific literacy and a "lack of respect" from government agencies are significant barriers to the co-management of forests in BC. Unfortunately, respectfully taking raw data offered by rural residents from stories about resource uses, quantifying these stories where this is useful, listening for related information and then negotiating agreement for representing this information in written plans, is not in the repertoire of skills of most natural resource scientists (Nadasdy 1999).

Natural resources co-management with First Nations presents new challenges to the province and to First Nations. Institutional and educational transformations must occur so that current co-managing processes are transformed. Aboriginal justice and natural resources sustainability initiatives can be served through adopting acceptable co-managing processes. Unfortunately, the necessary provincial institutional and educational transformations to facilitate improving co-managing process have not yet begun. As the need for site-level community involvement in resource use decision-making is ignored or minimized by the province, and as resource use demands continue to accelerate, the crises in natural resources management are likely to increase in severity.

In its history of implementing 'command and control' methods for social organization, the pervasive effect of science and technology, and the authority of the printed word, Western culture has insisted on dominating resource use decision-making from its central authority. In the process of its domination of nature ecosystems and indigenous cultures were degraded. Site level concerns of over-exploitation and loss of biological and cultural diversity have now reached crisis proportions. Today, as First Nations natural resources workers and provincial planners are required to work together and reach agreement on co-management initiatives within traditional territories, it is clear that there is much to be learned about how to listen and continually adapt to site level and community concerns. Provincial institutions are ill-prepared for training planners and for supporting communities in facilitating cross cultural learning and for developing self-organizing teams that can continually respond to adaptive management challenges across management scales. Scientific methods rooted in Western history and philosophy are effectively preventing the implementation of co-management of natural resources with First Nations and are failing in securing sustainability of forest resources from regional and provincial centres. Until more effective methods for stewardship of natural resources are found and as the complexity of effects of human intervention in nature increases it is likely that the scale and frequency of forest management crises will increase.

In the next chapter, research method is presented that has developed grounded theory to help explain the crises and opportunities for co-management in traditional territories of Northern Secwepemc First Nations.

2.0 Northern Secwepemc te Qelmucw Case Study Research

The following chapter presents research methods and the results of 5 case studies with the First Nations communities of the Nothern Secwepemc te Qelmucw.

2.1 Introduction:

Communication by speaking and listening and by sharing stories continues to be important for maintaining culture- but communication by reading and writing is the dominant method currently used by management authorities. Co-managing forest resources has been proposed by the Cariboo Tribal Council Treaty Society to address their outstanding claim to aboriginal title in their territories. This project has identified and explained the communication challenges for the co-management of the traditional territory of the Northern Secwepemc. There is little presently known about how the Province and First Nations can communicate effectively in such a way so that acceptable forms of co-management can actually be achieved at a practical level. Co-management has been defined as "the sharing of power and responsibility between the government and local resource users" (Berkes et al., 1991:12). The World Bank has defined co-management as:

> the sharing of responsibilities, rights and duties between the primary stakeholders, in particular, local communities and the nation state; a decentralized approach to decision-making that involves the local users in the decision-making process as equals with the nation-state" (The World Bank, 1999:11).

Co-management is also understood as:

> A situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources (Borrini-Feyerabend, 1996:8).

Carlsson and Berkes (2005) warn that most definitions of co-management do not fully capture the complexity, variation and dynamic nature of contemporary systems of governance. They list several problems with the current understanding of co-management:

> There are a number of complexities rarely accounted for in the conventional conceptualizations of co-management: (1) complexities of the State, (2) complexities of the community, (3) complexities of the dynamic and iterative nature of the system, (4) complexities of the conditions available to support the system, (5) complexities of co-management as a governance system, (6) complexities as a process of adaptive learning and problem solving, (7) complexities of the ecosystem that provides the resources that are being managed (67).

Due to this complexity co-management presupposes that parties have, to some extent, agreed on an arrangement. However, in practice the actual co-management arrangement is not predetermined and thus evolves and is a process rather than a fixed state (Carlsson and Berkes 2005). Preparing institutions for adaptive social learning is discussed later in Chapter 4 and 5 of this thesis as a method of addressing the inherent complexity of co-management decision-making. It is likely because of the complexities of co-management described above that there is yet no agreement for definition of "co-management" in NStQ territory. It is hoped that the results of the empirical research of this thesis may provide NStQ and Provincial government managers information to assist in evaluating and adapting their current co-management learning process on a path toward evolving acceptable co-management practices.

2.2 Research Method

The following research method section provides detailed information about the purpose of the study, the study terms of reference and the research method. The qualitative research completed in this thesis relies on the grounded theory method (Glaser 1998). Practising grounded theory requires that the researcher is careful not to pre-conceive the nature of the study problem. In this way, the problem for study is directed by the information from participants themselves. The direction of the study then is adaptive with the participant ideas. In doing grounded theory, the research problem is essentially designed by the research participants themselves in a process with the researcher. The substantive categories from data and the theoretical ideas about what fits together are allowed to emerge from interview discussions and become more refined from constant comparison of interview data (Glaser 1998). For example, in this study I quickly discovered during the initial interviews that an initial pre-conception that I had of

the research problem, was incorrect. As federal legislation requires forest co-management between the forest industry and First Nations, I had assumed there would be examples of productive co-managing processes already in effect. However, there are no mutually acceptable co-managing processes in the territories of the Northern Secwepemc. Although there have been some promising co-managing processes in resolving issues within protected areas, there are still no good examples or models involving forest licensees for developing co-managing practices within the NStQ territories. The moral force among the NStQ that encourages and supports co-management is a thousands-year-old mandate to continue to steward lands and forests sustainably, respectfully and adaptively into the future.[3] In the short-term, natural resources workers are trying to resolve problems in co-managing crises. If I hadn't adapted my questioning to this emerging concept, of co-managing crises, my early questions would have seemed manipulative or impossibly optimistic and quite useless for generating theory about 'what is really going on' in the short term.

In the long term, the ancestral problem of sustainably co-managing natural resources is being resolved in the treaty process – though the long-term struggle is also characterized by crises.[4] In Glaser's (1998) grounded theory terminology, the theoretical code used here to help structure the emerging theory is that of the "boundary family". For the purposes of this study the "boundary families" are essentially the same as the four case studies that correspond to the high priority short-term co-management crisis of each of the four communities of the NStQ. One other boundary family (i.e. case study) is taken to be the group tasked with the challenge of developing a long-term co-management protocol. (i.e. treaty team and related authorities) throughout the NStQ traditional territories. In this way there are four case studies addressing short-term co-management problems, and a fifth case study concerned with long-term problems associated with co-management.

For grounded theory to work effectively, the participants themselves, as the best authority on the subject, must develop their own concept of the problem. The researchers

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[3] Refer to direction from the Elders in Appendix 3 - NStQ co-management discussion paper.

[4] Theorists of organizational crisis and crisis communication find that organizations that prepare well for a variety of crises are most resilient to change (Mitroff and Anagnos 2001, Gunderson and Holling 2003). This concept of a crisis model for planning is discussed in chapter 4.

need to neutralize their own bias and the bias of any other research that they have read within the conception of the research problem. Glaser suggests that stating the problem at the outset of the research limits the self-organizing quality of the research and can prevent a concept of 'what is really going on' to emerge. Also, he warns that if the researcher has done a literature review prior to doing the survey, then this knowledge should merely be used 'as data' for an emerging statement of problem and not to force the data into an 'authoritative' problem concept. If done properly, conceptual empowerment for participants can be realized as "a substantive conceptual theory that explains how the participants in the substantive area continually resolve their main concern". (55) As the 'secretary for the participants' and a 'custodian of the process' the researcher must practice a level of humility uncommon in academic contexts. Researchers must be able to suspend their judgement about the nature of the research problem so that the problem and the theory are allowed to emerge naturally from the interview discussions. Glaser also suggests that if a researcher has a long-established and detailed pre-conception of some problem for study then they might interview themselves and use these data along with the emerging theory. In this way, the additional variables of the personal history of a researcher are visible and appropriately incorporated into the theory as data[5].

2.21 Study Purpose

The purpose of this case study research is to discover ways in which cross-cultural communication between provincial land managers and the keepers of aboriginal knowledge of the North Secwepemc te Qelmucw (NStQ) can be improved for the benefit of the whole of Secwepmeculecw, British Columbia and Canada. I hope that through identification and comparison of issues in the case study crises, conceptual empowerment will benefit participants. Glaser (1998) found that when well researched grounded theory clarifies concepts about an organization's issues of concern, then the issues can be collectively addressed by the organization in more comprehensive and creative ways. As

[5] Throughout the thesis in a personal and autobiographical format, I have written paragraphs describing key events that have affected my emerging understanding of forest management in British Columbia.

well as assisting conceptual empowerment in the community, another purpose of the research is to associate the field data with library research and to make recommendations about innovations in planning policy and procedures. Provincial authorities use scientific literacy to communicate forest management information. However, too much emphasis on reading and writing and not enough emphasis on talking and listening could weigh forest co-management decision-making heavily in the favour of those who are most proficient in science literacy. In the western political tradition, organizations are formally controlled and structured by written words and explicit communications. People who do not have a seat at the table or are not formally integrated into these organizations by the power of the organizations' words (i.e. its constitution and rules) do not have power within the organization. As the First Nations' tradition of formal discourse is directed in spoken words and tacit communication, a trust in all participants' humility and commitment to support the whole, is crucial. In our current attempts at co-managing which place emphasis on written words that are often formalized by the Province without consultation with First Nations, there is concern amongst First Nations and others that natural resource management institutions are excluding participants whose contribution of aboriginal knowledge would best be made orally.

2.22 Study Limitations

The research began by interviewing natural resource workers, elders, government liaison officials and industry managers who are currently involved in what natural resource workers identified as co-management crises in four aboriginal communities. The communities share boundaries and treaty interests as a collective called the Northern Secwepemc te Qelmucw (NStQ)[6]; though the distinct communities of T'exelc, Tsq'escen', Xats'ull/ Cm'etemc and Xgat'tem/ Stswecem'c[7] have historically governed

[6] "Northern Secwepemc te Qelmucw" means "people of the Northern Secwepemc". However, the individual communities of the NStQ have historically regarded themselves as autonomous communities and proud to be part of the Northern Secwepemc peoples, who are also proud to be part of the related whole of Secwepemc peoples generally (Shuswap Nations). Appendix 3 includes maps of the traditional territories of the Northern Secwepemc First Nations and a NStQ discussion paper on co-management.

[7] Practice pronouncing the communities' names in your 'mind's ear'. Practice should always be fun, although I am still learning the correct pronunciation of the communities' names (sometimes the elders

and continue to govern themselves each as autonomous groups. A fifth case study was conducted to develop a sense of broader perspective by interviewing participants who are involved with treaty negotiations and long- term development of co-management in traditional territories of the NStQ.

These studies will not be generalized to all aboriginal communities. While there may be broader lessons to be learned from the case studies, they are representative only of resource managers, educators and resource users within the NStQ territory. In this qualitative study, interpretations have been checked for accuracy by participants. Focus groups were organized to test assumptions and interpretations of data. The study is a first step in discovering the feasibility of cross-cultural learning organizations to balance orality and literacy in forest co-management planning in British Columbia.

2.23 Study Significance

Resolving forestry problems with community based learning organizations informed by traditional ecological and scientific knowledge is a new approach to forest management in British Columbia. This dissertation is only a small first step in a larger and much needed program for change in theorizing and practising forestry education in British Columbia.

2.24 Ethical Considerations[8]

A fundamental concern for this participatory/ action research is that the study should not further marginalize or disempower any of the study participants. A potential concern is that the advocacy theory might not be tenable when based on the facts derived from the interviews. The potential ethical concern is "what if the data indicates clearly that aboriginal communities cannot transform provincial forestry education networks to

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laugh at my pronunciation and sometimes they say 'that's pretty good'). It is a good idea to start from somewhere so that when you read the symbol in this text you can verbalize an associated sound: T'exelc sounds too me like "tla-helk. Tsq'escen' sound like "ts-kes-ken". The two communities of Xat'sull and Cm'etemc- sound to me like "hats-ulth" and "meh-temc". The two communities of Xgat'tem and Sts'wecemc, sound like "hat-tlem" and "stwai-kem".

[8] The unanticipated discovery that my research is formally approved by individual participants though not formally approved by the NStQ, as a collective, is an on-going ethical concern. A discussion of this concern is included in appendix 4.

enable local learning organizations to focus literacy training in the most relevant areas of community concern? Will this knowledge discourage the participants and those advocating change?" Though discouraging for some, finding the precise reasons why barriers to educational change exist can be empowering. It is anticipated that 'many of the clouds will have silver linings' and even somewhat disheartening news will have potential to be a catalyst for transformation, and an improved transformational theory. The study is restricted to aboriginal communities so that any attempt at a definition for a transformational theory (if there is to be any at all) will first derive from the interests of aboriginal people. The study was designed in such a way that participants were encouraged to work with the researcher in directing the purpose of the study, the data collection, analysis, interpretation and dissemination of research. In this way, ethical issues were addressed throughout the course of the research[9]. The following specific ethical issues were addressed in this study (Creswell 1998):

- The study has protected the anonymity of individuals, roles and incidents in the project.
- Data have been kept secure for a reasonable period of time so that they are not appropriated for other purposes.
- A copy of the transcripts of taped meetings with names of participants edited is available for the participant communities at their request.
- The participants were required to check the validity of the researchers' interpretation of data so that an accurate account of the information has been assured.
- The research did not use language or words that are biased against persons because of gender, sexual orientation, racial or ethnic group, disability or age. A good diversity of focus group participants has helped to ensure that language is used correctly.

[9] Implicit in the study design was hope for multi-year funding so that NStQ researchers could be paid to co-manage this research project with the researcher and UBC. As it turned out, funding agencies questioned the "relevance" of the project and so this project was not funded. Except for a portion of the researcher's travel cost - the project was completely funded by the researcher and through 'in kind' contributions of the NStQ. From a financial perspective this research could be regarded similarly as the other failed attempts at co-managing in NStQ territory- where the NStQ workers are asked for their ideas but given no compensation for their efforts.

- The study did not suppress, falsify or invent findings to meet the researcher's or audience's needs.
- In planning the study, special considerations were made to respect the authority, the contribution and the integrity of participant focus groups. The results of this study have not been misused to the advantage of one group over another.
- The study design includes a detailed research method so that readers can determine for themselves the credibility of the study.

2.3 Research Questions[10] and Interview Data

The questions provided guidance for the interviews. A mix of questions from two question sets, were used for all interviewees. One set of questions explored the theme of long-term co-management goals and the other set explored the theme of short-term co-management crises. Questioning was free-flowing, drawing from both question sets when feasible. An interview priority was to structure dialogue as a conversation rather than as simply an interrogation based on question lists. In some cases, substantive coding reflected new and rich categories of concept. This occurred when elders and others introduced relevant new ideas and questions that I had not thought of.

Initial focus group meetings found that treaty workers were primarily working to achieve long-term co-management benefits and that natural resource workers were working on trying to achieve short-term co-management benefits. The work on long-term and short-term projects is being done simultaneously. The treaty-related tasks of negotiating long-term co-management protocols have a different focus than those in day-to-day co-managing of crises issues; but they are just as important. Due to severely limited capacity for natural resources management, one community worker must assume many different roles in responding to integrated resources and co-managing crises. For example, on the job natural resource workers must spend long hours in difficult negotiations to conserve key traditional and environmental values in their territories, and at home in their communities they must also report to their band council on a variety of other long term, short term, and social and economic issues.

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[10] The two question sets used to guide interviews are included in Appendix 4.

The practical problems of communication are acknowledged in the question set which focuses on the co-managing crises theme. These interview questions developing data on short term crises of co-management were based on the ideal "human-in ecosystem perspective" outlined in Davidson-Hunt and Berkes (2003). The question set for a long-term vision for co-management was developed primarily from a discussion paper on co-managing by the NStQ (Mar.2004), and from readings from Ostrom (1990) and Pinkerton (1992)[11]. Initial focus group meetings determined that interviewees should not be grouped for separate analyses but that there should be one population for analysis and interpretation of question responses. Initial inquiry indicated that if co-management will work effectively, a cohesive effort will be required among all NStQ communities and between the NStQ and the Province. Therefore, separate analyses for the identifiable groups within the sample population were not considered.

2.31 Data Collection

This study uses the case study survey method since this is a collaborative approach well-suited for developing information in small communities (Yin 1994). Four community contact persons were designated. A fifth contact at the tribal council treaty society was also appointed. The tribal council and community contact persons collaborated with me to ensure that ongoing communication with the communities was maintained over the course of the project. Field data collection began when the interview process started in July 2004. Initial focus group meetings, following a community news article describing the research project, were held with the communities at Dog Creek (Xgat'tem/ Stwecemc) and Canim Lake (Tsq'escen'). Initial meetings were also conducted with the treaty team executive at Williams Lake in July 2004. Six interviews were conducted in September 2004 to help orient the project and to test the question set. The September interviews were based on questions derived from the NStQ vision for co-management and from the work of Ostrom (1990) and Pinkerton (1992). Notes from the

[11] In the discussion paper included in Appendix 3 the Secwepemc elders are clear in citing their continued sacred and ancestral responsibility to manage lands and resources in all their traditional territories to sustain all beings. One elder I interviewed was uncomfortable with the term "co-management" because it suggested two different paths of management. His point was that all must be managed with care and that there cannot be two ways of managing when 'all is one'.

interviews were coded (substantive coding) and from the focus group sessions and from the interviews it was determined that two theoretical codes had unexpectedly emerged to assist in further grounded theory construction. It was found that to address the issue of how to transform co-managing in the NStQ traditional territory, the project must inquire not only about long-term co-managing visions but also about the current co-managing crises that were of grave concern in the communities. A survey to look only at long-term co-managing prospects without examining what natural resources workers regard as short-term crises in co-managing, would not be grounded in what is actually 'going on' as positive or negative developments in the short term crises have significant effects on long-term visions. During the winter of 2004 I therefore re-configured the research process as four case studies of "co-management crises" and a fifth case study of long-term regional co-managing opportunities. I developed another set of questions to guide interviews on the subject of "co-management crises" and I asked the community contacts in each of the communities to decide on the most important "co-management crisis" in their community. I also asked community contacts for direction on who should be interviewed. I had hoped to interview eight to ten experts in each community. I completed fifteen interviews in three weeks of fieldwork in May 2005, eight interviews during two weeks in June and ten interviews during two weeks in July. I tape-recorded the interviews and also recorded a digital audio copy as a back-up in case of a malfunction of recording. A library of tapes and CD's were compiled to store the interview data.

2.32 Data Recording

Each 60 to 90 minute interview session was recorded for transcription and analysis. Detailed notes were taken and the 33 interview tapes and CDs and related written data have been maintained in confidence in accordance with our 2004 UBC Ethics Review Committee agreement. Prior to recording interviews an informed consent form was signed by each interview participant and an explanation of the research project plan and confidentiality measures was given. Audio information from the CDs was transcribed into Word format and transcriptions were stored on hard disk and a copy is being kept on

a back-up CD. The interview data analysis software ATLAS.ti (version 5) was used to store interview data for analysis. Transcribed interviews were imported as primary documents into one hermeneutical unit for qualitative data analysis using the ATLAS.ti functions.

2.33 Data Analysis

Qualitative data analysis is an ongoing process which according to Creswell (1998) is "involving continual reflection about the data, asking analytical questions and writing memos throughout the study"(190). The analysis used in this research was tailored to the grounded theory method for data analysis (Glaser 1998). The computer software ATLAS.ti was used for qualitative data analysis. It was used for maintaining the data, coding quotations (substantive coding in Glaser's terminology), and maintaining memos for codes. The network-mapping feature ATLAS.ti (version 5) was useful in developing aggregated codes and displaying the logic relations between these abstract codes (theoretical codes in Glaser's terminology). The theoretical codes became the foundation for the grounded theory building that ultimately resulted in the research findings. Graphic illustrations of how concept categories and their properties were generated from coded text data have been developed using the network feature of ATLAS.ti. The networks (theoretical codes) have been stored for further continual comparison and subsequent grounded theory building and analysis. Following Creswell (1998), the grounded theory method used here followed systematic steps: "generating categories of information (open coding), selection of one of the categories and positioning it within a theoretical model (axial coding), and explicating a story from the interconnection of these categories (selective coding)." In this project theoretical models were displayed as networks of codes, or maps. I also refer to these as "spider's-webs". A more optimistic metaphor could be "dream-catchers"[12].

In this research open coding was completed for transcribed interviews. Theoretical models were summarized from the five case studies and these have been developed into

[12] 50 networks of aggregated coding from interview transcripts that contribute to development of research themes for the 5 case studies, are included in appendix 2.

themes for a grounded theory of transformation. Links between interview data, themes and principles for co-management are made in chapter 4 and are also suggested in Tables 1 to 5 in the appendix. Strictly speaking, pre-conceived hypotheses were not used for the development of themes and co-managing principles (i.e. the grounded theory). Hypotheses should be grounded and emergent from interview data and only become part of the results of a grounded theory (Glaser 1998). However, after completing an extensive literature review and considering that I have previous working relations in NStQ territory it was impossible for me not to approach the study without some pre-conceived notions to formulate into a simple hypothesis. The hypothesis for axial coding (in Creswell's terminology) is the supposition that "the NStQ have traditional knowledge and information that can transform current approaches to forestry education and thus improve forest co-managing within their territory". The hypothesis was further informed by the following assumptions:[13]

- A transformation can occur that would situate oral knowledge at the centre of the forest planning system.
- The community would want to spend energy transforming formal forest management processes.
- A "new literacy" of the learning organization will help to "fast track" participant requirements to understand science literature and assist this transformation.
- The community will ensure over time that the transformation being applied is working.

The 'story line' of the selective coding is described in the above procedure for grounded theory analysis. This 'story-line' linking the categories derived from the data with the model will characterize the 'fit' of the data collected from the interviews with the theory of transformation advocated in this dissertation. The network feature of Atlas.ti has been

[13] This was the basic hypothesis used for theoretical coding. As grounded theory emerged from the codes it became apparent that the data was varied and strong enough to test for validity of related hypotheses. In Chapter four it is argued that the NStQ are leading in the transformation toward sustainable co-management in their territories by facilitating shared decision-making and by encouraging knowledge emergence in crisis situations. Further it was found that the grounded theory developed from the basic hypothesis could also support the derivation of four basic principles for co-management in NStQ territories.

used in building a 'storyline' by displaying, storing and retrieving portions of theoretical models to combine and recombine to best describe the emerging 'story' (i.e. case study themes). The nodes in the theoretical models (networks) display the name of the substantive code (category of statement) and also a paired number set (x,y), where "x" displays a value for the code's "groundedness". The code "groundedness" is the number of times that the substantive code was found in all of the case study interviews. The "y" variable shows the code's density or the number of links that the code has to other codes in all of the case study interviews. In effect, this tool is much simpler than it sounds and it is a good way to demonstrate the validity and connections between the final research findings, the theoretical models and the 'raw data' of the taped interviews.

2.4 Validation

Validation, like analysis should occur throughout the steps in the process of research. The following are some strategies that have been used in this research to ensure that validity is addressed (Creswell 1998):

- Results from different interviews were compared and contrasted to build a coherent justification for themes.
- Interview participants and community contacts were asked to review interpretation of findings to determine their accuracy.
- Using descriptive writing helps to give the readers a sense of the context and setting that also provides detail to help validate interpretations.
- Using self-reflection helped to create an open and honest narrative. This helped identify any bias the researcher brought into the study.
- Any information that ran counter to themes and data categories was also presented.
- Prolonged time in the field was spent in completing this research to ensure that an in-depth understanding of the phenomenon under study was gained. The principal researcher had previously been employed for one year as the community forest issues coordinator for the NStQ and had been a forestry consultant in NStQ territory for 18

years. The researcher referred to knowledge learned from previous field experience which helped ensure validity in the research project.

- Peer debriefing was used to enhance the accuracy of the research. Colleagues in the Faculty of Forestry at the University of British Columbia provided constructive criticism in the development of this work.
- A supervisory committee of four advisors (two First-Nations, two non First Nations) and an independent chairperson auditing the process was formed to review the project at key points in its development. Natural resources workers from the communities, the treaty team executive and elders were very helpful in providing critical comment, advice, opening doors and effectively assisting in the supervision of this research.

2.5 Narrative Structure

An analysis of discourse within focus groups and across focus groups informed the narrative structure. Some specific conventions were:

- Using the wording from participants
- Intertwining quotations with (the author's) interpretations
- Using indents or other special formatting to call attention to quotations from participants.
- Without distorting the facts, presenting 'bad news' in the best possible light for critical inquiry so that potentially discouraging information is still useful to the NStQ.

3.0 RESEARCH FINDINGS[14]

3.1 Northern Secwepemc te Qelmucw (NStQ) Co-management Visioning Case Study

3.11 Introduction:

Northern Secwepmemc First Nations' have aboriginal title and rights to natural resources within their traditional territories (Figure 2)[15]. This is in accord with Sec. 35.1 of the Constitution Act of 1982, as interpreted by the various court cases leading to the Delgamuukw decision of the Supreme Court of Canada in 1997. According to the decision, the method of realizing aboriginal rights and title will be found through co-managing natural resources between First Nations, Licensees and the Crown (*Delgamuukw 1997*).[16] Aboriginal rights are given protection as part of the constitution of Canada to protect these rights against the threat of a majority interest to extinguish them. However, as the Province of British Columbia is constitutionally empowered to manage natural resources (*Constitution Act 1982*), and since the Forest and Range Practices Agreement (2002) has not yet developed acceptable forest co-management protocol regulations for protecting aboriginal rights and title, a situation has arisen in which the federal government is requiring the Province to deliver a service that it is not yet prepared to do. As a result, there has been an inconsistent relationship between Provincial and Federal jurisdictions with respect to acceptable co-management practices. John Borrows (2002) argues that co-management can evolve with constitutional law by always upholding equal rights for First Nations with the Provinces of Canada. But this will require flexibility and imagination in interpreting Canadian and Provincial laws to harmonize with Indigenous laws. In arriving at the Delgamuukw decision, BC Supreme Court Judge Lamer concluded that aboriginal rights exist as pre-existing rights at time of contact with Europeans. Borrows shows that Lamer has 'frozen' aboriginal rights and

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[14] Note that Research Findings are based on a compilation of interview statements. Except for the researcher's necessary interference of re-phrasing substantive coding for clarity and to encourage the 'flow of narrative' and to avoid repetition, the research findings do not necessarily reflect the opinion of the researcher.

[15] Figure one indicates the approximate location of territories of the northern Secwepemc, other indigenous territories and the province.

[16] There may be a continuum of aboriginal interest in 'crown' lands ranging from aboriginal rights to aboriginal ownership. It may be useful to think of a corresponding continuum ranging from a moderate to an extreme requirement for a formal co-management protocol. The province is responsible for all potential as well as actual infringements of aboriginal rights and title to lands (Gordon Prest, pers.com.)

indigenous laws so that they are unable to evolve much beyond their relevance at time of first contact with Europeans.

> Aboriginal rights protect only those customs that have continuity with practices existing before the arrival of Europeans. Aboriginal rights do not sustain central and significant Aboriginal practices that developed solely as a result of their contact with European cultures... In order to claim an aboriginal right, the court's determination of Aboriginal will become more important than what it means to be Aboriginal today. The notion of what was integral to Aboriginal societies is steeped in questionable North American cultural images (Borrows 2002, p60).

Borrows argues that according to Lamer's (1997) definition of Aboriginal rights in the Delgamuukw decision, First Nations should not have had the right to assist in the development of the fur trade, nor to assist in developing the economic infrastructure that resulted in Canada. In his analysis of the decision to freeze aboriginal rights at the time of contact with Europeans Borrows (2002) warns that:

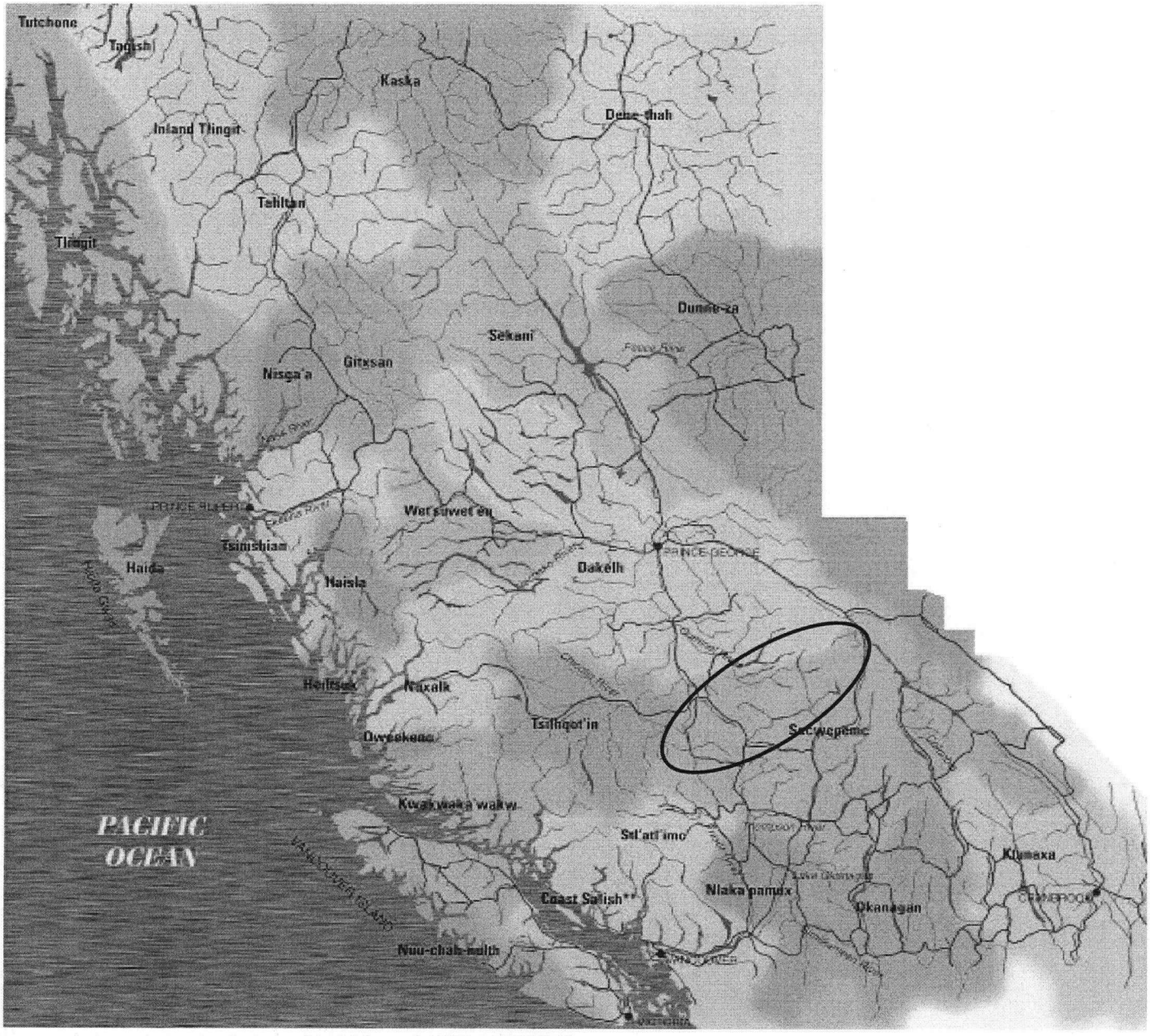
> This decision relegates Aboriginal peoples to the backwaters of social development, deprives them of protection for practices that grew through intercultural exchange, and minimizes the impact of Aboriginal rights on non-Aboriginal peoples. (61)

As long as future aboriginal title cases consider the rights of First Nations as secondary to maintaining internal consistency within western traditions of legal praxis, then the prospects for co-management are dim.

Another perhaps more hopeful result of the Delgamuukw decision is that First Nations can use it in the treaty process to negotiate an integrated understanding among governments of what "co-managing" can become with respect to First Nations self-government and aboriginal rights and title to lands and resources.[17] The project presented here has the primary problem of documenting the transformation of the practice of provincial forest management in NStQ territory from exploitative, bureaucratic and

[17] It might be useful to think of co-management as a self-organizing learning process in sites of change rather than merely a checklist of legally defined objectives (Graham Smith pers.com.)

=Approximate location of the Northern Secwepemc



Map not to scale

Figure 1 Indigenous Language Areas and the Province of British Columbia

Figure 2 Northern Secwepemc Territories and Sewepemcul'ecw[18]

[18] Map not to scale. Oval outline only roughly indicates the traditional territories of Northern Secwepemc Nations (approximately 56,000 square kilometres) and the overall extent of Secwepemcul'ecw (Shuswap lands) in southeastern British Columbia (180,000 square kilometres). On this map, Soda Creek is Xats'ull/C'metemc, Sugar Cane is T'exelc, Canim Lake is Tsq'escen', and Canoe Creek is Xgat'tem/Stswecem'c.

mono-cultural, to ecosystemic and bi-cultural.[19] How can aboriginal title and rights be realized through co-managing natural resources with the Crown? Answering this question fairly and comprehensively has been a goal of the NStQ treaty team since 1992. For the Secwepemc, developing nation-to-nation treaty agreements for stewardship of natural resources has been a goal since 1906, when they first made their formal territorial claim to the government of Canada. The Province of British Columbia has been slow to acknowledge aboriginal rights and title to natural resources. This is due to a legacy of colonialism that still operates not far beneath the surface of public service institutions in British Columbia. The 'good intentions' of our public service institutions to 'include the aboriginal interests' are superficial in effect and do not address the deep colonial structure issues that still haunt the administrative authority of First Nations, the Province and Canada. However, a transformation from colonial attitudes and approaches could be beginning within the public service in British Columbia. There are some hopeful signs that multiple sites of change are working simultaneously in small, scattered initiatives around the province. As natural resource managers become more confident, conscientious and imaginative in encouraging transformation from centralist colonial approaches to authentically co-managing natural resources, their cross-scale and cross-boundary effectiveness will accelerate. The interviews that inform the following case studies probe to discover key thoughts from elders, natural resource workers, bureaucrats, teachers, managers and technicians about the learning and potential for transforming the provincial public service into one that works to achieve eco-systemic and bi-cultural practices. Recognition of the urgency for transformation to an ecosystems approach for land use planning is not new in NStQ territories. The Commission on Resources and Environment (CORE) Act came into force in British Columbia in the early 1990s and provided much evidence to show that careless over-harvesting and the lack of integration of forest uses causes serious problems for sustaining whole ecosystem functioning in Crown forests. This was not 'news' to the Northern Secwepemc te Qelmucw. The NStQ

[19] Davidson-Hunt and Berkes (2003) provide definition of a "humans in ecosystems perspective", on which many of the interview questions of this research are based. Ostrom (1990) provides a starting place for understanding "co-management" and the research of Pinkerton (1992) has helped to identify challenges for implementing "co-management". The term "bi-cultural" currently lacks definition. Presumably, a definition of "bi-culturalism" in the context of managing natural resources will emerge as co-management process is instituted in British Columbia.

have had on-going concerns about the sustainability of natural resources for nearly two centuries since the problem of over-exploitation of natural resources arrived in their territories with gold rush opportunists, missionaries and colonialists. However, the rapidly accelerated rates of resources extraction over the past 30 years are causing concerns that have reached crisis proportions. In the early 1990s, a Commission on Resources and Environment (CORE) land-use planning process was assembled in the NStQ territories. At this time, the NStQ were fully engaged in developing their treaty table and were unable to participate in the CORE process. Although some industry participants were satisfied with the resulting Cariboo-Chilcotin Land Use Plan (CCLUP) targets and strategies, many First Nations and non-First Nations residents with more accurate local knowledge of the accumulated costs of poor site planning do not speak well of the CCLUP resolution[20].

The mountain pine beetle epidemic has now added a new layer of crisis, intensifying the urgency for developing a long-term vision for co-managing in NStQ territory. Since 1999, a mountain pine beetle infestation in British Columbia has grown from 0.2 million hectares to over 10 million hectares in size. The B.C. Ministry of Forests and Range (2005) predicts that the outbreak will kill 80% of all susceptible mature pine by 2013. The basic economic sector of the Cariboo-Chilcotin economy depends on lumber manufacture from rapidly diminishing pine timber supplies. A major reduction in pine production is imminent and the need for a long-term economic survival strategy is apparent to community leaders in the NStQ territories. Though they wisely chose not to participate in CORE negotiations in order to conserve their energy for their treaty process with B.C. and Canada, the struggle of the communities of NStQ to manage their natural resources, "in a good way", continues.

[20] A coalition of Cariboo-Chilcotin environmental groups registered a complaint in 1997 with the B.C. Forest Practices Board, questioning the legitimacy of the integration strategy and the implementation of the CCLUP. The NStQ did not participate in the initial CCLUP design and implementation; but are currently developing their own land-use plans to help refine the CCLUP and clearly register their concerns with the Region and the Province.

3.12 **Co-managing as Natural Resources Management**[21]

> *"I think co-management goes further than where we were at and where we are at with First Nations. We like to think of it as collaborative management as opposed to co-management... collaborative management is the sense or the relationship that we are in fact working with first nations ensuring that they are front and center in consideration of the things that we do... but at the end of the day they don't have a veto on the decisions that get made...whereas I would see co-management ...and I think they see co-management as having a mutual veto where one party can stop the process."*

After the next critical phase of NStQ treaty negotiations is completed, that is "the agreement in principle phase", there will be two main areas for natural resources management jurisdiction in Secwepemculecw. There will be aboriginal title lands and there will be co-managed lands. On aboriginal title lands, First Nations will have full decision-making authority for natural resources management. Recognizing the current difficulties that Provincial negotiators have with consensus decision-making, for now there will likely be two different types of co-managed lands in Secwepemculecw. There will be co-operatively (some say "collaboratively") managed lands on which the Province is required to accommodate First Nations interests in lands and resources, but where final decision-making authority rests with the Province. There will also be jointly managed lands where consensus-based planning will occur as a result of an on-going management relationship between the First Nation and the Province. To put this in a different way, in the consensus process the First Nation and the Province would each retain a veto power in the final decision. A "bull's-eye model" is suggested by the treaty team, where full decision-making authority is required by First Nations for aboriginal title, a 50/50 joint veto co-management area is proposed for areas around title lands and a collaborative management area is proposed for all areas beyond the jointly managed areas. This is very similar to the model that eventually became implemented by the Nisga'a Treaty in Northwestern British Columbia. Although consensus decision-making is the traditional way of resolving disputes in NStQ society, the Province seems to distrust the consensus

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[21] This theme is derived from one theoretical code- "Natural resources management as co-managing" summarizing 5 substantive codes from the interview data.

approach. Instead, the Province seems to prefer a collaborative model whereby government maintains decision authority.

3.13 **Co-managing is not Consultation**[22]

> *"...as the natural resources worker I get a map saying that there's going to be some logging and I have no resources to even go there and look at the place - I get sent a map on an 8 and a half by 11 thing and I have thirty days to respond otherwise it's assumed that ...yes... And it's an impossible situation - that's the referral system..."*[23]

> *"...I just about give him heck ...what are you trying to tell us... this is all our interest not just this one tiny little strip - I feel people get caught in those traps - I'd like to look at the big picture not just one tiny little square - that's what we need with co-management we need the big picture not just those little squares..."*

Interviewees indicated that collaborative management is currently characterized by weak consultation, by failures to accommodate First Nations' interests, and by inadequate funding of long-term planning process. The British Columbia Ministry of Forests and Range and the Ministry of Environment have capacity both with personnel and discretional spending to hold annual co-management reviews. First Nations have a very limited capacity to participate in these reviews. It is unrealistic to expect comprehensive community participation in co-management planning without sharing resources for planning. Interviewees, including some from forest companies and government, were aware that the transformation to sustainability can be harmed by weak consultation methods. Several noted that forest planning is currently a government-and industry-dominated process and that the planning process follows an inflexible planning framework that is designed for short-term development plan approvals. The Forest and

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[22] This theme is derived from one theoretical code- "Consultation is not co-managing" summarizing 18 substantive codes from the interview data.

[23] A consistent though unconventional punctuation for quotations throughout this document tries to accent the basic rhythm of the speech of interviewees. Combined use of quotation marks, italics and indentation distinguish quotes from the text. Where there are three dots at the beginning or the end of a quotation this means that the idea is connected to a previous or subsequent thought. Where there are three dots in the text of a quotation this indicates the completion of a phrase and a 'full rest'. Where there is a ' – ' in the quotation this indicates a 'half-rest'. Occasionally I use '...(pause)...' to indicate that a much longer period of silence is used in the speech.

Range Practices Act has specific regulations for monitoring regenerating timber values; however monitoring of cumulative impacts on non-timber values and the long-term monitoring of regeneration of non-timber values is not required in the regulations. One interviewee noted that short-term approaches to planning accompanied only by consultation opportunities contradicts the whole purpose of negotiating a better partnership through treaty, between First Nations and the Province.

> *"...A lot of the problem with government is that they just want to consult without hearing what we have to say... I think that's where a lot of that block is... sure we can go to meetings and listen ...but there's really no voice and that needs to change..."*

> *"...they had this big map on the wall and they had overlays - one for berry areas - hunting areas - traditional use areas - one for trap lines and another one for naming... and some smart person over there went and threw those overlays away ...and now that's lost now because the elders have gone now that named these places... they told us where they went to get this berry or root and medicine... That was a bad thing to do to lose that information... at that time we didn't have any mapping thing like they do at tribal council to do that... at that time people were leery of passing that information on to any government agent so that information was lost and at that time they had everyone go in ... it felt weird to be asked to go in and talk about different things there..."*

NStQ interviewees indicated that co-management and collaborative management means not only a sharing of responsibilities between different interest groups but also between interest groups and the lands, fish, wildlife and biodiversity resources. Through respect for shared or co-managed research, the costs and benefits of current forest uses can be compared with the long-term costs and benefits of alternative uses. The co-managed research can then guide mitigation and compensation strategies to address the concerns of First Nations who have traditional livelihoods that are put at risk by logging in areas of high non-timber forest values.

3.14 **Co-managing 'Literacy Crises'**[24]

> *"... we were told that we (First Nations) have more political clout with government on these (natural resources) issues... yet it doesn't seem like we do... I don't know... maybe just proper wording is just what we need... like myself I've only had grade 8 education... if I had education I'd be dangerous (laughs)."*

The literacy crisis is best understood as a crisis of communication. The problem is not so much that the NStQ communities cannot understand in a literal way the plans and written communications that come across their desks. The natural resources workers of the NStQ communities are continually astonished by the major gaps in consistency, lack of seriousness of purpose, and weakness in logical reasoning in the memoranda that they are required to review. The problem is more that the NStQ do not understand why government and industry representatives continue to write requests for approvals that are so poorly defined. Why do they not back up their written words with verbal explanation, field trips and respectful gestures and the financial support that could help put a good long term co-managing relationship on a solid footing with the communities?

The roots of the literacy crisis are in the incapability or unwillingness of government and industry technical staff to put their writings sensibly and adaptively into words and deeds. There are several key differences in cultures and perspectives that tend to institutionalize a literacy crisis between First Nations and government. On the one hand, government ecosystem managers with the highest authority are best characterized by their low level of knowledge of particular ecosystems; on the other hand, the NStQ ecosystems managers typically have a richly detailed knowledge of ecosystems of concern but little or no management authority. Combined with their western technical knowledge, the traditional knowledge of the NStQ manager relies very much on experience and on the stories of a holistic 'lived' understanding of community members. Community knowledge exists of particular wildlife populations, herds and even individuals; there is also the knowledge of responses of different vegetation to degrees and types of disturbance; as well as knowledge of the location of water and water flows. Seasonal and long-term knowledge of growth and yield and depletion of different species

[24] This theme is derived from one theoretical code- "Literacy crisis" summarizing 9 substantive codes from the interview data.

is strong in NStQ communities. The knowledge is not randomly accessible from databases, nor will it ever be. It is in a much better format for human and community use. It is primarily accessible through the medium of story telling, preferably in relevant field locations. An NStQ educator emphasizes the value of stories for teaching:

> *"...If you tell me a story I can reflect on it very easily... If I study on a text I will probably also reflect and come to some conclusions and through my experience become wise – hopefully - but story telling is an easy way because it is a passing on of more of the knowledge it's head and its experience and tradition and all kinds of things being passed on at the same time to somebody else and someone else receives that and digests that very easily and it can easily become a part of that person perhaps. Story telling is a very powerful form of education..."*

Land-use managers have literacy skills and explicit knowledge of specific well-defined and discrete subject areas. Often coming from cities to rural contexts, many officials never learn that their sometimes rudimentary knowledge of forest management needs to earn credibility at the level of the forest and forest community. An imagination for alternatives to current management approaches is constrained by inflexible, theoretical ways of understanding, frequently learned through rote memorization of standards, rules and regulations. Nevertheless, properly supported alternative approaches can occur and grow in value through encouraging learning over time, through stories of pilot projects and problem-based learning initiatives.

> *"...Like I said it's a journey ...for the people...with the computer and a pencil.... You can have a dozen papers in one big paper like one... continue your journey I said... we can put this down and take the best things what should not happen what should happen and it will come out on a small piece of paper this journey that we are going to. This is something I look forward to..."*

All of the natural resources workers and many of the band staff and forestry workers are able to translate key issues into simpler terms for community comment and direction. It appears that it is now the government and industry that are failing to resolve their part of the literacy crisis. Many government and industry employees still fail to understand that they have a responsibility to follow up consistently on written messages in verbal words and ideas. When government and industry can acknowledge the two-way nature

of the literacy crisis, that both partners have responsibility for the quality of communication, then there is much that could be done to improve co-management and collaborative management.

> *"...There should be involvement with mapping with everybody ... I know there's more knowledge to be learned from band members... Now we've got introduced to 3D mapping - they're going to show us how we can use 3D mapping... Everything is right in front of you and it's just like you're there... mapping is changing..."*

> *"a thing we have to do in order for the NStQ to engage with government properly is to get the NStQ land use plan out... It has to be a higher level plan and also informed by the community land use plans... If we have a land use plan that is consistent with provincial legislation then they have to look at it... The land use plan on every level will help us engage with government..."*

> *"...Maps are kind of like an agreement...you can interpret things into a written document or a map... Maps can trigger conflict... So maps become pretty important they either bring about consensus or they create conflict - or they can be ignored as we have seen - just downright ignored - I guess behind the map there must be legislative tools that will bring about the agreements that are on the map and if the words that are behind the map are not clear and strong then the map can be ignored... And I think that might have happened to us in CORE ...we didn't have as much legislative power built into the words and there was no legislative will behind what was written - but there was little backup at the staffing level to give the legislation power and teeth for monitoring and enforcement..."*

There are short-term technological solutions that can be implemented immediately for building shared visions and a systematic understanding of the landscape. Mapping software that produces three-dimensional models of the landscape stimulates holistic thinking, team building, mental models and an individuals' sense of responsibility by making map data appear more akin to personal experience (Lewis and Sheppard, 2005). Maps can facilitate agreements and they can actually constitute agreements (Baskerville 1990, Brody 1981).

Although words and maps are crucial in facilitating agreement, it is also important to respect the limits of what can be translated across cultures, either by maps or through writing. Some meanings will always remain in the Secwepemc oral language and in the

Secwepemc culture. There will be limits to what the elders want to know about ecological and forestry language, just as there are limits to what most scientists may feel that they want to learn from Secwepemc. Nevertheless, both ways of knowing ecosystems must be regarded with equal respect for co-management and collaboration to work effectively.

3.15 **Co-managing for New Relationships**[25]

> *"...I really do believe its sitting down together, working together in a team approach and taking the other parties seriously and vice versa and making decisions that are for the best of the natural resources... That's how we can improve co-management... We've done it for thousands of years and the governments' only done it for a couple of hundred years and they 'know best'... I try not to get sarcastic about it... But you know... I really don't believe the respect's there... at the... end of the day they go ahead and make the decisions that...(pause)... that can change... I do believe things change...but I don't believe sometimes that things change until there's a crisis ..."*

Clearly, a new relationship is required between First Nations and the Province so that co-managing can resolve rights and title issues in NStQ territories[26]. Interviewees indicated that there is growing recognition that conflict over Provincial use of Crown lands cannot continue to be mediated by the Supreme Court of British Columbia. Recent Supreme Court decisions have shown that it is the Province and the licensees that are to blame for poor co-management practices and that it is the Province that must work to resolve the difficulties. If the Province and its licensees are interested in cultivating a new relationship, it will be necessary for them to develop a new paradigm that respects long-term community development goals. A completely different approach and a different type of co-management practice will be required. A management approach that fits with the non-linear dynamics of ecosystem and community complexity is needed.

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[25] This theme is derived from one theoretical code "New relationship" summarizing 8 substantive codes from the interview data.

[26] In 2005 Premier Gordon Campbell announced a "New Relationship Initiative". Although still poorly defined it does represent official Provincial acknowledgement of a communication challenge with First Nations in co-managing natural resources in traditional territories.

> *"...management changes and then you got a whole new group of people in there who may not be up to date or may not have that relationship where there's trust... that's the biggest word right there between government and anybody is trust. I know we've opened our doors and kept the door open - see what happens... I know we've put a lot of trust in people we haven't worked with before - you know Ministry of Environment and them - starting to make those baby steps towards trust - but I think it's going to take a while..."*

Negotiating the methods between the Province, its licensees and First Nations to self-organize for co-management could be a feasible starting point in cultivating a new relationship. Interviewees indicated that the Province should not impose its own approach for co-management and expect that this is different to colonialism. A new relationship needs to be negotiated and it cannot be decreed 'from above'. If trust is shown to negotiators then self-organization to co-manage adaptively from the local level down to the regional and provincial levels could be negotiated through the treaty process.

In the current approach, opportunities for self-organization to develop locally 'grown' approaches are not considered seriously and incorporated into long-term collaborative management strategies. NStQ natural resource workers and government and industry planners have the capability and are in the best position to self-organize to address the problem of how to co-manage NStQ lands and resources. Creatively discussing a variety of alternatives and options for co-management among local planners, and deciding on preferred options, can then become the first critical step in embarking on a co-management relationship. The idea of imposing a Provincial co-management template for natural resources management is reminiscent of colonialism. It has been a source of concern and ultimately carries a high potential for crisis in the NStQ treaty process. There have been many long and unproductive hours of treaty negotiation as a result of this problem of not preparing for a system that can empower and implement adaptive self-organization for co-managing at the field level, in NStQ territory. Such an adaptive process of self-organization cannot by its very nature fit into a strict time frame for 'completion'. The development of co-management in NStQ territories will be ongoing and constantly iterative and adaptive to new local, regional, provincial, national and global information.

"...It's a struggle- we need our young people educated - they need their education... hopefully our young people coming up are aware of what's going on now because right now it's an awakening of our voices ...that are you know... trying to reach out to anybody that are reaching out to get together... and to work together... it's happening now slow... I'm glad that you're here... we need to work with the university to make things happen in a positive way in an assertive positive way... I don't like to work with anything that is negative - I shy away from negative stuff- you need a balance for any project - the pros and cons - you need a long term goal... That's what I'd like to see come out of this - that's a long term goal that can work for all governments...especially with First Nations... its coming..."

"...When people understand the importance of our information then it can be better... if it doesn't make sense to someone then they're not going to buy in to it. When people keep saying I'm like this because of residential school... you're like this yes- but you survived it - understand that you survived it... and what do you have to teach people about this?...You could pay me dollars for the abuses that I went through but that wouldn't pay for anything that happened to me... All of the things that have happened... but there are still those of us that lived ...the strong are still here and we survived because we were stronger and maybe because we were willing to listen to elders...there are certain things people need to do to help themselves..."

A new relationship with the NStQ must learn to more fully understand and value traditional knowledge. If historic accounting were done of the value of official and unofficial advice that the NStQ have freely given that assisted in development of their territories, there would be much more respect today for the purpose and value of traditional knowledge. Traditional knowledge was freely traded in the expectation that fair trade could be understood and trusted without 'writing everything down' and without the Province or the Department of Indian and Northern Affairs standardizing and controlling the process. Respect and reciprocity were the rules understood by hosts and guests in relation to traditional knowledge, but these rules were nowhere written in the laws of the colonizing government. History shows us today that respect and reciprocity are not shown and that the benefits to the dominant society in the development of NStQ territories have been bountiful, while the costs to NStQ society have been devastating. There is still much to be done in writing down rules of respect and reciprocity with nature and between cultures.

To improve co-management it will be necessary to respect that First Nations have a financial interest and a training interest in the sustainable management of forests. The financial interest is not a 'one-time' payout, nor can training and employment interests be construed as 'make-work' projects. Sustainability of both financial and land-based values is crucial in negotiating resolution to outstanding aboriginal title issues. By adding their knowledge, sharing their skills, information and energy in their traditional territories, the Northern Secwepemc te Qelmucw have already added much value to natural resources in their territories. Traditional use studies, rural health and community development projects, as well as forestry, wildlife and fisheries management and monitoring assistance are just a few of the crucial services that NStQ have been providing to the Cariboo Chilcotin community.

> *"... if the younger generation are going to work with the elders they should go there not just to find things out if something goes wrong but also just to go visit them... like some of the elders don't come out any more because they say it doesn't do us no good to talk because no one listens - they don't want to hear what we're saying - they're not ready to hear what we're saying and the more years that go by - the older they're getting and you're going to lose all that information..."*

Natural resources management is a long-term commitment. Building trust and a "human-to-human relationship" among the members of the adaptive learning organization will be the first key objective of the organization. This can be done in life-world contexts where participants share their knowledge and their stories as they work toward acceptable co-management solutions. A new relationship with First Nations will require a paradigm shift in the way planning business is currently conducted with industry and government.

> *"...I have found that the basis of bringing about agreement is when you help people to want to help the other person... then you usually can come to agreement ... The communication should be designed to help us understand each other and what our needs are... Try to get you to help me to solve my needs and me to help you with your needs and then agreeing to help each other..."*

3.16 Theme Five: **Comanaging Process: "Heart"**[27]

> *"...they have designed the corporation to not spend money... nobody has the authority to spend money. Have you looked at the morale of the people - the morale of that company is worse than working in the Forest Service, than in the government situation. I just look flatly at the companies and just slam the management policies 100% and men like (a specific forest company CEO was named here) who have just lost their heart - its not what his Grandpa had started at all..."*

The idea of putting one's "heart" into the task is a theme that has emerged very clearly during the constant comparison of substantive categories throughout the interview process. Taking personal responsibility for team building, systemic thinking, developing mental models and shared visions is found to be lacking in planning processes in NStQ territory[28]. Several interviewees stated that forestry employees both within industry and government do not seem to have their "heart" in their work. Many seem unhappy in their work and "look forward only to their retirement" and, crucially, do not see much purpose in taking risks to improve existing forest management systems. Certainly in industry and government, corporate policy has sought to increase control and to minimize risk. With key decisions strongly being influenced 'from above', most planners and negotiators remain demoralized. Recent industry consolidation has centralized more power in fewer operations and has consolidated more timber licenses in fewer permits. Fewer players 'at the table' results in a simpler and more powerful economic 'game' for government and industry. With a corresponding consolidation of power in bureaucracy there is a stronger climate of colonialism. First Nations have been invited to a seat 'at the table' though it is noted by several First Nations' representatives that the invitation usually lacks 'heart' or sincerity. For one thing, their invitation to participate in co-management planning usually lacks adequate funding to cover the cost of meaningful involvement. For another thing, a sense of long-term management purpose is lacking at the table. Planning

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[27]This theme is derived from one theoretical code- "Heart"- derived from 15 substantive codes from the interview data.

[28] Yet organizational theorists agree that these are precisely the attributes required for organizations to be successful, now and in the future. In subsequent chapters, this thesis includes discussion of proven management paradigms for systemic thinking and management approaches developed by keepers of traditional knowledge and in parallel with organizational theorist Peter Senge, and applied ecologist, Fikret Berkes, Carl Folke, Crawford Holling, Lance Gunderson and others.

initiatives to envision sustaining all land values for seven generations are assumed natural in traditional ecological knowledge[29]. However, such 'low impact' harvesting guidelines - even those recommended by law, in the Mule Deer Strategy of the Cariboo Chilcotin Land Use Plan, are unpopular with government and industry managers who have grown accustomed to extracting the majority of marketable volume from the first and second pass in five year development plans. Such plans are thought to lack "heart" because in their implementation, they cause many lost opportunities for managing for long-term and diverse natural and cultural values.

There is concern that the Ministry of Forests and Range is not presently doing the basic service of monitoring compliance or enforcing the Forest and Range Practices Act regulations. There is concern that the Provincial government is not encouraging growth in diversity of the forest sector economy[30]. With the legal mandate only for managing to a five year allowable annual cut constraint rather than to long-term ecosystem area health indicators, there is a tendency among licensees to compete for the remaining stands and to value timber solely as a commodity, rather than considering area constraints and forest ecosystem networks that support a complex of biodiversity. That the licensees' legal tenure is for the supply of a specific volume of timber to industry rather than being associated with a co-managed land responsibility, discourages stewardship potential.

The task of building 'heart' and personal responsibility among managers in a long-term stewardship plan that cares for multiple forest values, is not served well in a volume-based tenure system. Entrepreneurial skill is not well-served in a forest economy that depends on the sale of huge quantities of single product volume to a few markets rather than on a greater diversity and higher quality of products to many markets. The licensees are responsible for logging and replanting a certain volume of timber. They are not necessarily responsible for conserving all associated long-term area values. The

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[29] From the perspective of an interior Douglas fir ecosystem management, (IDf is an important zone in NStQ territory) a three- pass selection harvesting system will take at least 150 years to accomplish. When recruitment of coarse woody debris is considered, then 200 years or about seven generations for ecological succession, is a reasonable sustainability assumption. In some areas where high crown closure must be maintained for mule deer values, more time must be carefully budgeted.

[30] Promising initiatives for economic renewal in forestry in the Cariboo Chilcotin Region were dismissed by the Liberal Government when they stopped funding all Forest Renewal B.C. projects in 2003. In 2005, there is a new provincial interest in developing forest economic strategies for the region. The long-term benefit of this new proposal to diversify the Cariboo Chilcotin forest economy again remains to be seen.

licensees are not required to explore the potential for encouraging community stability by adding value to timber. The legal responsibility to only manage timber volumes and reforest areas effectively ensures that the industry has no clear political or economic incentive to communicate with local residents and First Nations. Timber volumes and tree planting can be managed without community input; but it is the knowledge and care for the more subtle values of the forest that requires the sensitivity, local knowledge and care of many people with a personal commitment to the task.

Nevertheless, there are also heroic stories of transformation that engage 'heart' which can be told to help reverse an accelerating process of collapse of the local forests and their economies, in the NStQ territory. The story of the Likely/Xats'ull community forest tenure is one that is examined later in this research project. To tell stories about how small communities engage 'heart' to seize opportunity in times of crisis is an education for community survival. Survival education through story telling is a key component of Traditional Knowledge but is not yet widely encouraged within and between forest-based communities. Dialogue about success stories could serve to create a human-to-human bond between government and industry and community planners across regions and territories. Meaningful dialogue through story telling, about success through perseverance and heart, is a small investment now for building community sustainability into the future.

3.17 **Co-managing 'Lived' vs. Statistical Understanding**[31]

> *"... Unfortunately there isn't a lot of knowledge about the forest that we come out of high school with... And I think First Nations to the extent that they are still on the land probably come up with an appreciation of the forests which is superior to the non aboriginal understanding of the forests and I would say that's the traditional education where it functions is superior... so I think it needs to be taught at the high school level... and at the college level it has to be there... And it has to be on-going... because there's new information coming - new applications forthcoming - so its got to be part of professional upgrade and extension work..."*

[31] This theme is derived from one theoretical code "Holistic vs. Statistical knowledge" summarizing 15 substantive codes from the interview data.

At present, there is still a tendency to re-invent the same conflicts and re-invent the same solutions rather than to learn together between communities, across regions and throughout the province, how to resolve similar types of conflict. Hence the struggle for respect and recognition is ongoing in the case-by-case rulings of the Supreme Court, which repeatedly emphasize the poor co-management practices of the Province and its forest licensees. Traditional forestry schools and colleges in British Columbia are failing to train their students in the art and science of sustainable forest management. This is perhaps due to the fact that the management system for these institutions is removed from the forest and communities. From the perspective of forestry schools it is natural to learn and teach forestry in detached fragments of knowledge without the essential cross-reference to whole ecosystems and communities. Although students receive information from a diverse range of subjects, there is little emphasis on synthesizing new knowledge or even in perceiving relationships between the types of knowledge they are taught to memorize. Students have difficulty finding real contexts for integrating diverse sets of knowledge about communities, ecosystems and economies. They also fail to accumulate skills necessary for managing meetings to encourage diverse community opinion and to adaptively work to resolve forest use conflicts.

> *"...they need to take the time to stop and listen and I think... that would have a lot to do with trust too... once they start coming down to individuals and communities' level... they would start realizing its not what they thought and then people might start trusting them... there's a lot of improvement that needs to be done..."*

> *"...sometimes the policies don't work... you have to learn the ground truthing - and we're good at ground truthing... but to have someone high-high and then work down ...it just don't work... they do all these studies and they figure that they've got it down to a 'T' but they don't - that's what I see anyway...".*

Acceptable cross-cultural forestry and land-use training, must begin in high school. The training should teach acceptance that TEK is equal to scientific knowledge in its contribution to the integrity of acceptable site-specific land-use prescriptions. Unfortunately however, the ideas associated with colonialism are still prevalent in the belief systems of many rural people in NStQ traditional territory. A series of problem-based learning workshops for indigenous-cross-cultural awareness training should be

produced provincially and adapted and endorsed by local indigenous communities for presentation in communities. Some campaigning as well as adult education seminars to show the benefits of collaboration with First Nations will assist in cross-cultural bridge building and will serve to develop a foundation and direction for adaptive learning organizations into the future.

Western scientific management, for the most part, relies on literacy as well as inductive (statistical) and deductive (theoretical) science for its claim to the 'truth'. On the other hand, traditional resource management relies on the spoken word as well as a keen awareness of changes in local site indicators. Traditional resource management has a holistic 'lived' understanding that defies written description. Through story-telling, on-site verification, multi-sensory perception, consistent comparison and lessons from the elders, a holistic and lived 'adaptive management protocol' for resource use has been 'implemented' by the NStQ. Reading print primarily causes a literate/statistical understanding of "natural phenomena" by foresters. The meaning of literate knowledge is not expected to evolve by trial and error from integrating social cultural and forest values adaptively. Rather, foresters are inclined to develop their conclusions by referring back to their lessons about 'objective' science and the 'dispassionate observer', and by deferring to the 'common-sense' and often colonial attitudes of their peer group and supervisors. An exceptional student with research funding may develop a statistical understanding of discrete populations. Thus in formulating their conclusions and in making their policy prescriptions they are really only competent to use statistical surveys that pertain to regional 'verification' of population attributes – such regional verifications most likely do not have predictive 'power' or much management relevance at the site level. Conversely, traditional knowledge is very reliable at the site level but requires much discussion and collaboration with hunters in other territories to be reliable at a regional level.

Cross-cultural bridge building can occur when forestry terminology is used to explain traditional approaches of First Nations. Many natural resources managers do not have the interpretative skills to take science concepts and convert these to ideas at the scale of stand management, the region or province that can be readily adopted by First Nations. If some common language was mutually understood in discussing co-managing concepts

across scales or levels of management, then the Cariboo Chilcotin Land Use Plan could adaptively adjust its targets to accommodate First Nations' targets. An adaptive learning organization would provide for flexibility into the future in making adaptive changes to both the Cariboo Chilcotin Land Use Plan and to treaty as environmental and social conditions change. In the short term, properly funded and empowered co-management pilot projects strategically located could help to start the necessary long-term institutional transformation of forest management in the NStQ territory.

3.18 **Co-managing Institutional Change**[32]

> *"... Well it ought to go back to first principles... I think there is a problem if the information from research is not feeding in to answer some of the questions... so I would say that some of the resources that come from economic development in the foresty sector - a certain portion needs to go back into at least applied science..."*

There are clear benefits in combining the integrated site-specific knowledge of indigenous peoples with the specialized and comprehensive knowledge of scientists. However, forest management institutions have, as yet, been unable to do this effectively. Some institutional change is required to utilize TEK and scientific knowledge respectfully, adaptively and effectively. There will be both a long-term and a short-term component to this change process. It is popular in the vernacular of forest planners in British Columbia to refer to their plans as 'living documents'. There is, however, more to bringing a planning document 'to life' than merely drafting new clear-cuts on a map every five years, and attending to the replanting of previously drafted ones. The metaphor of bringing a plan 'to life' is a good one – but it must be earned. Continual experimentation, monitoring and adaptation are necessary to 'grow' an adaptive management process. The living plan is not just a map, but it is a social, economic and cultural institution empowered by groups of appointed individuals using traditional and western science for continual care of all forest values in a territory. Researchers must be flexible in this approach to utilizing all kinds of information when developing their site plan prescriptions. The luxury of being an 'objective observer' somehow immune from

[32] This theme is derived from one theoretical code "Changing institutional design" summarizing 11 substantive codes from the interview data.

"subjective" or "off topic" questions has become peculiar to 'colonialist colleges' and much too strange and expensive for communities to entertain seriously. Change occurs continuously in the forest and critical decisions affecting the life of the forest and of people with proven long-term interest in the forest must be made continuously based on the best information available at the time; but nevertheless some decisions *must* be made.

> *"...you know there's always a way of solving a problem... its just that you got to sit down together and bang away until its solved. You know all you do is you bring back a lot of ...(pause)... say for instance if we go and road block ...all those years of bringing around a kind of trust and communication and work side by side with the hunters - like if we lose that then we're going to have all this finger pointing and everyone will blame the other person instead of sitting down and working it out together where nobody is pointing fingers... An old Chilcotin Elder said to me one time... he said you know... until we learn to work together as one people we are never going to resolve nothing... as long as we're fighting with each other everything is going to fall apart..."*

Trust in local knowledge combined with literature survey and continual informal experimentation should provide most information needed for decision-making. Continual questions from forest users and the community must be addressed continually. In future, the 'off-topic' though potentially relevant ideas of sustainable forest management institutions must become part of the data for subsequent testing, analysis and adaptive policy development.

3.19 **Co-managing Planning and Technology**[33]

> *"...Our forest practices are abysmal and our management practices are the laughing stock of the world really... maybe our foresters need to travel around a bit and see what other people are doing...have a look at what other people are doing...The private land owners in the eastern states, the big ones like Louisiana Pacific - manage their land better than the companies in BC... it's a joke up here to them - they would never say that - but it is because here they don't have to manage it at all - they just have to fill out a few maps and fill out some forms and cross their t's just like the book says... Right here in the book it says 700 stems per hectare who says and why - it doesn't matter - that's the way it is... Is that going to lead to foresters forever - I don't believe it for a minute."*

[33] This theme is derived from one theoretical code "Planning and technology" summarizing 19 codes from the interview data.

Although the British Columbia Ministry of Forests and Range needs to use more up-to-date planning models in their harvest approvals processes, the Forest and Range Practices Act (FRPA) effectively discourages experimentation. As the forest industry is empowered under FRPA to manage to log a *volume* of allowable harvest, the non-timber qualities of the ecosystem *areas* from which the volume is extracted are mostly ignored. Managing only for a volume of harvest rather than managing ecosystems for sustainability and for integrating non-timber and timber uses is another primary area of the crisis in co-management in NStQ territories. That available technology is not used operationally to model harvest options is merely delaying the problem for implementation of sustainable forest management.

In the NStQ traditional territories, the historic method for calculating allowable cut has primarily been a negotiation between the industry milling capacity and the short-term timber availability within a timber supply area (TSA). If the long-term sustainable yield were to be used to calculate allowable harvest volume, allowable cuts would be much less. In the Williams Lake and 100 Mile TSAs, which comprise most of the NStQ territory, much of the easily available short-term timber has already been liquidated. In many landscape units progressive clear-cut harvests have eliminated or created significant gaps in seral species representation and have thus damaged biodiversity in landscape units[34]. In many areas of the TSAs it will be necessary to restore the seral distributions of species[35]. Streams and watersheds are also in need of restoration or special planning care due to historic riparian management carelessness and poor enforcement of hydrological green-up requirements. The fisheries, wildlife and biodiversity strategies of the Cariboo Chilcotin Land Use Plan cannot be integrated without making unrealistic assumptions about timber supply availability[36].

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[34] The Biodiversity Strategy of the Cariboo Chilcotin Land Use Plan (CCLUP) attempts an ecological approach by insisting on the relationship between variety and distribution of seral species in a given landscape unit and overall biodiversity of the area. Implementation of the Biodiversity Strategy of the CCLUP has proven to be very difficult.

[35] NStQ elders have repeatedly warned the forest service about their mismanagement of seral stage distribution of lodgepole pine stands that ultimately has exacerbated the mountain pine beetle crisis.

[36] A complaint against the Forest Districts and Licensees of the CCLUP area was launched with the Forest Practices Board in 1997. The complainants, a coalition of environmental and community groups of the Cariboo Chilcotin Region were concerned about the formula that planners were using for integrating timber interests with the non-timber interests of the CCLUP. There were concerns that key negotiated targets from C.O.R.E and which were now legally required in the CCLUP were being changed or ignored. The Forest

There is a strong tendency for government and industry to avoid discussion about how to sustain the forest industry in the throes of its inevitable timber supply shortage. Emergency salvage of mountain pine beetle in NStQ territories has 'bought some time' for continued carelessness, and has allowed nearly complete flexibility in harvest scheduling for licensees over the next five or ten years. But by that time, when the easy access to pine becomes more difficult, timber supply shortages will become more critical for communities. Rather than acknowledging the task at hand for calculating sustainable long-term allowable harvests based on all watershed values, from the ground up, government continues to avoid the issue.

> *"...I believe that spending nickels and dimes on different management regimens will pay dividends down the road in opening up resources that are now being closed to you... it will open up relationships with people and there's a benefit to be had there... So how to improve it - you could legislate it - but I don't know if that would fix it... If we could convince the major companies that this is a good thing and not a bad thing that's the way - and to convince them that you're much better off talking to people than saying no go away we have our mandate from the provincial government..."*

In its "new era" document, the current provincial government has addressed short-term timber supply shortages by allowing aggregation of TSAs and elimination of appurtenancy agreements. Industry operating areas are much larger now and their legal responsibility for providing secure employment to their forest communities are much less[37]. NStQ forest planners echo interests of the whole of ecology when they suggest that the long-term view is the most important one for forest management. It is crucial to change to planning that is adaptive to long term social and ecological health indicators now. It will take time to implement a new approach. When rural communities are in the deepest throes of their timber supply crises, it will be important for them to have the social-psychological advantage and business advantage of having a well-designed land-use plan, empowered by adaptive learning organizations from the stand level to the

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Practices Board eventually found that the complaint was legitimate and the formula for the 'integration' was spurious. After a three year inquiry the Board stopped investigating satisfied that the Districts and the Licensees would resolve the problem over the long- term implementation of the CCLUP. There was much more politics than science in this decision to stop the investigation.

[37] Nevertheless the moral and ethical responsibilities of timber companies are increasing given the rise in demand for corporate social responsibility.

provincial level. Mapping technology is available to help make precise estimates of yield in small areas that take into consideration a variety of development scenarios. Adaptive learning organizations could be poised to learn this new system for constant iteration with the information realm, at the watershed and landscape unit level. Three dimensional mapping and field visits will be crucial for continuous monitoring and management of forest ecosystems in NStQ territories.

> *"...I guess some people feel that they're old fashioned... I even have a hard time turning on the computer... I guess trying to bridge the gap from the old school to the new school our people are going to have to get the education to bridge the gap...Sometimes I know what I want and then they put it on the computer and it's frustrating for me I don't want to learn the computer stuff - I just want to stay as I am... Its good to look at and it does have lots of information but still..."*

Computer technology has recently made harvest planning and mapping specificity easy and more accurate. (Sheppard and Lewis 2002) Geographic Information processing that required time-consuming calculations on expensive and cumbersome mini-computers only a decade ago, can now be performed in 'real time' on laptop computers with inexpensive user-friendly software. This new technology can support forest managers who will in non-technical conversations be equipped, and presumably educated, to discuss the whole story of caring for forests from the site level to the provincial level. Mapping specifics is important because it will help to model land use decisions more accurately and to manage and minimize the risk before operations begin, from the scale of the site to the province. When information quality is high then risks are lower. First Nations, licensees and government can then proceed adaptively and confidently making site development decisions based on their best collaborative knowledge of the day. Adaptive and precise decision-making at the site prescription level of planning will enhance economic opportunity in the NStQ territory. Adding economic and sustenance value to areas by encouraging alternative forest products and alternative harvest methods will in the long-term help to mitigate the short-term timber supply crises. But we need to start using and adaptively experimenting with forest planning and map communication technology effectively for long-term community development now.

3.2 Spokin Lake Case Study

3.21 Introduction:

> *"...The main reason why the Spokin Lake thing happened is because it is a high value traditional use area and moose habitat area the community members wanted it protected by the Province so the community eventually ended up in a roadblock to keep forest harvesting out of there...and we've been fighting a battle ever since trying to get some protocol in place where we can work together with the Ministry of Forests and Licensees to manage the area properly so it can sustain our use as well as theirs'... the battle's on-going and it's been going since 1992 or 93 and we're fighting the same battle today..."*

The Spokin Lake Case Study is concerned with the long-term planning of lands within an area of vital importance to the T'exelc First Nation.[38] The area is classified as lying within the Cariboo Basin Ecosection of the Interior Douglas Fir Zone in South Central British Columbia. There is a high proportion of wetland habitat that supports a resident moose population still surviving in close proximity to the town of Williams Lake, B.C. There are many areas of high cultural significance within the Spokin Lake area. Spokin Lake is at the headwaters of Borland Creek that is the source of the primary water supply to the North Shuswap First Nation Community of T'exelc.

The first logging plans for the Spokin Lake area were delivered to the T'exelc First Nation by the provincial government for their review and comment in 1993. Since that time two T'exelc community workers have attempted to co-manage their interest in the natural resources with the Province, trying to understand the complexity and oftentimes chaos imposed on them by a large, well funded and close-knit clique of industry and government foresters, scientists, planners, mapping technicians, with interests in logging the Spokin area. The intention was to develop a shared planning process to facilitate logging and to protect natural and cultural resources in the area but clearly the band was limited in its capacity to respond accurately and authoritatively to all the risks suddenly imposed on their aboriginal rights and title to the area[39].

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[38] The Spokin Lake area is about 30 km due southeast of the town of Williams Lake.

[39] Due to limited funding in administration and due to pressing social issues related to poverty, band natural resources workers are required to respond authoritatively and simultaneously to a variety of community development, health and education, as well as natural resources management tasks in the community.

The Spokin Lake crisis escalated when after about seven years of unsuccessful meetings the Province issued permits to begin to access an area of high importance to the T'exelc community. The community formed a roadblock and stopped the road building into their traditional territory. With an information picket line composed of community members, elders and natural resource and cultural workers, they tried to appeal to the broader Cariboo community for support. The following grounded theories based on interview data from key participants of the Spokin Lake process help to provide an overall picture of 'what is going on' in the Spokin Lake planning process. This clarification of the current concepts of participants in the Spokin Lake planning process may help administrators to develop a better sense of direction for future plans for the area.

3.22 **Spokin: Crisis**[40]

> *"...They had maps. They had their five year plan and they introduced all those maps out to us... but we didn't have any participation in planning the maps we had no involvement in engineering the maps - we weren't consulted about anything that was put on the maps - it was introduced to us as one map...and I think at that time logging had already started in some of those areas..."*

The Spokin Lake crisis began as a five-year forest development plan public review in 1993. The public review process required the forest industry, and then the BC Ministry of Forests, only to provide basic information about the five year logging plans to the T'exelc community. Interview data indicates that the weak consultation process was a result of a poorly conceived and inflexible forest ecosystem planning approach. The on-going planning method prescribes the results of the plan before considering T'exelc interests in the area. It is a government and industry dominated process that has a very limited capability for making social or economic adaptation. An increased share in decision-making should also result in increased management of the project as a learning process, from the initial planning stages through to the different stages of adaptive implementation.

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[40] This theme is derived from one theoretical code- "Spokin Crisis" summarizing 8 substantive codes from the interview data.

T'exelc is concerned that they lack the personnel needed for the long-term learning task that should be structured and interactive with the other plan participants. A conflict between a short-term industry perspective of timber extraction and a long-term community perspective of ecosystem management, resulted in entrenched positions becoming further entrenched.

> *"...I think they conspire together to try and minimize our interests and minimize our access to resources with minimal cost to them. They expect us to go out and do all this work for them for their benefit yet they're not willing to give us any kind of funding to carry out the work to do it. A good example is this referral stuff... for years we've been battling these guys to give us funding so we could do it properly but no... they've been fighting us every step of the way and don't give us a dime..."*

The on-going weak consultation process finally resulted in a roadblock that indicated a strong show of solidarity among the T'exelc people in what resulted as a co-management communication crisis.

3.23 **Spokin: Avoidance 'Dance'**[41]

> *"...I think we tried to bring out as much of our cultural ideas and traditions and spirituality with the land and animals we tried really hard but I don't know.. It's really hard working with government because the communication ...to me it's just lip service... you know again its always just lip service - we give comments and it just collects dust for them until things get shaken up and it gets dusted off and goes in again..."*

Planning meetings with the intent only to inform rather than to co-manage resources creates a "dance around the table" instead of good faith negotiation and adaptive learning. The evasive behavior encouraged among planners in such a process results in the following undesirable consequences for sustainable forest management:

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[41] This theme is derived from one theoretical code - "Avoidance dance" summarizing 16 substantive codes from the interview data.

1) Due diligence is practiced according to the 'letter of the law' under the Forest and Range Practices Act, however there is little evidence of accommodation, mitigation and interactive experimentation and learning.
2) Government and industry planners have not been successful in gaining the respect of the T'exelc First Nation during the planning process. A natural resources worker frustrated by repeated attempts of the industry to continue submitting unchanged plans for review, unhappily referred to the process as "some kind of a joke".
3) There have been no agreements reached.
4) If there has been any accommodation there has been no monitoring of accommodation or study of examples of mitigation for adaptive learning and development.

Other factors contributing to the 'avoidance dance' are an intense economic and social pressure to maintain the annual allowable cut (AAC) in the region despite reasoned environmental arguments to reduce the regional contribution of AAC from this area[42]. Significant company mergers and provincial government changes in administration over the past decade have made it necessary for planners to continually re-invent their planning process to coincide with new corporate goals. There is no evidence that the forest industry is taking any direction from recent Supreme Court decisions made in other areas of the province that have found that significant accommodation or compensation must be paid to First Nations[43]. Some survey respondents indicated their belief that the forest licensees are planning to use results of recent Supreme Court decisions to attempt to transfer their responsibilities on to the Province for co-managing with the First Nation title-holders in the Spokin Lake area.

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[42] The regional protected areas strategy and the Commission on Resources and Environment plan – prior to revision by provincial 'power brokers', had originally identified the Macintosh Lakes Protected area within the Spokin Lake Case Study to be reserved from logging, as a 'Class A' Park. The necessity for reduction in AAC from this area has been known and avoided for at least 15 years. A Short Term Timber Availability Analysis (STTA) used in setting regional AAC was suspected in an inquiry by the BC Provincial Forest Practices Board to overestimate allowable cut in the Cariboo Chilcotin Land Use Plan.

[43] In a BC Supreme Court Decision *Haida vs Weyerhauser and the Province of BC* it was found that proper consultation was not given to Haida prior to making a forest license transfer. Subsequent Supreme Court decisions with regard to the Taku First Nation (Skeena) rights and title issues and with the Hy-ay-aht First Nation of the central coast also found that proper consultation and accommodation was not made prior to logging in traditional territories.

3.24 **Spokin: Entrenched Positions**[44]

> *"...Like I said before they have policies that they have to follow and they have guidelines that they have to follow... you know there's a process and there's already a five year plan and everybody says this is what we have to do and regardless of what we have to say its just input... To me that's just consultation - there's no working...working together there... it's just a consultation sort of process - to me that's not healthy..."*

As mentioned above, the Spokin Lake Planning Crisis came as a result of a 'cookbook planning' mandate limited in flexibility by forest practices legislation that favours short-term government and industry interests at the expense of long-term community and environmental values. There are some additional reasons why entrenched positions occurred. Interviewees indicated that although government and industry used 10 years of planning resources in an awkward "dance around the table" to avoid discussing substantive issues about Spokin Lake, during this time planners and First Nations natural resources workers were not given adequate resources to set up contexts where they could sincerely learn from each other. One T'exelc interviewee mentioned that results from a moose study initiated by the Ministry of Forests was not shared with the community. Examples of information-sharing contexts that were hoped for by T'exelc include learning from mitigation that has occurred elsewhere and learning to innovate, as well as experimenting and building trust in plans by developing an on-going planning relationship in field trip contexts.

The lack of sustained interest in responding to the communities' basic concerns about the plan, the lack of interest in building a 'human to human' rapport combined with changes of industry and government planning staff were not conducive to building integrity in the Spokin Lake planning process. The roadblock and information picket line set up by First Nations and the corresponding government fear of chaotic potential for 'negotiating through the media' made planners yet more distrustful of the process and of each other. Interview respondents indicated that this was not a good climate for interest-based negotiation. The Forest and Range Practices Act empowers the District Manager

[44]This theme is derived from one theoretical code –"Spokin Entrenched Positions" summarizing 19 substantive codes from the interview data.

(DM) as the Forest Minister's representative and sole and final decision-making authority for accepting or rejecting development plans. While too much involvement in the process is seen to fetter a decision by the DM, the DM must make a decision based on advice. As the context of forest management is still very much defined as timber management under current implementation of the Forest and Range Practices Act, the DM will seek to minimize his legal liability and typically take advice from other foresters. The opportunity for the DM to learn directly from community members is typically constrained[45].

3.25 **Spokin: Forest Practices Legislation vs. Local Knowledge**[46]

> *"...With First Nations people we don't look at just forestry... we don't look at just forestry, we don't look at just environment, we don't just look at plants... we look at everything as just one as intertwined with each other - we take a look at the whole as one - you know the bees are co-managing without the bees we don't have the flowers and we don't have the berries and certain water species that we have that clean the creeks they clean the lakes and they have an important part - we don't specify and focus on this this and this- you know we don't divide everything up like modern science..."*

Throughout the Spokin Lake forest planning process there has been a tension between the 'timber-first' planning paradigm and the traditional natural resources manage ment practices of the T'exelc community. Among many other things, the elders teach that Secwepemc traditional knowledge and traditional natural resource practice requires that the primary stewardship responsibility is to the land and to the people who were trusted to depend on that land. The elders teach that caring for land and resources must be a shared task with equal respect potentially offered to all community members in the management process. The elders teach that all natural resources are linked and spiritual by nature. The elders teach that on-site knowledge of specific places is authoritative and

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[45] Though for a number of years to their credit, the Williams Lake Forest District employed a T'exelc community natural resource worker as a liaison to the DM from T'exelc, this relationship did not last. In proportion to the funding available for mitigation and accommodation, there were too many pressures on traditional territories occurring in too many places throughout the District too suddenly for a meaningful liaison to continue.

[46] This theme is derived from one theoretical code "FPC code vs holistic understanding at Spokin"- summarizing 14 substantive codes from the interview data.

that if a disturbance is to be made to a natural process it should be made cautiously, respectfully and with consideration made for continual monitoring and adaptation.

The holistic nature of traditional ecological knowledge and resource management practice tends to contradict the paradigm required by the Forest and Range Practices Act. The Forest and Range Practices Act of British Columbia prescribes a method for planning that while acknowledging other values, it concentrates heavily on a 'timber-first' perspective. It requires a highly centralized authority with little regard for detailed on-site knowledge and it requires professional complicity in that the planners know that their first responsibility is to the legislation, policy and regulations of the legislation and not necessarily to community interests. Despite opportunities to try alternatives, the Forest and Range Practices Act specifies the operations that must occur, or the results that must be in effect after a certain period of time. There is a gap between the authority of the forest legislation and the information learned from forest practice. Changes to legislation are not reliably implemented to reflect learning on specific sites. Although "adaptive management practices" are encouraged by the Ministry of Forests, there are no well-documented or trusted operational examples of long-term adaptive management being implemented reliably within the Cariboo Chilcotin Land Use Plan region[47].

3.26 **Spokin: Management**[48]

> *"... at the end of the day I don't know that the band was completely on side with either the literature review or the adaptive management they were looking for a full blown study and again after consulting with the biologists and that we weren't prepared to go there so to me that was one of the main sticking points in this whole exercise - we just had different views on how that should be conducted..."*

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[47] In NStQ territory, there is one woodlot managed by Rod Blake that is registered both by the Silva and Forest Stewardship Council certification systems. This could probably be considered an exception; but it is less than 1,000 hectares in size. There are interesting projects occurring on the UBC research forest but these rarely include much community involvement that is so essential in determining cultural and economic viability. The notion of long-term sustainability is being actively discussed during treaty talks with the NStQ. As we see from the interview data, the NStQ board members of the Likely/ Xats'ull community are pressing for more meaningful community participation in the stewardship process to manage for a variety of values in the community forest. There has been great progress and great potential shown in the Likely/ Xats'ull community forest process but there is not yet a comprehensive and adaptive plan to address community needs for long term sustainable forest management in key areas of interest.

[48] This theme is derived from one theoretical code – "Spokin Management" summarizing 17 substantive codes from the interview data.

Commenting on a completed five-year logging plan for the Spokin Lake area, the T'exelc community responded. As T'exelc was not consulted to help in developing the initial plans, and as the initial draft of the five-year plan considered primarily the market value of timber, there were many risks and threats made in the five-year development plan to non market timber values and to related aboriginal rights in the Spokin Lake area. The band indicated that the proposed bridge across Borland Creek and the road development in the headwaters of Borland Creek posed a significant risk to their community watershed. The band pointed out that there were areas of high cultural value being threatened by logging and that wetland habitat and moose calving areas were put at risk by the plan. Interviewees indicated that unrestricted road access very close to town would surely threaten the resident moose population at Spokin Lake.

The band proposed a 5–10 year moratorium against logging in the area while risks were assessed, and so that a period of learning could take place and an acceptable plan could be developed. Although the government accepted the challenge to study risks and alternatives in the area, the logging continued with little change in the five-year plan. The government officially regarded the moose habitat and resident moose population "of low regional significance" and did not seem to consider its continued importance to the T'exelc community and the risks associated with increasing its accessibility to the hunters of the town of Williams Lake. Interview data from T'exelc participants indicated that the scientific validity from a "full blown study" was not one of their interests. They simply wanted to work together with the government and licensees' planners to integrate timber, traditional use and moose habitat values so that all participants could understand and respect the plan and its implementation. However, without adequate capacity for T'exelc to participate fully in planning in specific areas and without Ministry of Forests and Range's commitment to look at specific areas in detail, the collective imagination for both logging and protecting key non-timber values in the same areas was constrained. There seemed to be a tendency to communicate in terms of *either* logging *or* preservation rather than thinking in terms of relationships between logging and preservation in key areas. There was no experimentation in scaling down operations to facilitate shared use. There was little interest in challenging 'conventional forestry knowledge' and forest and

range practices rules in order to test alternative silvicultural systems. Some experimentation in leaving small buffers of trees around wetlands was tried, although this experimentation was abandoned due to foresters' concerns about the spread of the mountain pine beetle. Over the seven years of discussions there were a few field visits, but overall positions became progressively entrenched.

> *"... Well I think we tried to communicate - I mean they showed us what their concerns were and what some of the plants were - It was a great day in the field I mean I think everyone enjoyed it... it's just that at the end of the day I think we were at opposite ends of the spectrum when it came down to the actual management of that piece of the land...again I think they were looking at more of a preserving it as much as anything where we were looking at harvesting a piece of it..."*

The Ministry of Forests started work to build a bridge across Borland Creek to access small business permits in the area. The chief of the T'exelc First Nation then responded to elders' requests to set up a roadblock and information picket to stop the work that threatened non-timber values and aboriginal rights in the area. An elder put it this way:

> *"...We had a very good working group... I think we called ourselves the Home Team... we had elder women and elder men we had hunters we had youth... we had enough members from the community that were coming. There was a lot of consultation with prior chiefs there was a lot of consultation a lot of consultation with land users like the hunter groups and gathering groups... there was a lot of displays that were done... I was involved in a lot of talking with people... We had a blockade so people had a lot of information not only on our community but also on outside communities because we held a pamphlet sort of campaign you know so people from the 150 Mile and Rose Lake area came and they looked at the maps... you know they had a lot of input and a lot of them were very supportive of what we were doing they didn't discriminate us in any way and there was a lot of support... I'm not saying it was 100% we had a good turnout of people who were nodding... a lot of truckers going back and forth a lot of forestry workers just curious to see what we were doing and what we were saying taking time off their duties to see what we were up to..."*

The constitutionally protected rights of First Nations in the area were threatened and so the Province and licensee rights to log in the area became questionable from a legal perspective. The Province backed away from logging in the contentious area but then

later began developing access from a different direction. Although the band is currently trying to develop a protocol agreement with the licensees there is still no acceptable plan for the area. Elders are concerned that the hurried salvage harvest of beetle-infested timber in the area is causing waste and neglect of other values. There is also community concern about the fast rate of clear-cut logging, the planting of lodgepole pine in spruce areas, and the potential for insensitive industry logging in vital areas needed for traditional use sustenance, as well as cultural and spiritual purposes.

3.27 **Spokin: Memorandum of Understanding for Consultation Protocol**[49]

A memorandum of understanding (MOU) is currently being negotiated between T'exelc and the forest industry operators in the Spokin Lake area. The MOU will determine regulations for consultation that will describe arrangements for revenue sharing, shared funding for management and shared decision-making. Shared decision-making will include shared planning responsibility from the initial reconnaissance of areas through to supervision of post harvest and silviculture responsibilities.

Better information, particularly in the quality and detail of maps will be sought in an MOU with provision for three-dimensional mapping where required. The imagination for detailed mapping is to be strengthened as the licensee starts in the learning process with the T'exelc communities. Long-term learning will be structured and characterized by adaptive management experiments in the Spokin area to continue to inform and empower decision-making in a learning organization.

The learning organization resulting from the MOU could be an equal partnership of First Nations' delegates, Ministry of Environment, licensee, and Ministry of Forests and Range planners, scientists and foresters. Such a learning organization could encourage cross-cultural bridge-building by managing and monitoring projects adaptively and to develop trust relationships, over time. Eventually a simple site-specific MOU protocol agreement for the Spokin area may serve as a template for other legal agreements and

[49] This theme is derived from one theoretical code "Spokin MOU"- summarizing 11 substantive codes from the interview data.

learning organizations in co-management areas throughout the NStQ traditional territory. Such learning organizations need not be expensive, but they must be committed and empowered to monitor and to steer co-management decision-making in their interest area.

3.28 **Spokin: Begin to Learn by Doing**[50]

> *"...lots of times when it comes to writing agreement not everyone understands the implications of some of the wordings you know so you can sign on to something that you think it means one thing but it actually means something else but when you can get out there and you can see that a tree is a tree looks like a tree then its easier to deal with those issues...they're real."*

Several interview participants offered suggestions for ways to begin to plan for the Spokin Lake area. They indicated that it is crucial to acknowledge that all values and issues brought to the planning table by plan participants are important and need to be addressed with equal interest. If the forest licensee is primarily interested in forests for logs and the First Nation is primarily interested in forests for habitat, traditional use and water quality, there will be a range of harvest options that will need to be considered. The attitude that we should "seek first to understand", helps to develop a human-to-human bond regardless of the role of a participant in the process.

Developing real examples and experiments with mitigation techniques for conserving diverse values and implementing agreements honourably over time will build trust. Perhaps this is what the Province refers to in its recent talk about "a new relationship" with First Nations. However, interview participants indicated their perception that ill-equipped and ill-prepared provincial employees are currently not exemplary in presenting "a new relationship" for co-management of forests. With greater and more reliable funding committed to long term co-management planning more field time will be spent with community representatives at all phases of the planning process. An imagination for realizing benefits of "learning by doing" will be developed through first negotiating a legally-binding consultation protocol agreement for the Spokin area.

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[50] This theme is derived from one theoretical code "start learning by doing at Spokin" -summarizing 16 substantive codes from the interview data

3.3 Tsq'escen' Community/ Mountain Caribou Case Study

3.31 Introduction:

The community of Tsq'escen' lies in the foothills of the Caribou Mountains and has historically been connected with migrations of mountain caribou.[51] In recent years wildlife scientists and backcountry guides have noted that the caribou population of the Caribou Mountains is declining. The creeping cumulative impacts of human influences on caribou ranges are often cited as reasons for the loss of caribou in other areas of Canada. Although the exact reasons for the dwindling numbers of the herds in the Caribou Mountains are not known, the Ministry of Environment, and Ministry of Forests and Range have been attempting to find answers through research, whenever funding is available. In 2002, when the federal government found in their nationwide survey that the herds of eastern caribou are facing extinction and should be placed in the 'red-listed' category, the Tsq'escen' community felt that they were in crisis. A respectful co-managing relationship with the mountain caribou can be renewed and sustained. However, this will occur only with an unprecedented social consensus to affirm government and community authority to monitor and adapt with changing caribou requirements.

3.32 **Caribou threats**[52]

> *"... my uncle was saying its pretty strange to see droppings of a moose way back where there's no food... They're getting pushed back into the mountains because of all the logging and development of the lands in their habitat... their corridors are getting blocked off by main highways and they can't migrate back to their natural breeding and grazing grounds because they'll get killed off by the highway or poached off somehow cause there's too much roads now... Like they don't stand a chance with all these 4 wheelers and sleds that's going around... Like when a skidoo goes in there and packs it down and a wolf comes along it's easy running for him...and the caribou get killed off pretty easy like that too..."*

[51] Location map in Fig. 2 (p.23) – the location of Tsq'escen' is indicated on the map as "Canim Lake".
[52] This theme is derived from one theoretical code "Caribou threats" summarizing 19 substantive codes from the interview data.

"...basically, the one thing we're trying to understand now is what are the management levers that are available to influence what is affecting the caribou... what can you actually manage - you can manage the influence of logging or snowmobiling - or predators - so there's all these different management options that people have and they all have different degrees of influence on the survival of caribou... a lot of the management work going right now is trying to sort of look at that puzzle and try to figure out which is the best way to recover caribou based on the science... So someone is going to have to make some choices based on implementing some of these management measures and it will be an interesting next ten years or so - Society will need to decide what they want...its very complicated..."

"...Different diseases and the beetles are coming in pine spruce and fir I don't know where that's all going to end... poor old mountain caribou will be up on top there with nothing to chew on and then where's that going to lead?..."

The mountain caribou herds in the eastern region of the Secwepemc territories are mysterious and majestic, but they are also vulnerable to their harsh mountain environments. Although the eastern herds are well-adapted to extreme mountain habitats, cumulative effects of anthropogenic environmental changes may be causing accelerated population decline. The crisis of survival for the caribou herds is one concern for the Tsq'escen' community. Tsq'escen' has a long history and many associated stories about using the mountain caribou as a source of sustenance. Among the threats to the caribou population are wolf predation and the scarcity of winter food sources. A strong wolf population combined with a weak caribou population is one of the influences that are extinguishing the remaining herds. Road developments high into caribou winter grounds have made convenient, systematic travel corridors for wolves to hunt caribou. The many dozens of snowmobiles in the alpine environment of the caribou have potential for pushing the animals away from their critical feed and migration habitats. As the caribou are pushed higher and higher on mountain peaks to escape the new developments, they are further put at risk by deeper snow, steeper terrain and diminished food sources. Eastern mountain caribou rely almost exclusively on arboreal lichen as their winter food source. A history of clear-cutting vast areas of critical habitat combined with recent spruce and pine beetle epidemics have reduced the quality of forests for arboreal lichen and winter shelter for the eastern caribou.

Caribou management authorities understand the mountain caribou population dynamic as multiple interacting variables or 'management levers'. Habitat, predation and fecundity, or some variation of these, are the known variables that influence the population. It has been assumed that by manipulating these variables, an increase in the caribou population might occur. An inconsistently funded and administered program for understanding the mountain caribou was begun as part of the Commission on Resources and the Environment (CORE) process in the early 1990s. Forest Renewal BC (FRBC) funding also helped to support caribou research for a time. Caribou research has not been continuous since the crisis was initially perceived. Nevertheless interviewees indicated that effective implementation of caribou management will require continuous attention, shared local knowledge and a strong social consensus among affected groups.

Although the local environmental groups have attempted campaigns to raise social awareness of the need to protect the caribou, -without provincial support these attempts have often been left unheeded. The snowmobile associations of the region were much better funded by FRBC and the province to mount their campaigns for increased access to alpine areas, than were the environmental groups, to protect caribou. As snowmobile technology increased in power, so too did the snowmobilers' insatiable appetite for exploring steeper and more remote mountain environments. With the notable exception of a few presentations made for regional community groups, government researchers were mostly absent from the debate.

By the beginning of the new millennium it was becoming clear to guides, loggers and to some scientists that the eastern mountain caribou herds were being lost. In 2002, the federal government declared the eastern herds a red-listed species. Yet there was still no organization to lead toward a consensus-based management approach. A wolf-kill program, some snowmobiler-education, and some sensitive harvesting and road design has been implemented for known critical areas. But there is still inadequate long-term commitment to funding a learning organization for monitoring and enforcement for implementation of caribou recovery 'levers' and experiments in Tsq'escen' territory.

3.33 **Caribou Research Process**[53]

"...there's a need for a lot more research and connectivity between the different groups... outfitters will have certain knowledge about the caribou and certain observations and hunters will though obviously hunting isn't allowed any more of the mountain caribou... you know snowmobilers will have certain knowledge and experience from what they see of them, and trappers will... There's not a lot of unified...I don't see a lot of unified opinion between different groups around the issue because to me people want to protect their own interests... and new knowledge and understanding would take quite a bit of work and study over time..."

"...The work that's been happening recently is basically through radio telemetry so we have a good idea of where the caribou that are left are living and moving but as far as historic winter range we don't have a good idea... Traditional ecological knowledge of First Nations could do a lot to tell us how widely caribou used to be distributed say a hundred years ago... I'm not aware if there's ever been a project to try to accomplish that..."

"...they're busy trying to make money like I mentioned when they study the caribou they're all trying to make the almighty dollar and I guess the dollar interferes with everything that happens within our traditional lands... but really I don't see them - they may get together like on their own like scheming...or whatever it is that they do...(laughs)"

"... we were having what was information sharing we were having regional visioning where groups would get together and learn about the culture of the Secwepemc people and actually put names to faces to find out who was who... with the wildlife people we had a workshop with representatives from Williams Lake on these issues and that has greatly improved our relationship here... now we are getting more and more documentation and papers and references from the agencies on what's going on with wildlife in our area... We sometimes get phone calls about when studies are happening and with email links they send us emails of where we can find studies ourselves... and with the government opening up their webpages to us we are able to get a lot more information than we used to before..."

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[53] This theme is aggregated from two theoretical codes: "Caribou Research Process- The Tsq'escen' community involvement past, present and future" (16 substantive codes from interview data) and "Caribou Research Process- Tsq'escen' administration" (23 substantive codes from interview data)

Tsq'escen' interviewees find the process of researching the caribou confused. Changing provincial governments and research projects have resulted in knowledge loss, changing mandates, changing personnel and unreliable funding for community involvement. Interviewees emphasized that the context of an ongoing conversation is as important to answering research questions, as the conversations themselves. If the caribou research participants perceive the context of the research conversation as *ad hoc*, temporary and lacking in sincerity, authority and long-term commitment, then they will presume that the research conversation itself is superficial. Interviewees indicated that although they feel that an on-going adaptive caribou research conversation is important, they are not assured in the process that their time is well spent in meetings. There have been several instances where ideas and important meeting discussions have been lost or ignored due to lack of continuity in the overall mountain caribou research effort.

Tsq'escen' backcountry guides and community members have been generous over the past decades on mountain caribou trails, sharing their trails and traditional ecological knowledge with non-native guides and scientists. However, due to an over-riding concern for pursuing profit from the backcountry or for political positioning of the provincial government, the sharing of traditional knowledge has provided little benefit to either the mountain caribou or to Tsq'escen' people. Although the residential school system imposed on Tsq'escen' people resulted in a generation of some disconnect from their traditional knowledge of caribou, there is still much wisdom about the Caribou Mountains and the relationship between the mountain caribou and Tsq'escen' people and places. Reconstructing this knowledge of countless generations of Tsq'escen' life in the Caribou Mountains has been an on-going struggle for Tsq'escen' community researchers. Fragments of knowledge exist as stories inherited by families, passed down by their ancestors. One challenge for traditional use researchers is to record the knowledge of places and events and learn the significance of the stories so that Tsq'escen' youth and others can be guided by wisdom of the elders. Funding for traditional use research has been difficult to secure making it difficult to develop a secure foundation for the traditional knowledge. A sense of urgency and crisis prevails as funding sources and the energy of the elders are tapped to exhaustion. Nevertheless, guides and community workers are putting the wisdom they have to use. They ask: is it nowhere clear what is

the value of the mountain caribou? What is the value of mountain caribou to the forest industry? What is the value of mountain caribou to the residents of the Cariboo region and the Province? They suggest that to understand the value and the importance of the mountain caribou, all people with interest should work together with respect, to solve the problems of how to best relate to mountain caribou.

The practice of the art of resolving conflict through respectful discussion is a traditional method for problem solving that relies on knowledge 'of the whole'. Interviewees indicated that caribou studies are only as good as the conversations that they encourage. They suggested that traditional knowledge keepers and others with knowledge of caribou often do not attend meetings. They do not see how meetings held indoors and dealing exclusively with business can be relevant to the lives of First Nations' guides. They suggested that natural resources management could best be taught in the forest from outdoor wilderness schools. By exploration with elders and attentive scientists, youth could be taught to create their own knowledge of caribou places. A few interviewees suggested that it is difficult for Tsq'escen' youth to relate to past forms of traditional knowledge of caribou. Tsq'escen' people have stopped caribou hunting. They have stopped talking about the caribou. Stories of the caribou hunt are not being retold and renewed. Nevertheless there are many ways that Tsq'escen' youth can relate to caribou spaces and places if their experiences in the mountains could be encouraged by a coalition of Cariboo communities to grow and flourish.

The Tsq'escen' natural resources workers remain strong in their overall direction as stewards of their traditional territories, and they remain hopeful and patient with provincial and federal government planning authorities. However as in other NStQ communities, the Tsq'escen' natural resources workers have inadequate staffing and funds to properly assess cumulative and on-going development impacts in their territories. Natural resources workers recollect how the mapping of caribou migration patterns and associated stories was started in 1997 with FRBC funding for their Traditional Use Studies. The initiatives that were begun lacked long-term support for monitoring, implementation and enforcement of management goals. The regional Caribou Strategy of the Cariboo Chilcotin Land Use Plan was an attempt to co-ordinate research about the mountain caribou. Treaty talks by the NStQ treaty team have also

tried to co-ordinate and address long-term caribou management issues. That the caribou population became red-listed came as a shock to people in the Tsq'escen' community, the NStQ and also to many others in the Cariboo region. It is possible that such a crisis could bring people to form better human-to-human relations for a sustainable regional re-growth and renewal strategy for Cariboo communities. A crisis can sometimes provide incentive for an individual or a group to reach for answers that they currently cannot imagine. From this reaching for new answers, new understanding and a new paradigm for understanding may emerge. Cross-cultural bridge-building may be one of the benefits of sharing management tasks through all phases of an adaptive management process for recovery of mountain caribou.

An enduring regional caribou strategy is a shared vision that implies a shared responsibility by sharing management tasks through all phases of adaptive management process. In this process, it is necessary that scientists and policy makers with power to initiate a long-term adaptive program seek first to understand. They should recognize that a common goal needs a common understanding. They must understand that it takes time, long-term commitment and self-organization across management scales to develop and implement good policy. The time horizon for long-term planning will necessarily exceed one provincial government term in power – but it will be time well spent.

3.34 **Caribou Public Involvement Process**[54]

> *"...I went to this big wildlife workshop in Vancouver there... its good to have it in Vancouver... but the wildlife is out here (laughs). If you have the meetings more in the backcountry it will start to turn more heads so people will know how valuable the land is out here..."*

> *"...normally I'd like to take time to think and respond rather than just to give an answer right away... sometimes silence is taken as uneasiness... the silence is taken that we don't want to talk about it or something... so they keep probing -*

[54] This theme is aggregated from three theoretical codes and 46 substantive codes from the interview data – "Caribou Strategy Public Involvement Process" (15 substantive codes) "Caribou Regional Research Bias" (15 substantive codes) and "Caribou: Negotiating Local Knowledge" (16 substantive codes)

probing...but in the meantime we are trying to think about an answer that would justify a reasonably good thought out answer..."

"... if you can shorten a sentence down and make a long story short yet have the truth in there yet and the respect it needs... that's part of what I see wrong with that...Yes it could be a good system if they could learn how to communicate ...not everyone went to university..."

"...They say "I this and I that" and they don't involve the other ... they've got to say "Our and We're" so that when the people see the word "I" in there - they don't even want nothing to do with it. It's got to be "ours"..."

Interviewees, including caribou scientists and technicians, indicated that public involvement is necessary to make crucial decisions that will affect the future of the mountain caribou. Society will need to decide what is necessary to protect caribou herds. For effective implementation, caribou management measures will require strong social consensus, monitoring and enforcement by the affected groups. Consensus of opinion can be difficult to achieve, however, as there is a range of opinions and ways of looking at things. Different people find different management strategies acceptable. This is especially made more difficult in that government and industry tends to most strongly support large-scale backcountry developments that generate the greatest short-term economic benefit. Achieving consensus is difficult because different people have different expectations for public involvement. Interconnection and continuous cross-scale communication among social groups and agencies could expedite caribou management; but government has not been able to develop a consistent public involvement program to do this. A mailing list is maintained and research information is available by request from the Ministry of Environment. A more comprehensive public involvement strategy remains subject to the specific requirements of generality and specificity and timeframes dictated by unpredictable, *ad hoc,* caribou research projects.

Typically there is little or no funding allocated for public participation in research projects. The limited capacity of groups to participate in research, and the limited training of researchers in understanding the purpose of public involvement limits the emergence of knowledge about mountain caribou. This lack of capacity constrains the backcountry managers' ability to implement actions that might assist in recovery of

mountain caribou. A controlling group of government researchers tends to emphasize differences between local groups rather than a 'wholeness' and broader community of interest in maintaining caribou. Although separate meetings are the most cost effective and the easiest to organize, they can be disorienting for the development of a whole group and can serve to undermine trust between conflicting groups. For example, after nearly 10 years of talk about the problem of maintaining mountain caribou populations there is still no continuous formal process in place for group discussion about caribou co-management with the Tsq'escen' community. None of the mountain caribou research projects have yet been co-managed with First Nations. Consequently, the province still doesn't know specifically what NStQ long-term interests are in natural resources affecting and including the mountain caribou. Since 2004, a federally-funded caribou recovery implementation group is scattered across regions in the province of BC to identify and hopefully address gaps in provincial caribou research. However, a NStQ participant was able to attend caribou recovery implementation group meetings only for a short time when funding permitted.

Interviewees indicated that caribou research needs to be adaptive and on-going with the conversations of all knowledgeable stakeholders. A general consensus was indicated among interviewees that caribou research should be directed by a well-represented and adaptive learning organization. This contradicts caribou scientists' concern that caribou research is "too technical" to be "broadened out to other groups". But it echoes a common concern among interviewees that caribou research despite good intentions, does not yet have a unified management approach. Natural resources workers are concerned that existing site-specific caribou research knowledge is not easily accessible to people unless they are local environmentalists, guides or recreation group leaders. They acknowledge that caribou research if undertaken properly, would take a lot of work and commitment from a lot of people. However, due to lack of a consistent public involvement strategy, even the most basic collaborative research opportunities have been ignored, or lost. For example, the caribou research strategy of the Cariboo Chilcotin Land Use Plan involving forest sciences, fish and wildlife and forest licensees did not properly budget to systematically involve First Nations.

Building research strategy from diverse viewpoints is essential, considering that caribou scientists have 'built-in' research biases due to short-term scientific and technical limitation. Technical research studies that are strictly limited in time and geographic relevance although more amenable to statistical analyses, tend to build a perspective from measurements as 'brief shutters in time'. Caribou technical research is inevitably limited by funding, public perception and weather, however to mitigate this limitation, local knowledge can be negotiated to serve to 'broaden out' and to potentially 'fill in gaps' of scientific knowledge in the absence of scientific verification or 'absolute proof'.

The colonial history of exploitation of back-country environments is still affecting the current reality of the science of caribou management. Interviewees indicated that caribou science is limited by bias generated through short-term *ad hoc* studies favouring backcountry exploitation. Perhaps due to their centralist, short-term development bias, these studies lack long-term information about caribou, habitat, historic migration routes and changing environments. Some interviewees indicated that caribou researchers do not sufficiently often advocate the management option of creating a Class A park to protect mountain caribou. Some interviewees indicated that the government's refusal to put mountain caribou resources in Class A park status with stricter site-specific regulation and enforcement confirms government and industry bias towards maximizing short-term profit generation at the expense of the mountain caribou and back-country values. If the bias of short-term profit maximization does not exist, then the Class A Park option could be more frequently discussed. Or, alternatively, a less biased approach could be demonstrated by freely changing the contexts of the conversations about caribou. One interviewee indicated that the context of the conversation is "just as important as the conversation itself". For example, the interviewee suggested that if the Northern Shuswap people facilitated the conversation around a round table (and in a series of back-country meetings) there would likely be a different result than if government facilitated a conversation around a square table. Other interviewees indicated that the research meetings as they are currently presented are not relevant to the lives of First Nations' guides. The context of the conversation sometimes needs to be moved to mountain caribou habitats to develop a deeper understanding and respect for the subject of the research.

In any conversational context, research groups must practise the art of resolving conflict through respectful discussions. Caribou interest groups need to bring their knowledge together regularly, and they need to try to recognize their individual biases to find unified understandings. With practice, respectful listening and talking from different perspectives can improve. All interviewees indicated that there is always a good possibility for a 'paradigm shift' in the understanding of backcountry users- and of the mountain caribou. One scientist interviewed joked that both species, humans and caribou, seem to be equally characterized by their unpredictable nature.

Sometimes it takes a crisis for conditions to generate a new understanding and opportunities for re-growth and renewal. After the crisis and in the re-growth and renewal phase it is best for all potential back-country competitors to become conscious that all back-country uses have needs and that whole groups must work together to meet those needs. Participating in meetings uses energy and strong emotions are generated to resolve conflict through care and discussion. A lot of energy is required to put aside one's own opinion in resolving a conflict through whole-group discussion. The energy, commitment and work required is one reason that social consensus has not yet been achieved in communities' relations with each other and with the mountain caribou. Natural resources workers and leaders of backcountry groups are improving their skill in negotiating local knowledge, however much improvement is necessary. Once it is possible to listen and talk from different perspectives, the learning cycle can begin again and again, iteratively and continuously at successively new and more complex levels. When a tension develops between participants' individual interests and new knowledge about caribou places then there is an opportunity for growth. A new understanding and opportunity is generated as successive on-going concerns are discussed in respectful relations between the group and the individual. The group then needs to again interactively work at this new level of understanding as knowledge emerges about participant needs and potential methods of resolution. Adaptive management and the development of community-based learning organizations to achieve consensus is a never-ending conversation and emergence of new knowledge. Adaptive management is essentially democracy continuously 'at work'. Human energy, skill and long-term funding will be necessary to assist in developing adaptive management institutions for

sustainably co-managing whole back-country values and to assist in the recovery of the mountain caribou populations.

3.35 **Caribou and Tsq'escen' Eco-Tourism at Risk**[55]

> *"...I went... like... it was...but the meetings were taking me farther and farther away from my whole... my goals and objectives there... I was getting stuck in papers and too deep in there ... so I just let it kind of idle for a while... and then I just started going back and doing ribboning where our trails got to go and see where the animals cross..."*

Some interviewees indicated that for long-term backcountry values to be managed, enforcement of closures must occur in key caribou migration areas. A Tsq'escen' guide suggested that a trained group of First Nations' rangers could monitor back-country uses and gather wildlife information. Citing a successful indigenous rangers system in Hawai'i, the guide suggested that caribou migration corridors could be mapped and monitored more accurately with help from the Province and from Tsq'escen' youth. This could have the benefit of allowing traditional knowledge keepers, scientists, and First Nations' youth to work together on a common goal to enforce whole back-country values. Currently, un-enforced caribou area 'restrictions' apply to environmentalists, scientists and backcountry guides. But an honour system of respecting closures is not working well among the unregulated snowmobile riders and others who are not mindful of the rules. One interviewee noted that it is not uncommon for dozens of snowmobiles or all terrain vehicles users to cavort in certain alpine areas of the Caribou Mountains at the same time. A system of limiting back-country uses would be well served in a park management plan; however many of the critical caribou areas are currently outside of the jurisdiction of BC Parks.

The Tsq'escen' community envisions potential in the Caribou Mountains for developing low-impact community tourism businesses. Tsq'escen' back-country guides have been working toward submitting tourism business plans with government, but as

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[55] This theme is derived from one theoretical code "Caribou and Tsq'escen' eco-tourism at risk", summarizing 23 substantive codes from the interview data.

their business plans are coming together, Tsq'escen' commercial tourism interests are threatened by essentially unplanned developments in the back-country. Local bureaucratic channels for small business development proposals are constantly changing and discouraging. However, big business development proposals such as mines, logging and major tourism projects can be given incentives and accelerated approvals by distant senior government authorities. Hopeful guides at Tsq'escen' who envision First Nations tourism business find it hard to compete even in their own territories, with proposals from well-financed developers that promise only short-term benefit and are insensitive to back-country impacts. Changing provincial governments and changing government planning authorities and staff also undermine First Nations' development proposals. When Tsq'escen' business plans are considered by government it is a challenge to teach government planners to hear the proposal as it is, rather than to try to change it to better suit government's needs.

Planning for low-impact First Nations' tourism in the Caribou Mountains can work if participants acknowledge each others' needs and work together to meet those needs. Adaptive management planning with communities should be structured as apprenticeships in a whole program of problem-based learning. An adaptive-learning organization for co-managing commercial tourism interests in the Caribou Mountains should be empowered and financed for encouraging regular meetings in the back-country.

3.4 Demdomen Society and Provincial Wildlife Management Case Study

3.41 Introduction:

> *"...Our wildlife management group started out with maybe five or six of us. It's all volunteer it started out when we had Demdomen society... we were trying to find ways to open people's eyes about wildlife. We got a funding for a wildlife management training program for one year that was good there was people there that you kind of thought would never be there... it carried on from there..."*

Demdomen society is a volunteer group of hunters and teachers from the Stswecem'c/ Xgat'tem First Nations, in the southwest of the NStQ territory. The society was first formed in the mid-1990s to respond to a variety of crises facing wildlife in traditional territories. An accelerating increase in recreational hunting pressure associated with rapid new road development was occurring in large areas west of the Fraser River.[56] Over the last decade, Demdomen has become increasingly involved in adaptive learning about wildlife resources in traditional territories. Their involvement in a growing variety of community and wildlife projects has helped position Demdomen as a facilitator, or local catalyst for adaptive learning organizations with wildlife and recreation interests in Stswecem'c/ Xgat'tem traditional territories. Demdomen continues to meet with the BC Ministry of Environment, the Canadian Wildlife Service, and with local and provincial guide and recreation associations, in their effort to rekindle the tradition of natural resources learning and teaching in their traditional territories.

3.42 **Demdomen as a Catalyst for Adaptive Learning Organization, Form of Communication**[57]

> *"...There is a problem of government's misunderstanding of how First Nations operate at the resource level and there's certainly a misunderstanding on the First Nations side of how government works and the process in regulations. And there is a misunderstanding on definitions..."*

Demdomen is a registered non-profit society established by members of the Stswecem'c/ Xgat'tem First Nations. Together it forms an outreach group to the

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[56] The south Chilcotin region had been researched and promoted by the Canadian Parks Service as the site of a future national park for at least 20 years. However, in the aftermath of the CORE planning process, the national park proposal for the south Chilcotin lost considerable ground. Most of the 'ground' that was forested went to a bid for logging by licensees Lignum and Riverside (now Tolko Industries). Road building was swift in order to secure their new operating areas. With the many new forest roads came many new hunters from large population centres looking for easy kills in pristine 'new' territories.

[57] This theme is an aggregation of three theoretical codes that summarize 45 substantive codes from interview data: "Demdomen as formal organizing catalyst" - 19 substantive codes; "Form of communications with community members" - 15 substantive codes; "Form of communication with provincial planners" - 11 substantive codes.

community that attracts funding and helps the province of British Columbia and Stswecem'c/ Xgat'tem council care for wildlife resources. For the past decade, Demdomen has been a catalyst for a variety of adaptive-learning organizations of overlapping interests responsible for bringing the right people together at the right times to learn how to move forward with action items relevant to issues of caring for traditional resources. Improvement in collaboration over the years has been achieved and Demdomen has shown the provincial government and local residents that the Stswecem'c/ Xgat'tem Nations have vital expertise in wildlife management. Demdomen has proven to be an organizing force, or catalyst for forming adaptive-learning organizations to anticipate and respond to crises 'before' they happen.

Demdomen society notes a 'big difference' in overall wildlife management effectiveness when the Province takes time to listen and to adapt to what local people are telling them. Although Demdomen and other volunteer initiatives have really helped in community involvement and in the co-management of natural resources in their traditional territory, there is much more work that needs to be done to establish adaptive learning as a co-managing institution with the Province. Specifically, the Stswecem'c/ Xgat'tem council has requested funds from the Province to hire a First Nations conservation officer for the territory to provide stewardship services and better subsistence use estimates of wildlife resources. Natural resources workers say they need to work with the colleges and universities in British Columbia to 'to make things happen in a positive way'. There is some confidence in potential collaborations with universities and colleges in coming to terms, developing talking and listening skills and cross-cultural bridge-building in developing co-managing agreements.

> *"... Well that's another thing - they (MoE) do it in different ways than everybody - they just hang amongst one another and they don't talk to other people about what they are doing and they don't tell you nothing about what's happening and their involvement with the wildlife... this is something that they never do..."*

Ministry of Environment (MoE) wildlife officials recognize that with help they could learn to improve the structure of their co-managing meeting processes with First Nations. Although improvement has occurred since the early days, First Nations planners have

more experience and are more proactive than provincial wildlife planners for facilitating wildlife management workshops with diverse interest groups. Wildlife officials and Demdomen members note that improvement in co-managing has occurred when a collective community understanding is achieved of common goals. However, with a variety of dispersed and often conflicting users of wildlife resources, this task is easier said than done. Nevertheless, Demdomen works toward the task emphasizing that "getting everyone on the same page" is key in implementing acceptable regulations effectively, from the local level to the level of provincial policy makers[58].

Coming to terms and agreements about wildlife management regulations is best achieved through community involvement and decision-making. Demdomen is working so that First Nations and non-First Nations communities will respect Stswecem'c/ Xgat'tem wildlife management goals. Demdomen members know that more elder and community involvement is needed for co-managing wildlife resources effectively. However, regional scientists are slow to acknowledge traditional approaches for community-based care for wildlife resources. When elders begin telling their stories to the scientists in the boardroom, Demdomen members and others sense that many scientists focussed on maps and pre-defined objectives fail to grasp the meaning of what is being said to them. Due to their fundamentally different management approaches, Stswecem'c/Xgat'tem communities have had difficulty over the years in getting legitimate appreciation from the province for the wildlife management research projects that they have started from local initiatives. Demdomen society directors say that hunters are often 'saying the same thing' as the provincial wildlife biologists, but they use a different vocabulary and different terms of reference.

Misunderstanding often occurs due only to the differences in language and culture of the co-managing participants. Demdomen members are growing in confidence in their role as translator and mediator between Ministry of Environment officials and hunter groups; but directors suggest that they might be more effective if they had help with the "proper wording". Interviewees noted that Ministry of Environment officials try to assist in the translation of scientific to traditional knowledge but they can tend to 'take over'

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[58] Demdomen's mission and often-stated purpose – the metaphor of 'getting everyone on the same page' is designed to appeal to literates to help them relate to traditional values of working together to solve common problems.

community initiatives. Ministry planners sometimes try to redesign management objectives scientifically or bureaucratically only to achieve uncertain short-term agency objectives, while the community is seeking long-term, problem-based learning objectives for the whole community. Demdomen and community natural resources workers are helping provincial agencies learn to listen to the elders and to learn that when wildlife resources and impacts are being considered, they need to learn not just to "look for it" but scientists also need to know "why it is there and how to look for it". On the other hand, government officials insist that their mandate empowers them to maintain an 'objective view' of wildlife resources that is less site-sensitive and more abstract and regional in scope.

A Cariboo-Chilcotin-Coast defined regional perspective of wildlife resources although interesting in its tremendous complexity, is not the priority of the traditional knowledge keepers of the Stswecem'c/ Xgat'tem territory. Traditional knowledge keepers and others with knowledge of wildlife do not attend meetings that seem irrelevant to them. Effective learning organizations co-managing with traditional knowledge keepers should maintain their focus on site issues and should have meetings in relevant backcountry locations to make team learning more effective. Literate policy-making agreements need iterative constant and cumulative reference to field trips.

Demdomen members find that going 'house to house' works best for informing the community; but they are concerned that natural resources workers in the community can become 'distant' as they are compelled to use a management system that has evolved essentially for colonial authority. They feel that when their planners defer to an 'authority' of provincially and regionally-defined administrative systems their traditional knowledge is not respected or sufficiently used. They know that traditional knowledge keepers will not want to share information unless the request makes sense to them. Accessing the holistic lived understanding or 'tacit knowledge' of hunters cannot be done through written requests, or in boardrooms with reference to map folios.

> *"... it's getting to where now each band has its own voice for their wildlife... they stand up and say who they are where they're from and why they're there. I'm pretty sure that every meeting I've been to lately we've been on the same page... it's just like I said its learning how to sit down and communicate with each other*

and talk the same language - we're on the same page but it's just a learning for us about the language... We seem to have good communications with people in the communities of 100 Mile and Williams Lake... the mayor of 100 Mile have been supportive coming to our unity rides. We're getting to work with the community - it's a lot different than how it used to be..."

Community members sometimes feel that although their natural resources advisors and managers listen, they seem to have their own agenda and very little accountability to the community members themselves. Some interviewees indicated that natural resources workers do not talk and interact with the community and 'try new things enough'. However, perpetually under-funded and continually in response to situations of accelerating resource management crises resulting from fragmented and regionally defined provincial objectives, community natural resources workers simply do not have sufficient time to consult with the communities and 'to try new things'.

Knowing the secret bureaucratic language for each ministry engaged in co-managing wildlife resources should not be a pre-requisite to participate and to benefit in the process. Xgat'tem/ Stwecemc natural resources workers have found that they are required to organize provincial government employees from separate ministry 'silos' to respond to integrated resource management crises. If fragmented and often contradictory provincial objectives are not addressed in a unified way by co-managing authorities, then community members can begin to feel understandably confused by the planning process. Alienated from the bureaucratic and fragmented process of wildlife management, community members begin to feel that the "only ones understanding and benefiting from the planning are the planners themselves". Instead of working together co-managing community interests with the province, Stswecem'c/ Xgat'tem natural resources workers are too often consumed trying to organize provincial ministries and trying to guess where Provincial decisions will lead and how these might affect their communities' interests. More community involvement in decision-making and project development could be organized and co-managed by natural resources workers from Xgat'tem/ Stwecemc together with Provincial agencies. It was suggested that First Nations' planners and managers need more training in proposal writing and project management to initiate problem-based learning projects for community development. However provincial

ministry employees could also benefit from this type of training, especially if they could take the time to listen and understand community concerns.

> *"...You know government has training programs for listening skills that type of thing... I think First Nations probably do better than non First Nation - you know he has a talking stick and other type of things... Maybe I haven't been as good at structuring these processes - it's more training to set up the proper procedures and understanding... I've never had a problem listening sometimes I have to be careful not to interrupt elders when I want to provide information... some people are good at it... I know I've got a long ways to go - It depends on who's running the meeting..."*

First Nations planners are required essentially by 'trial and error', to develop a refined knowledge of how ever-changing internal communications work between provincial agencies in order to try to integrate their natural resource decision-making with provincial objectives. On the other hand, provincial planners are not as motivated to familiarize themselves with the basic process of how internal communications work in First Nations natural resource management organizations. Worse, many ministry planners assume that First Nations who do not speak their case in scientific and bureaucratic terms clearly 'don't have a case'. First Nations become disappointed with the implication that they should 'play guessing games' or 'word games' with government from a distance in order to first frame their concerns 'properly'. Elders assume that provincial wildlife officials would want to know "what's being said in communities"; and to learn what is being said respectfully: "they should always have a smile". Although this is regrettably a difficult task to accomplish for Ministry planners with very limited resources and training in doing site consultations, it is a worthy and necessary challenge. With institutional support from co-managing agencies and First Nations, planners could grow to learn personally from traditional knowledge and to appreciate communities' knowledge of sites as they gain familiarity and confidence in traditional territories.

3.43 **Demdomen as a Catalyst for Adaptive Learning Organization - Content of Communication**[59]

> *"...I'm going to try to get this thing on a road where we can get the government out there somewhere and people will write down what we say and where we see our deer and moose and we put it on a map... it's something I understand in my life... I'm only 71 years old..."*

In one of their first wildlife management projects, Demdomen facilitated a collaboration between Stswecem'c/ Xgat'tem and Navaho hunters to learn how to manage local wildlife and identify which mule deer individuals to harvest, in order to have the most favourable impact on the herds. Sharing of knowledge in this project encouraged new friendships and new knowledge while providing a forum for developing a relationship of traditional ecological knowledge between nations. Communication of knowledge occurs in backcountry locations as a shared, holistic or 'lived' understanding. Explanation and elaboration of stewardship concepts using literacy or statistics was not a priority in this knowledge exchange project. Demdomen members recognize that they use a different 'language' for explaining wildlife stewardship concepts. Although the languages are different, Demdomen hunters recognize many congruencies in their traditional knowledge with scientific principles of wildlife biology. They encourage scientists to collaborate on projects with the communities in order to translate knowledge into scientific language where this would be useful. Demdomen society is looking for funding and partners to continue their studies to improve knowledge about wildlife population dynamics in their traditional territory.

> *"...So we studied the habitat and we studied a lot of their... their wintering grounds, the moose calving areas, there's a lot of that we studied and also the species at risk is another one... We know we've had a lot of porcupine and they're starting to die out, the badger is also red-listed... we had 1000 to 2000 before and now we only have 200 left... and so those type of things that we're doing now it's quite interesting- there's also stuff like the spade foot toad the advocet and the curlews different things like that we're studying and its quite interesting..."*

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[59] This theme is aggregated from two theoretical codes that summarize 30 substantive codes from the interview data. "Traditional knowledge" – 14 substantive codes and "Knowledge in relation to others" – 16 substantive codes.

Stswecem'c/ Xgat'tem traditional use study is regarded by the community as ongoing adaptive work in caring for natural and cultural resources. The province regards traditional use study primarily as a project already completed for the purpose of expediting resource use proposals and permits. During the term of the FRBC traditional use study project, knowledge from the elders was solicited and used for mapping some of the locations and attributes of cultural resources. Although the provincial contribution of funds for traditional use study is finished, natural resources workers know that their work in identifying and caring for cultural resources is still in the early stages of reconstruction. Elders are concerned that they are not as involved in mapping traditional knowledge as they feel they should be. They are concerned that integrating traditional uses with resource extraction is not studied or supported consistently in a co-managing process with the province. Natural resources workers and mapping contractors are anxious to continue learning and to utilize innovation in 3D mapping technology to assist elders in developing a shared vision for application of traditional resource management and for co-managing resource development with the province.

> *"...The way they (TUS) were set up was I think that they hoped that they could give the First Nations money... they would put some stuff on the map they could say that they consulted with First Nations and then go ahead with their development... There was a consultant who went to quite a few First Nations that were doing this study and gave them a framework for doing interviews...the questions weren't very helpful for First Nations... so what ended up happening is that the referrals started coming to the traditional use study people and right away we had a problem... what are we going to do with these referrals?...and it's a problem we're still dealing with today..."*

The FRBC funded traditional use study (TUS) only initiated the on-going and adaptive learning process for resource development decision-making. Much of the TUS program funding was spent by outside contractors learning how to do TUS; and much of that knowledge now has since left the community as tacit knowledge appropriated by the employees of the now unrelated firms. Or it was lost in unrecorded conversations. Nevertheless, Stswecem'c/ Xgat'tem staff members were able to teach themselves how to record and use essential TUS knowledge in the western ways. Respect, funding and on-

going collaboration from outside agencies on TUS and learning would put resource use decision-making on a much more secure footing in Stwecemc/ Xgat'tem territory. First Nations have very limited funds and technical expertise to do all the required work in TUS and, so far, outsiders' 'help' has been unreliable, or committed only for the purpose of expediting resource exploitation.

> *"...Our number one rule was if an elder takes you somewhere else, just follow because they're going to tell you what they think is important... When you really listen you will find out that they are telling you something that is important... When we realized this, to me that was when the TUS (traditional use studies) started getting really good...I would say there was some major flaws in the mapping exercise at first..."*

Demdomen society has proven itself as a community catalyst for sharing in adaptive learning about natural resources. Although they attract little funding from the Province, Demdomen is recognized and appreciated by regional planners in the Ministry of Environment. Demdomen members have been able to use scientific concepts to consistently and persistently state their concerns clearly, so that scientists are able to comprehend site-specific problems. Demdomen, the Stswecem'c/ Xgat'tem First Nations and the government of Canada are currently collaborating to co-ordinate species-at-risk studies in traditional territories. Demdomen society directors want to help groups discover how working together 'on the same page' can benefit individuals and groups involved in co-managing wildlife resources. Demdomen are trying to get everyone- their natural resources and treaty staff, elders, Ministry of Forests, Ministry of Environment, guides, ranchers and local recreation interest groups 'on the same page'.

> *"...We have seven or eight youth that come out with us learning... We don't just take them out to hunt we explain all about the animals that they are going after and we explain which ones to pick out and which ones to leave... We tell them all they need to know so that in the future they know... They're learning about wildlife management and they're also learning about our traditional ways..."*

Demdomen members are helping Stswecem'c/ Xgat'tem communities' hunters to self-organize to understand their mule deer sustenance harvest. They are helping to co-

ordinate new knowledge of wildlife impacts from local sources, with provincial information. Demdomen members know that local cowboys collectively know hunter pressures, range impacts and deer movements. Getting 'others on the same page' includes other First Nations communities. Demdomen members also 'put the word out' and are available to discuss with hunters in other First Nations communities preferred options and techniques to use in caring for shared wildlife resources. Demdomen members are interested in talking about rules that apply to First Nations and non-First Nations hunters. Guide association and gun clubs have asked the Demdomen Society to collaborate with them in developing policy recommendations for regional and provincial consideration.

> *"...We take parents out too - we don't have a program for it... it's all volunteer work... Larry has a company but right now he has a hard time making the money to pay for insurance costs alone... We'd like to set up but I spend so much time out there I've learned a lot from elders in different communities - I learn from other hunters and I learn their ways and they learn my ways... I wish we had something for our youth where they could gain knowledge and they could get academic credit... We were hoping some of our youth from this community will be conservation officers... It's been 10 years now and it's been pretty much all volunteer...but we expect that eventually it will be a business..."*

Demdomen members have been given chief and council authority to offer ideas and information about traditional knowledge and resources without being 'hung on the consultation hook'. In the past the Province has used anecdotal natural resources information from unofficial First Nations sources to expedite logging and other resource exploitation. Now wary of this technique used by industry and government to 'fast-track' development permits, the chief and council of the Stswecem'c/ Xgat'tem communities have had to respectfully request that Demdomen hunters and teachers present a letter from the band chief and council 'on the written record' at their meetings with wildlife officials – to make it clear that their comments and advice at the meetings should not prejudice on-going treaty negotiations with the Province. The necessity for such a letter saddens Demdomen representatives. Some recognize it as a necessary western formality

but others see it as a sign of bad faith on both sides and not just a procedural 'legal instrument'[60].

Ultimately, the Stswecem'c/ Xgat'tem community leadership has the sacred trust of their community members to direct learning and development toward a collective vision of strength and respectful collaboration with the province. Chief and council and treaty staff need to be accountable for consistent and acceptable results in their treaty-making process. Demdomen members and their wildlife researchers keep close in touch with the Stswecem'c/ Xgat'tem chief and council; but as a recognized society in British Columbia they also have the perseverance and credibility they need to survive changing regional wildlife management officials, as well as successive provincial and band-elected governments. Demdomen has been given chief and council authority from successive band governments to help to co-ordinate community hunting interests. This authority is consistent with the Stswecem'c/ Xgat'tem communities' long-term vision for sustainable fish and wildlife stewardship in their traditional territories.

Demdomen directors patiently and persistently meet an on-going challenge trying to care for wildlife resources while co-ordinating implementation of sustainable fish and wildlife management policy in their traditional territories. They are encouraged that some of their knowledge is eventually understood and respected by provincial authorities. Demdomen members are currently working hard to achieve road deactivations called for by a variety of groups and provincial ministries. However, due to lack of co-ordination at the provincial and regional levels, these road deactivations have not yet been accomplished.

3.44 **Demdomen-NStQ and Provincial response to wildlife management crises**[61]

> *"...Usually it's a flare-up... it's something that all of a sudden a concern that they weren't adequately consulted - It was the spike moose thing that flared it up - and oh by the way here's a bunch of other issues you need to address... Sometimes I look at it like if we don't change the regulations then we don't have to act... we're*

[60] Similarly though most interviewees were familiar with signing researchers', "letters of informed consent", I did notice some people were concerned about the need for this legal protocol. This ethical issue is discussed more fully in Appendix 4.

[61] This theme is based on one theoretical code aggregated from 23 substantive codes from the interview data.

almost put in the position of status quo because if we propose a 'reg' change then we are going to have to talk to all the people and they are never going to all agree..."

"...last year regulations came out for spiked moose the band had a huge problem with that because it increases hunting pressure (for deer and grouse as well) and it increases the probability of moose being shot and left out in the bush. They wanted to know why that had been opened up (to hunt moose) and they wanted to express their concerns about it... The band approached me on that and we had meetings with the Ministry who subsequently shut down the moose hunting on the west side of the Fraser but they didn't shut it down on the east side...The reason coming from them was that they had consulted with us therefore they didn't feel they had to shut it down...whereas on the west side it went more political and so it did get shut down..."

Stswecem'c/ Xgat'tem First Nations have historically had little influence in initiating dialogue with provincial wildlife officials. For decades, local knowledge has evaded centralized provincial bureaucratic authorities. Provincial wildlife resource planners focussed on broad regional area objectives are not attentive to the key impacts of administrative problems that accumulate over time at the local level. A change in provincial wildlife regulation without careful consultation with local communities can result in a growing management problem reaching an unacceptable threshold of site impact that can trigger a communication crisis. For example, communication crises are sometimes caused when regional or provincial policy changes are made by informing communities of regulation change by sending a letter in the mail, without a follow-up meeting. Issues of trust accompany all letters received by First Nations communities from provincial authorities historically; trust building is not possible through such an impersonal means of communication. Regulation changes that increase recreational hunting quotas in traditional territories are especially problematic. The Ministry of Environment has a legal obligation to ensure sustainability of wildlife populations and First Nations' sustenance uses before considering any increase in recreational hunting. On the other hand, the Ministry of Environment wildlife administration budget is directly linked to the sale of hunting licenses. Demdomen and Stswecem'c/ Xgat'tem natural resources workers are finding that it is always a struggle with government when

outcomes of central decisions issued through the mail seem to be set up as 'win-lose' situations for the people in indigenous communities.

> *"...When you're just a biologist you work with the biological and that's the most important thing but when you get to the management level you start to have to balance the biological with the social and the economic... In our ministry part of our budget is based on hunting and fishing license sales... So do you think that we have a bias at least to maintain hunting and fishing license sales... yes... and we did this when we opened the spike fork moose season - we had biological evidence to show this was a reasonable harvest and economic incentive... but socially the acceptability wasn't there. Precautionary approach is a kind of ambiguous term because it depends on what criteria you are going to apply it to and what species you apply it too... Are we taking a precautionary approach on sheep? - yes we're very conservative with sheep...would we take a precautionary approach to restrict mule deer harvest right now?... not likely since all the evidence shows that we have lots of deer - there is a risk that if your deer population exceeds the carrying capacity then other problems will develop... farmers are saying that they've seen the deer population triple on their farms over the last few years and they want more harvesting..."*

> *"...They wanted to open it up to all bucks... it just got carried away... The hunters came just like ants they'd clean out one area and then all move to another area and then clean that out... To me I don't know why the government is so hard on this and don't want to listen... We do have deer coming back - but it doesn't mean that we have to kill every one of them right away - and open it up to everybody to come out..."*

> *"...I don't see why they've got to have that mandatory kill all the bucks - It took us six or seven years to get them back to where they were...we were starting to see big bucks - now were not going to see them anymore... The guide outfitters over there are saying the same thing... There's just too many people over there..."*

Demdomen knows that by respecting all participants and by developing human-to-human negotiations as an adaptive learning organization, then natural resources workers would be able to respond to crises 'before' they happen. 'Win-lose' scenarios cannot always be transformed into 'win-win' situations; but when respect is shown for indigenous communities, there is greater opportunity for learning and sharing in a co-managing process. Natural resources workers notice that provincial managers with broad

regional or politically motivated provincial concerns miss opportunities to use discretionary spending to solve simple problems with First Nations before a crisis ensues. The task of clearly explaining policies and answering questions of indigenous community members about the provincial wildlife management system in traditional territories is one example of how clear communications can begin to help communities to help themselves and ultimately to assist in co-managing of natural resources.

> *"...There's been a lot of I guess you could call it mis-communications between us... There's things that are happening out there that we don't know about until it's too late... and it's all because of somebody didn't send a letter or didn't send a fax or make a phone call... Working with the government can be hard... It's two different languages... they have they're own way of talking about things and we have our way of talking about things..."*

Crises are often caused by miscommunication between provincial authorities and First Nations. Demdomen society works to ensure that all players can be at the table when changes are made. For example low Ministry of Environment wildlife estimates of sustenance use and consequent incorrect population assessments resulted in the Ministry of Environment opening a recreational hunting season for young spiked-bull moose in Stswecem'c/ Xgat'tem territories. In adjacent territories, the T'sihlqotin First Nations felt this was unacceptable and were able to stop the provincial decision to open recreational hunting of young bulls. The NStQ failed to get a similar response; they were heard as less forceful and perhaps more 'conciliatory' by distant provincial strategists. Recreational hunting for the spike-bull moose was not closed in their territories. Demdomen, the NStQ and the T'sihlqotin Nations did not agree with the provincial plan to an open season for the hunting of young spiked-bull moose. The Ministry of Environment respected T'sihlqotin demands but not those of the NStQ, and this caused a crisis in confidence among the Demdomen, provincial wildlife officials and Stswecem'c/ Xgat'tem communities. It was hoped that the Ministry of Environment wildlife officials would change hunting regulations in Stswecem'c/ Xgat'tem territories in 2006, but any changes were made too late to be published and distributed in the current provincial hunting guide. In an effort to protect conservation and sustenance values in their territories, the natural resources advisor through the Stswecem'c/ Xgat'tem chief and

council informed the Province that they were left with no alternative but to institute their own road checkpoints.

> *"...back to the road block thing we don't want to go out there and just shut it down ... so possibly what we're going to do and we talked about this at the last wildlife meeting and we talked with council is that we're going to set up checkpoints... we'll put out a press release and we're going to let everyone know they're out there and we're going to put signs up to let them know that it will be a voluntary check-point and we're going to be taking numbers sex and age and all that kind of stuff. And we're also looking at things like safety because people couldn't go out berry picking up there and the rancher couldn't do his ranching because there was a shot going off every minute ... but interestingly... I got a call the other day and he(MoE official) says ... 'what do you think about the idea that we look for funding to help you do that ...and we go out and do the checkpoints with you?'... I said I think that's great... you know... "?*

Demdomen is also concerned about the accelerated increase of deer hunting associated with potential increases of moose hunters and believe that deer hunting should be restricted to four point bucks and older. The province recognizes that they must be careful to take responsibility for their part in co-managing so that First Nations at road checkpoints are not perceived as acting without authority. Specific hunting regulation changes are (at the time of writing) yet unknown to the Xgat'tem/ Stswecem'c. Regional wildlife planners have not yet resolved with Stswecem'c/ Xgat'tem communities how to manage the spike bull moose hunt, the impacts of too many deer hunters and of the current recreational river-boat hunting. There are also issues of hunter access that the Xgat'tem Stswecem'c wish to co-manage with the province. The province expects to learn more with Demdomen members this year at their road checkpoints as together they inform recreational hunters of the regulation changes and local concerns.

> *"...With the Ministry of Environment in Williams Lake it's been pretty good - we've had some bad times but we've also had lots of good times with them... you know we've worked... we've gone a long ways with them from where we were 10 or 12 years ago... "*

3.45 **Demdomen-NStQ/ MoE and Administrative Boundaries**[62]

> *"...there is a push to try to streamline and amalgamate but there comes a point when certain mule deer regulations biogeoclimatically that seems like the same area - you might try to manage by biogeoclimatic zones or by specific populations - so you could start managing that way but part of the problem is that the management units do not correspond with watersheds... well you say that should be easy to fix just change your boundaries... A huge administrative burden... because there's a whole suite of regulations under the act you'd have to go to every regulation and change it..."*

> *"...In this area you have four management areas all coming together - government think the populations are OK in the separate management units but they don't see what's happening in this one small area that includes populations from four units. The four units meet here in a hub and there's different regulations for each area so hunters can move around and so they open up a different area at a different time... So you got these hunters traveling from one area... and improve their chances that way... There's just too much pressure in one area...especially in this area ...before they weren't using boats... Now they're using boats... The hunters up on the road are shooting them and chasing the animals down to river where they used to be able to get cover... now the hunters on the river are just driving up and down with their boats and shooting them or chasing them back up to the road where they get shot... The animals don't have a place..."*

Demdomen, community hunters, and Ministry of Environment wildlife resources planners are required by legislation to work within a system of wildlife administration that may be more social or arbitrary in its basic design and evolution than biological. Using watersheds as fundamental 'building blocks' for wildlife units and regions would resolve current administrative difficulties with respect to developing local knowledge; but due to the legal framework attached to current unit boundaries all associated regulations would need to be amended. Such a revision toward a biogeoclimatic and watershed-based approach for wildlife administration, though sensible ecologically and from the point of view of traditional knowledge keepers, would have a significant impact on current management practices affecting the recreation and tourism sectors of the provincial economy. Nevertheless, Demdomen emphasizes the need for regulatory

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[62] This theme is an aggregation of one theoretical code summarized from 22 substantive codes based on the interview data:

reform. Site-specific and watershed-based wildlife management regulation is a serious concern in the Stswecem'c/ Xgat'tem territories where four separate administration units allow hunters too many options for exploiting wildlife resources. Under the current regulatory framework, recreational hunters and guides have incentives to lengthen their hunt within Stswecem'c/ Xgat'tem territories and to plan their expeditions to move from unit to unit within the same overused areas. When one unit is closed or presents unfavourable restrictions, hunters can relocate their camps a few miles or, in some cases, simply hunt the same animals on the other side of the road in the adjacent unit where hunting is permitted.

Current provincial administrative boundary rationales outlining hunting units are often social and historical rather than biological in design. When region and unit boundaries meet in First Nations territories, it is difficult to explain why closures apply on one side of the road but not on the other. Not only are local wildlife resources over-exploited due to hunters remaining in the territory only to move to adjacent units to take advantage of a sequence of openings, but respect and trust of the wisdom of provincial management authorities have become strained. It can be difficult to reconcile local traditional knowledge in a framework that favours unit boundary setting from distant regional and provincial offices. Demdomen suggests that although the Ministry of Environment in the Kamloops and Cariboo-Chilcotin-Coast regions have different regulatory approaches in the Stswecem'c/Xgat'tem territory, different hunting units should be harmonized to avoid unacceptable site impacts within a traditional territory. When different hunting units outline different hunting regulations that risk the overuse of particular sites, the differences should be negotiated at the local level.

Provincial hunting regulations should harmonize with site-specific traditional ecological knowledge for caring for wildlife resources. However, the Ministry of Environment finds it difficult to respond to site-specific concerns. Although their wildlife population estimates are accurate within large unit boundaries, their accuracy diminishes at the site level. Demdomen finds this averaging of local populations across large management units misleading, since it creates the impression that all populations are equally healthy and there is no problem of over-exploitation of wildlife resources and site degradation at specific locations. Recreational hunters concentrate in the

Stswecem'c/ Xgat'tem territory because of the international publicity generated about Parks in the south Chilcotin region and because of the natural beauty of the area. However, with increasing overuse by hunters many of the locations most valued for spiritual and cultural reasons are becoming threatened. Encouraging a concentration of recreational hunting in these vulnerable areas is not only unfair to the First Nations who must share wildlife resources disproportionately compared to the rest of the region, but it also concentrates a disproportionate share of the regions' cumulative site impacts on a relatively small area.

Ministry of Environment wildlife officials have noticed a fundamental tension between standardizing regulations for ease of central administration authorities and making separate site-specific regulation to accommodate the 26 First Nations in the Cariboo Chilcotin Coast region. The Ministry of Environment understands that administrative boundaries without ecological meaning can present contradictions and communication difficulties from a scientific and administrative perspective, but there is a strong historical, social and economic momentum behind the force of the boundaries, entrenched in legislation and regional and provincial tourism business strategies that are difficult to reverse. The Ministry of Environment sees some combination of regional and site-specific regulation as a desirable balance to achieve. The Ministry of Environment has offered to develop a 'memorandum of understanding' for how to work with the Stswecem'c/ Xgat'tem so that abuses of hunting regulations and site degradation due to recreational hunting can be minimized or prevented.

Ministry of Environment officials point out that they simply do not have the staffing capability to offer a site-specific planning service to each of the communities of the 26 band councils in the region. However, they feel they could communicate effectively with all the bands through their council of chiefs at the tribal council level. The Ministry of Environment notes that individual attention to each band would not solve all site management problems as territorial boundaries overlap and inter-community and multi-stakeholder discussions will continue to be of increasing regional and provincial importance.

"... just looking at the expanse we would probably need 3 or 4 hunter advisory councils dealing with regulations. The problem is we'd then have the management units that we manage under (span) cross different (First Nations) territories and (provincial) game management zones so you'd have to decide ...now if we have a hunter advisory committee for the Chilcotin but you have overlap in the CTC (NStQ) area and it's a real problem that has been elevated by the Canoe Band (Xgat'tem) who says here's our traditional area we're partly in the Kamloops region and partly in the Cariboo region and you have fundamentally different approaches - that's not acceptable in our territory we want the same 'regs'. So there will always be a boundary problem if we move the boundary north somewhere along the line that boundary is going to cross into someone elses' territory right... We have a legacy of administrative boundaries which don't correspond with territorial boundaries and we have overlapping territorial boundaries which causes difficulty."

Ministry of Environment officials indicate that round-table discussions involving overlapping stakeholder interests and First Nations' interests will become increasingly important. They acknowledge that the province and the communities must be accountable for having the decision-makers at the table at the right times to make key decisions so that adaptive learning is served. Ministry of Environment officials hope that stakeholder boards with First Nations in a co-managing relationship with the province is a way that First Nations and stakeholders can adaptively learn and assist the province to mitigate increasing impacts on traditional resources. Ministry of Environment and First Nations natural resources workers note that it can be a strategic problem to ensure that the right people are at the table at the right time to make key decisions. Relations between key individuals and key communities can be complicated by historic conflict between personalities or interests. Consequently, Demdomen directors indicate that it is crucial that an undercurrent of trust and respect be nurtured by sending a clear sign that the province is encouraging transformation of current fish and wildlife approaches to management. Wildlife planning must be more closely linked to ecological units of analysis and must ensure that communities that depend on natural resources for their traditional livelihood are clearly respected in the co-managing process. Ministry of Environment officials are very concerned about balancing First Nations' sustenance with recreational hunting. The Ministry of Environment require accurate estimates of First Nations' sustenance use before they can authoritatively make changes to hunting regulations or raise recreational or community hunting quotas. To do this, the Ministry of

Environment will need to develop common goals with First Nations' representatives, starting from a common understanding of the capability of the land for sustaining wildlife resources.

> *"...We just started talking to the guide outfitters association...our next step is to sit down and talk with each other... I was the only one to talk to the head of the guide association for this area - It was just me personally talking to him made me realize that the association has a lot of the same interests as we do... So that's why we would like to sit down prior to any government meetings and get to know each other... same with the wildlife federation - we've taken some baby steps with each other - we've sat and listened to what they've had to say...we've learned what they want and they've learned what we want..."*

3.46 **MoE and Demdomen/ Stwecemc Xgat'tem joint hunter checks**[63]

> *"...What I've also suggested in a proposal to Canoe(Xgat'tem) is that we run joint hunter checks and some patrols... And yes we mark down impact to grasslands... where they set up their camps and where they drive - we have to get funding for this type of enforcement... Generally it's not going to tell us because we sampled this many then there was that many - but what it does is it provides a profile and some presence... It may not tell us how many hunters were there and how many deer were shot but it may tell us how many camps and where they were...It's in the park so parks people should know about this..."*

Demdomen and Stswecem'c/ Xgat'tem natural resources workers are noticing increasing numbers of hunters concentrating in certain areas of their traditional territory. The Ministry of Environment are not well equipped to proactively prevent serious site impacts caused by increased hunting pressures. For example, Demdomen members are finding that current recreational riverboat hunting is unethical and is causing too much pressure and unclaimed kills; but regional enforcement officers with the Ministry of Environment are ill-equipped to deal with this problem. Elders are concerned that local herds of mule deer were up to 10 times larger 50 years ago in the Empire Valley. But

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[63] This theme is aggregated from two theoretical codes summarizing 43 substantive codes from the interview data: "Demdomen and MoE regional and site specific" – 20 substantive codes; "Demdomen and MoE joint hunter checks" – 23 substantive codes)

regional wildlife planners maintain that herds are healthy when the population is averaged over the entire management unit.

Ministry of Environment wildlife planners find that they are unable to respond proactively to First Nations and others' concerns about enforcement, habitat management, forest and range management and road deactivation issues. Compiled at broad regional levels, Ministry of Environment mule deer population information is of limited usefulness at the site management level. Demdomen is requesting funds to continue a local mule deer and moose study so they are more familiar with the dynamic equilibrium of the local wildlife populations as they relate to hunter and habitat impacts locally. Ministry of Environment wildlife population estimates and habitat management guidelines have generic relevance but the accuracy of knowledge diminishes at the site level. Demdomen members are concerned that the recent and growing deer population impacts due to increased hunting pressure in their territory are averaged over larger management units and are not being detected by regional inventory and hunting use statistics.

Demdomen members are confident that with financial and other assistance they can develop local wildlife knowledge and make recommendations effectively with their hunters, natural resources workers and local ranch employees. They have found over the past 10 years that 'getting everyone on the same page' is key to implementing regulations from 'the bottom up'. They have also found that the different 'languages' used for explaining and understanding wildlife causes the greatest misunderstandings among wildlife management planning participants. The language and context of a 'holistic lived understanding' of population dynamics and wildlife behaviour in a valley is different to the language and context of scientific literature and statistics of the region – but it is an equally important language and context for knowledge emergence to be effective and adaptive across management scales and boundaries.

Demdomen members have found that mapping technologies that produces three-dimensional images provide a good communication medium for sharing and expanding both literate/ statistical and holistic/ lived knowledge. With three-dimensional mapping technology, diverse interests can collectively develop a more accurate understanding of natural resources and learn to make increasingly acceptable and well-informed collective

decisions. Stswecem'c/ Xgat'tem First Nations continuing in traditional use studies find that the mapping of sacred and ceremonial places is necessary to protect the places; but co-managing some protocol for confidentiality will need to be enforced. Demdomen has assisted Stswecem'c/ Xgat'tem natural resources and treaty staff to develop mapping for wildlife habitat and migration routes of a variety of species in their territories. More work needs to be done to keep the mapping up-to-date, particularly in relation to changing patterns of recreation use. Avoiding the reconciliation of wildlife administration boundaries with local knowledge can cause site management crises for Stswecem'c/ Xgat'tem communities and the province. A watershed-based, biogeoclimatic and ecological approach for describing habitats would help to translate geographic information across the language barrier between traditional local knowledge and scientific regional knowledge.

Volunteers from the communities are helping government to do work that in other jurisdictions in Canada might be done with full-time employees. The Ministry of Environment point out that in Alberta there are about 300 conservation officers compared to only 120 in British Columbia. In areas of hunter overuse there are simply insufficient conservation officers to be effective. The benefit of joint Ministry of Environment and First Nations hunter road checkpoints and patrols is not just in ensuring that hunters are informed of new regulations, they also help the Ministry of Environment and First Nations understand the co-management goals that they have in common. Through such problem-based learning assignments as joint hunter checks, a team approach is encouraged for the co-management of wildlife resources. Almost certainly, team wisdom and a new, shared knowledge will emerge from these collaborations. Demdomen members have noted that they have traditional knowledge that can help the Ministry of Environment wildlife officials learn 'not just to look for it' but also to learn 'how to look for it and why it is there'. Sensitivity to the interactions of hunters, residents and roads is a complex, tacit and contextual knowledge that cannot easily be made explicit. Some conservation officers are able to work long enough in a region to accumulate a considerable amount of this site knowledge; but this information is not easily shared with office-centred wildlife planners and policy analysts in separate ministry 'silos'.

Regional planners from all government ministries are too constrained in their separate ministry interests to correct the separation and weak communication between regulations and enforcement so that an adaptive strategy for continual improvement can evolve more wholly from the level of the forest to the Province. The weak connection between planning, monitoring, enforcement and policy development can be strengthened by co-managing enforcement checkpoints, and joint patrols with First Nations.

> *"...First Nations are very interested in having their own enforcement people out on the land... I'm not sure if you knew I think in BC we have 120 COs and Alberta has about 300... TNG (Ts'hilqotin National Government) have been saying they want First Nations enforcement - most of the bands have suggested this to us..."*

> *"...We do have a wildlife committee but I think we need more people trained in wildlife management and natural resources... I think it needs to happen fulltime... I think we actually need an office where the government recognizes us to start working with us... so I think we need more staff... more people trained in that area and the trust that we know what we're doing... I think that's not the only way but it is something that needs to be looked at..."*

Unfortunately, it required a clear signal to politicians that Stswecem'c/ Xgat'tem volunteers were planning to do their own hunter checks and patrols before co-managing between wildlife planners, enforcers and First Nations was sanctioned by the Province. It is unfair of the Province to wait for communities to initiate 'co-managing by crisis'. It is unfair of the Province to expect volunteers to do necessary work without maintaining a better organization for training and compensation for the volunteer services provided. Ministry of Environment wildlife officials have shown recent improvement in collaboration with Stswecem'c/ Xgat'tem First Nations and there is talk of funding community participation expenses, although this is not confirmed. Demdomen members know that they need more technical expertise and co-operation from the province to adaptively manage enforcement duties in their territory. But they also know that a recently accelerating erosion of their local wildlife resources must not be allowed to continue. Stswecem'c/ Xgat'tem First Nations could make good use of well-trained wildlife conservation officers working full-time for their own territorial government in a co-management relationship with the Province.

"...I just wish that the government would listen to what people have to say - we're all supposed to be on the same page... but they ...I don't know... sometimes you feel like you've made a breakthrough - and then all of a sudden it changes... it seems like you get used to one person being there and you get things working with that person in that office - then all of a sudden boom they transfer him... He doesn't have time to finish what he's doing so they bring somebody else in who has a totally different set of ideas... maybe he's not as good a listener as the other person was... You know I think the people that live on the land that live in this area have more knowledge than the people that are sitting behind desks... Just to listen to what the people got to say... If they listened then everything would be alright if we all worked together..."

Although Demdomen volunteers do not have biology degrees and provincial wildlife conservation enforcement training, they are respected in the region as hunters, teachers and researchers. Over the past 10 years of attending and facilitating backcountry land use meetings Demdomen directors have found that their communications are improving with non-First Nations communities in the region.

3.47 **Demdomen-NStQ/MoE and Adaptive Learning through Co-managing Parks**[64]

"... you may say that we need a special management approach for that specific area - and because there is already a Churn Park committee that includes a variety of different stakeholders ...my suggestion to Canoe(Xgat'tem) is that we sit down and if that's a localized area problem there's already a planning team in place lets use that forum to decide on how best to deal with it... Because really Park legislation has more jurisdiction of the area than we have - we can say that we need these things like restrictions on number of campers and restrictions on allowable hunting areas, restriction on number of hunters..."

"...We have a planner and he is spending virtually all of his time on Park MOUs - there is a huge resource demand to follow through on all 26 bands in the region - that's a full time job... So we have one planner and it difficult for him to... at the band level the community of Nazko were impressed that someone came to talk to them - but because you are there - there are expectations ..."

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[64] This theme is the aggregation of two theoretical codes summarizing 25 substantive codes from the interview data: "Demdomen and BC Parks management" – 13 substantive codes; " Demdomen and MoE wildlife staff education challenge" – 12 substantive codes.

BC Parks' planners and First Nations have new emergent knowledge in co-managing parks in NStQ territories. BC Parks' clear legislated mandate to manage tourism impacts while conserving protected area values is one reason for their growing rapport with First Nations. Protecting natural and cultural values and regulating tourism is also a key interest of First Nations, though many question why intensive planning for tourism and conservation does not also occur outside of parks. The intent of the provincial and regional administrations is to classify the land and focus planning resources on specific areas for specific purposes rather than to work to develop a conservation and use ethic for the whole region. Although First Nations recognize the need to prioritize certain areas for special protection, the elders feel that this should not be done at the expense of areas outside parks that are then promoted as intensive use.

> *"...Later we started forging relationships with people in BC Parks and it came down to a few individuals who helped us and tried to deal with issues fairly and that went a long way with us...It was known that nothing would happen out there without the knowledge of the steering committee. We could do field reconnaissance with them to consult and help them mitigate their development right on the site. We were happy because we could be paid for our consultation and we knew we would be consulted and we could mitigate for impacts on the site. And they were happy because they could proceed without going through the usual bureaucratic channels of archeological impact assessments and referral processes..."*

BC Parks' planners have achieved considerable experience in establishing on-going learning organizations for land planning. Negotiating plans for new protected areas with diverse groups may have resulted in considerable team learning at the site levels and across management scales in the BC Parks organization. As a higher than average proportion of parks are roadless alpine tundra areas of low human populations, the task of organizing recreational hunters and negotiating access agreements in parks is usually simpler than for land use plans outside parks. Nevertheless there are lessons that can be learned from the parks' models for adaptive learning and co-managing that can be applied across the landscape.

Trust building through demonstrating fairness; and encouraging listening to all perspectives as well as monitoring experiments and recommendations, has been

important in the implementation of management plans for parks. In developing the Churn Creek Protected Area, BC Parks achieved valuable results by employing archaeological workers of the Stswecem'c/ Xgat'tem community directly in the mapping and planning for sensitive cultural and spiritual areas. Risks to cultural resources through proposed park developments can be better understood when more community members are actively involved and employed in archaeological investigation. The development approvals and high costs of consulting archaeologists can be optimized in this way. Most importantly, the benefit of the learning about First Nations' natural and cultural resources in parks remains with the community, and not just with professional archaeologists after the initial plan is completed. The learning organization involving the Stswecem'c/ Xgat'tem First Nation that has grown in co-managing the BC Parks plan for the Moose Valley/ Flat Lakes protected area is now mostly 'on the same page'. If not, the organization is poised to make adaptive changes that could work toward acceptance by the group.

Interviewees indicated that Parks legislation might be implemented to disperse recreation in areas in the Churn Creek Park in order to prevent site degradation due to over-use. Methods for regulating recreation use in areas outside Parks can also be co-managed by planning teams. A monitored site use agreement among recreation group leaders, commercial guides, and First Nations can be equally effective inside or outside Parks boundaries. The Stswecem'c/ Xgat'tem Nations help to improve natural resources planning when the Province takes time to listen to site level concerns. When planning is proactive to site level concerns then adaptive learning can occur. Co-managing parks in traditional territories has met with some success; and the NStQ are now working to make their land-use plan proposals outside of parks explicit so that their communities' knowledge can be negotiated with the Province to resolve other problem-based learning challenges. Demdomen directors are ready to discuss plans with other back-country groups that believe that long-term gain can be realized if the co-managing process is implemented now.

3.5 Likely/ Xats'ull Community Forest Case Study

3.51 Introduction:

The Likely/ Xats'ull Community Forest Tenure is one of a few community-driven, joint-venture, forest tenure agreements between a non-First Nations and a First Nations community in British Columbia[65]. The absence of the province or its licensees as a mediator in the relationship between the Village of Likely and Xats'ull First Nation has assisted in cultivating cross-cultural communication processes directly between the communities. Despite their differing cultural background, a common interest in sustaining their local investments in the lands and resources and a common distrust of government planning processes has joined these two communities together in a business partnership. The Likely/ Xats'ull Community Forest (LXCF) case study presents a promising model for co-managing forest resources such that communication protocols are evolving as a joint community driven consensus-based process between communities, government and industry. This case study presents a contrast to the others in that the LXCF that has been continually formulating and adapting a policy structure that enables them to explicitly self-organize for resilience in the face of change and crises.

3.52 **Likely/Xat'sull Community Forest Process: Provincial Contribution**[66]

> *"The stumpage rates went from 25 cents a meter for salvage to 8 or 10 bucks which was almost workable... Now it's up to 18 bucks per cubic meter... Because the stumpage is so high we are having to log larger blocks than we wanted to and we have had to sacrifice some of our management goals just to make ends meet..."*
>
> *"...there are guys from Victoria coming to the community forest association meetings...but there isn't the flow coming back from government to make it work at this point... It is supposed to increase the economy of stability and the living*

[65] What counts as a "community driven joint venture" is key in understanding the best potential for the future of community forest agreements in British Columbia. With minimal community involvement, first nations and non-first nations 'joint ventures' can be deceptively similar to conventional forest management.
[66] This theme is the interpretation of one theoretical code "LXCF process: Areas for Province to improve" that is developed from the aggregation of 14 substantive codes from the interview data.

environment of the people in the community of the forest but it's bloody hard to make any money at it other than create six logging jobs"

"...from government we're not hearing that maybe if there's something we're not doing they should be telling us - or if we're doing it right we should be hearing that as well too... we're not hearing the communication on how we're doing... we haven't heard anything so maybe that's a good thing... but it would be nice to hear something from them..."

Aside from just being an important training area, and morale-booster and income generator for the Xats'ull First Nation and the Village of Likely, the Likely/ Xats'ull Community Forest (LXCF) can also be a model from which co-management protocols might be derived and applied to other areas of provincial jurisdiction. However, interviewees commented that the community forest is not regarded as a co-management learning opportunity by the province. There seems to be only an interest in monitoring the Likely/Xats'ull Community Forest, without any attempt to learn systematically from the board and community members.

3.53 **Likely/ Xats'ull Community Forest Businesses**[67]

"...With Likely and Xats'ull we're both trying to be more...we want to be... self sustained and that's what we're striving for...because we both want to create jobs for our community members... we both want to make money... we both want to provide services for our community members..."

Developing a vision of greater business independence from government and major forest companies has been a quest for the Village of Likely and the Xats'ull/Cmetem' First Nation for decades. For the Xats'ull/Cmetem', a repressive colonial history of exclusion from natural resource management still lingers in many families' stories. For the Village of Likely and its small-business loggers, the failed promise of sustained yield forestry has shattered confidence in the planning process and has phased out local

[67] This theme is based on one theoretical code that is the aggregated result of 24 substantive codes from the interview data.

forestry employment and short-and medium-term prospects for industry in forests around Likely. The Xats'ull/Cmetem' envisions that their co-managing employment prospects for community members off-reserve will grow in their traditional territory. The Village of Likely envisions re-growth and renewal of their local economy as small businesses explore new niches identified by local First Nations and non-First Nations entrepreneurs.

Although in theory it is the province, and not the licensees, that is supposed to be managing crown lands, the economic and political power of the major licensees have historically presented a formidable monopoly and lobby group in the forest sector. Provincial cutbacks to Ministry of Forests and Range personnel initiated in 2002 all but extinguished local administrative capability for the Ministry of Forests and Range in managing small business forestry. Government provided some assistance to the Likely/Xat'sull Community Forest (LXCF) in developing their initial plan; but due to continual cutbacks and relocation of staff during the LXCF start-up years, the provincial contribution tended to be slow and inefficient. Fortunately for the Village of Likely and the Xats'ull/Cmetem' First Nation, the approval of their community forest tenure was well in process before the cutbacks. In the absence of government capacity to respond to detailed community questions pertaining to small business development, the LXCF were able to respond in their local areas. By 2005, the LXCF had grown their forest management capability considerably. Within the area of the community forest tenure the LXCF manager administers local small business salvage permits.

The LXCF board members from Likely and Xats'ull help to answer community member questions. A LXCF newsletter is published to provide information to both communities on developments in the community forest, policy discussion and future prospects. The LXCF acknowledge that trust building is not possible simply through written communications, and so they solicit community information in a structured way at community meetings. Nevertheless, there is a limit to how much board members and the LXCF manager can accommodate community requests. Some diversity and conflict in co-managing the LXCF is both inevitable and ultimately healthy when it is managed to develop sustainability. For example, concerns have been expressed to the LXCF manager about ensuring equal opportunities for each community's forestry and logging contractors. The problem is that Xats'ull's new logging contractors may not be well

prepared to take on responsibilities for logging a specific area, yet their experienced contactors may be busy and unavailable. The LXCF manager must provide equal employment opportunities for both communities but, at the same time, quickly and decisively respond to profit-making opportunities for the benefit of both communities. The balancing act has not been easy. Nevertheless the manager and the board are developing an informal 'skills and equipment inventory' for LXCF and a schedule for work and training that could eventually assure equal opportunity for small business contractors from both communities.

There are always new and interesting policy questions for LXCF board members to address. For example, how can LXCF board members develop policy on individual or group members 'equity' in the community forest? Is there a way that LXCF can provide loans or loan guarantees to individual contractors on the strength of their future employment in LXCF? How is it possible to approve some individuals' business proposals and not others'? To simplify matters of policy questions in the short-term, LXCF board members have agreed that their first priority and primary objective is to keep their community tenure in good standing during the period of their pilot agreement. By 2007-2008, the LXCF will be eligible to apply for a 99 year lease for their community forest area. In the meantime the board will give considerable authority to their manager to use discretionary powers to address day-to-day issues of diversity and conflict. Both communities seem to accept for now that their cause for self-determination and self-sufficiency needs a local champion or 'prime mover' to organize their efforts. That 'prime-mover' is their community forest manager, curiously named "Robin Hood", who is accountable to the Board of the LXCF who in turn are accountable to the communities. The LXCF manager is responsible for enforcing established LXCF operational policy and assisting the board members in evolving new corporate policy as specific business opportunity arise.

3.54 **Likely/ Xats'ull Community Forest Shareholder Involvement**[68]

"...one community member might feel strongly about not doing something and maybe we won't go ahead with it...or even from this community say if someone is totally opposed to what we're doing... then we'd have to as a board of directors...take their input and try and figure out what to do..."

"... We had some pretty good meetings when the Soda Creek (Xat'sull/Cmetem') people came out here... We take turns with our AGMs at Likely or at Soda Creek ... people were definitely wondering about it at the beginning - why we were getting involved with people 60 miles away because they were First Nations... they were wondering about that - It sort of looked like taking advantage of a people's race it seems like for political purposes but we sort of got to appreciate each other... You know we're trying to share the work equally - there's definitely a lot better feelings for the arrangement now than there was initially..."

The Likely/ Xats'ull Community Forest is structured as a corporation with two shareholders. The Chief of the Xats'ull Indian Band holds one of the shares on behalf of the Xats'ull community. The other LXCF share is held in trust for the Village of Likely by a registered society in Likely. The LXCF community forest association was initially structured to give all inhabitants of each community each a share certificate in the corporation. However, that approach, though inclusive of all individuals, proved to be difficult and unnecessarily expensive since the number of shareholders would have required that the LXCF be registered with the securities commission and stock exchange. Nevertheless, some board members that were interviewed indicated that an individual community member does have the power to cause change in the direction of the LXCF. The Xats'ull/Cmetem' First Nation gets community input to directors through band staff and council members. The Village of Likely gets their community input through to LXCF by holding regular strategy session meetings in Likely. Board members from both communities suggested that public involvement in planning at strategy sessions is less than what they would like. Residents are informed but not very motivated unless they are employed in the community forest.

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[68] This theme is based on one theoretical code that is the aggregated result of 14 substantive codes from the interview data.

Some of the Xats'ull/C'metmc community members that were interviewed indicated their concern about looking after the whole forest so as to generate employment from non-timber and timber products. There is a perception among some community members that LXCF managers still do not know how much work is going to go to Xats'ull/Cmetem' contractors. Individual community goals are different and this is respected in both communities. Cross-cultural learning is not a formal priority in the LXCF policy framework[69]. Nevertheless it was indicated by several interviewees that the foundation for friendship between families was beginning informally at LXCF hosted meetings and picnics. LXCF annual profits are shared equally between each community and allocated for spending by the separate shareholder communities according to individual community needs. A considerable geographic distance separates the two communities and, due to severely limited travel expenses, it is usually necessary to hold community information meetings separately for each community. Community forest dinners at annual general meetings have proven to be a good way to entice assistance of new community forest volunteers. Despite the geographic and cultural distances between the communities there is a sense among those involved that board members are 'doing their best' to manage the communities' forest fairly. There is not much opportunity for input from the communities at present, due to the difficult planning constraints imposed by emergency beetle salvage. There are also the economic constraints of high provincial stumpage rates and low market prices for all sawlogs in NStQ territories.

There is the perception amongst some community members that only 'a certain few' are involved in community forest operations. On occasion there has been concern about potential conflicts of interest, as some board members are also forestry and logging contractors. The LXCF has developed a policy to distinguish separate individual business from community business interests. Nevertheless, there is still a perception that board members do not know how much of the future contracting opportunities will go to Xats'ull. There is a challenge for the LXCF manager and board to achieve a 50/50 employment and contracting target while still maintaining the 'bottom line' profitability and overall capability of the organization. Building capacity among new contractors

[69] It is worth mentioning that cross-cultural learning has already been mostly achieved by the Xats'ull/Cmetem', as it was imposed on the Secwepemc since the late 1700s. It is the community of Likely as a whole, who will have much to learn if they wish to grow in cultural association with the Secwepemc.

must be done carefully in order not to excessively or unnecessarily risk losing the forest tenure due to a potential for incidents of poor forestry practices during the pilot agreement.

3.55 **LXCF Problem Based Learning Opportunities**[70]

> *"...they've had a couple of forums...we had one in Revelstoke and there were several communities from all over BC that went there just to find out about community forests... and what we did was... I did a presentation and Robin Hood did a presentation...on our relationship that we have right now and how it all started...and a lot of people came to us and asked us questions specifically about how the community forest was working..."*

> *"...I guess part of it would be that the community didn't ask the right questions... and I don't think the people really recognized - even the people that got on the board - what was going to do... The work that was going to happen - and how much we were going to get out of it... I don't think that was really seen and I don't thing that's really seen even yet..."*

Another criticism of the management of LXCF is that it is difficult to motivate community forest residents to state their concerns to the Board. There is only a small budget to cover the expenses of community workshops, dinners and travel to extra meetings. Very often, community residents are unable to participate in management simply because they cannot afford to travel to meetings. There are often field-level problem-based learning opportunities that are lost due to the lack of travel funding for community participation. The scarcity of funds for community participation has created a perception that board members are not explaining issues and opportunities to communities. There is some profit from the operations of LXCF, but profits must be prioritized to accommodate many other urgent community initiatives. The LXCF information newsletters distributed to the community cannot provide teaching and learning contexts, so community members wonder what their "life-world" relationship is to the community forest.

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[70] This theme is based on one theoretical code that is the aggregated result of 14 substantive codes from the interview data.

There is an opportunity for two forest dependent communities to learn from the diversity of their surrounding Interior Cedar Hemlock (ICH) ecosystems. Xats'ull/Cmetem' is interested in rekindling community interest in caring for natural resources, traditional medicines, foods and other materials collected from the rich ICH forests in their traditional territory. The Likely Community School (managed jointly between the Likely Community School Association and the Province) is hopeful that community forest teaching opportunities can be structured to teach the next generation of Likely residents to appreciate and develop the diverse values of their community forest in a co-management relationship with Xats'ull. In the future, the service of co-managing and packaging forest-based learning experiences could become a profit-generating service provided by LXCF to outside training institutions, professional associations and tour groups with specific problem-based learning needs but limited time to build familiarity with the learning opportunities of the area.

3.56 **Future investment for both communities –Likely and Xats'ull**[71]

> *"...but what caught my interest in it all was the possibilities of what could come from this community forest other than just the harvesting operations...together there was hopes of other tourism ventures...we got letters of support from the Nenqani treatment center...from our businesses internally we got support letters for the community forest application..."*

The shared interest of Likely and Xats'ull in negotiating natural resources management opportunities with government dates back to the mid 1990s when they negotiated control of a fish hatchery in Likely. The trust generated by this shared achievement has been building ever since by shared conversations between communities. Growing from the hatchery partnership and now sharing new community forest stewardship responsibilities, cross-cultural team building has a good foundation[72]. There

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[71] This theme is the aggregated result from 4 theoretical codes – 1 process/good/motivation, 2-process/good/trust-building, 3- process/purpose/present, 4-process/purpose/future representing an aggregated total of 58 substantive codes.

[72] In a cost cutting measure the Federal Department of Fisheries and Oceans were planning to dismantle their salmon hatchery at Likely. The community of Likely recognized that the Quesnel river salmon run and the fish hatchery are important community assets as tourism destinations, and fisheries resources. The

is a sense that community leaders are getting to know one another and that the communities have now been working together for some time. The board of the community forest send community members to team-building workshops when there are relevant continuing education courses and funding available. Natural resources management workshops help to develop a human-to-human bond, they reinforce the idea that all issues at the table are important and they acknowledge that there is work to do to prepare for diverse community forest interests and potential investments for the long term.

The Village of Likely and the Xats'ull/Cmetem' First Nation are working together to be more self-determined and self-sufficient communities. Each community is growing to respect the others' tenacity to survive, despite a failing forest industry and local economy. Although there are difficult issues to discuss, there have been no damaging conflicts between community representatives at the board level. A conflict resolution process is defined by LXCF policy guidelines; and as a management function it is essential for continued trust building between the communities. Each community has an independent association that is available to help mediate in conflict. The Xats'ull/Cmetem' business development corporation can relate directly to LXCF to avoid perception of 'interference' between the board members and band council. Likewise, the Likely Chamber of Commerce can assist in mediating potential conflicts between LXCF and Likely businesses.

Much discussion was needed to work out the agreements to form the community forest corporate structure. At the time that this vision of community management was still a dream, the process of forming a corporate structure was at times, trying. The communities were awarded their tenure in 2001, and since then, trust has been building more naturally between the communities as people begin working together in the field. The LXCF policy of cross- cultural bridge building "kept at a business level", seems to be working. The 'moment of crisis' that produced the conditions for community

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communities of Likely and Xats'ull are also concerned to maintain their local involvement with the salmon fishery and a few local jobs at the hatchery. The NStQ and Likely successfully negotiated with the Province to purchase the hatchery from the Federal Government. The University of Northern British Columbia (UNBC) worked with the Province to assist in managing the hatchery. There is currently a UNBC field research station at the hatchery. This UNBC research station is poised to grow as the Likely/ Xats'ull and NStQ partnership grows.

acceptance of the community forest was when families from both communities were sitting anxiously and somewhat unhappily in a room together to discuss their award of the shared community forest tenure. Sensing that the moment was critical, and that the people were looking for leadership, one board member from the Xats'ull community exclaimed his now legendary directive to the group: *"people... are we here to do business or not?"* During the planning period prior to community forest operations trust building was difficult. Trust is growing more naturally between the communities since operations have begun. The demonstration of fairness has successfully built a level of trust in the management of the community forest. The ability to communicate, to work toward and to demonstrate fair and equitable agreements is a great motivator to continue improving communications between the LXCF board and its communities. Although good results are often unpredictable, the fact that there are some good results from the LXCF partnership helps to build motivation among the board and community members. The current emergency salvage operations in stands damaged by the mountain pine beetle have changed initial management goals and this has strained relationships among those members who are concerned about sustaining non timber forest values. The current focus on salvage opportunities and the apparent need to quickly clear-cut the infested pine has some LXCF members worried that the community forest is being regarded too much as a short-term income generator and not enough as *home* for all its inhabitants. Some LXCF members feel that though trust is still given, the board members and managers are not 'seeking first to understand' well enough, before they proceed in large-scale pine salvage operations. Presumably this short-term salvage plan and diversion from the LXCF sustainability plan is only temporary.

The original vision of LXCF to follow the community vision represented by their board members is respected, though adaptively amended and monitored. To ensure long-term LXCF resilience to future market opportunities and timber supply constraints, the business of conservation and sustainability must also be planned. The LXCF-sponsored community workshops for non-timber forest products learning has been important in respecting community members who have long-term non-timber interests in the area. The Xats'ull/Cmetem' First Nation has a long-term perspective in their motivation to succeed and this will help the board survive in the short term and balance their

motivation to succeed quickly with patience to build stronger relationships between community members. Trust in leadership is related to motivation to continue growth in the partnership. Good examples have been set by LXCF board members, community leaders and local industry foresters, committed to the long-term success of the Likely/ Xats'ull Community Forest. Trust in the Board has been growing as a result of demonstrating fairness in disbursing economic benefits between the communities. The LXCF community forest has a comprehensive policy structure for organizational communication in place and is adaptive to change. Face-to-face agreements are made in conducting business, acknowledging that respect develops and grows on a human-to-human foundation. Both parties acknowledge the other's needs and work together to meet those needs. In day-to-day negotiations, the LXCF manager and board members learn where their community assets in skills and equipment are so that this productive capacity can be continually improved. All LXCF members share and trade skills and knowledge of the community forest area. Both communities are working to benefit economically through log sales and employment. Profit from the community forest is re-invested into community development. Each community decides separately how their share of the profit will be spent. As a two-shareholder structure, the LXCF with its pooled resources stand a better chance of attracting joint funding and volunteer help for sustainable resource development from regional and global not-for-profit sectors and government and industry partners. Trust is building more naturally now that operations have begun and trust is more assured as long as communication protocol is continually improving and adaptive to all LXCF member concerns. However trust may not be so strong yet for those community members that do not feel connected to formal community forest communication networks. The LXCF forest manager readily admits that Likely's small businesses are more numerous and better positioned than Xats'ull's to take advantage of the community forest; but he adds that all of the board directors are committed in their mandate of managing the LXCF equitably for the benefit of all residents of Likely and Xats'ull. Board members respect their LXCF constitutional requirement to assist in building business capacity for Xats'ull so that both communities may share equally in the employment as well as the profits of their forest tenure. Trust is built by respecting that all issues at the table are important. It takes respect and a team

approach to do the necessary cross-cultural bridge-building to ensure acceptable representation of all LXCF member interests. Likely and Xats'ull are working to become more self-determined and self-sufficient forest-based communities. Unfortunately, the current stumpage rates that the province is expecting on salvage timber and the low prices that the mills are offering for sawlogs does not respect the long-term commitment of LXCF to developing their non-timber value. Given this monopoly-controlled economy for sawlogs in NStQ territories it is difficult for LXCF to recover a reasonable value for their logs and to save profit for community training and future research and development of their non-timber forest products and markets.

In future, LXCF can look forward to increasing dividends from sustainable development of a diversity of forest resources. However, Xats'ull and Likely both need more small business capacity in common, so that they can together realize potential venture opportunities. There are signs that the Village of Likely and the Xats'ull/ Cmetem' First Nation are beginning to trade their knowledge resources. Likely has benefited from Xats'ull's knowledge of intergovernmental relations and proposal development. Xats'ull and Likely are currently pursuing a tourism/fisheries joint venture proposal that is separate from LXCF, to restore salmon stream habitat with support from the federal and provincial governments. As both First Nations and non-First Nations communities are motivated to work together to co-manage rural resources into the future, governments and licensees may be drawn into the process and eventually conform to sustainable management directives from the local level. The community forest in partnership with the Province and educational organizations could do more to train LXCF forest workers and provincial and First Nations' natural resource managers. This process of engaging and teaching with the government at the local level down to the level of the Province is a slow process and it will work most effectively where adaptive-learning organizations (ALOs) such as LXCF remain stable over generations. Where ALOs are in place, the re-growth and renewal process can function on behalf of communities to develop markets and products from a variety of natural resources. There is a sense that medicinal plants, tourism and other non-timber resources will be of more interest in the future. Future generations will understand better the value of the community forest and its intergenerational effects in securing long-term sustainability.

4.0 Discussion

In this chapter the research hypotheses are analysed in relation to the theoretical codes and research themes developed from interview transcripts. Section 4.1 shows how the research hypothesis has been confirmed.[73] In section 4.1 key networks are referenced to show that the NStQ is providing leadership in transforming Provincial approaches in co-management. With reference to networks in section 4.1 there is evidence that it is primarily in times of crisis that a NStQ co-management initiative is recognized. Section 4.2 further elaborates a conception of planning in response to crisis and argues that crisis management should occur before, during and after crises and not just as a response to them. However these leadership initiatives are not recognized, nor are they encouraged or supported by the Province. Section 4.3 proposes and describes four co-management principles that are derived from analyses of the interview data and argues that these principles can assist organizations to be more sensitive to potential learning opportunities associated with times of crises. Before confirming or rejecting validity of hypotheses first it is useful to become oriented to a model of the 'whole story' by linking substantive codes in order of their descending frequency.

Common Substantive Codes (sorted by groundedness)[74]

Code	Freq.
Holistic-lived understanding	21
Sharing management 'start to finish'	20
Cross-cultural bridge building	18
Crisis	17
Acknowledge each other's needs	16
Develop human to human bond	16
Team approach	15

[73] The hypothesis for axial coding is the supposition that "the NStQ have traditional knowledge and information that can transform current approaches to forestry education and thus improve forest co-managing within their territory".

[74] Forty three percent of all interview statements coded are contained in the categories listed here.

Crisis as new understanding	15
Increase information sharing	15
Learning with First Nations communities	14
Seek first to understand	14
Cookbook planning	14
Linear vs. holistic thinking	14
Respect	13
First Nations short staffed	12
Talking and listening skills	12
Limited mandate	12
Diversity and conflict	11
Traditional resource management	10
Site knowledge no authority	10
Ability to communicate is there	10
Adaptive learning organizations	10
Avoidance dance is institutionalized	10
Demdomen trying to get everyone on page	10

There is a pattern of relationship among the top seventeen most frequent codes. This sequence of statements seems to tell a story. If I may put together these codes in sequence to tell the story the way it was told to me, it would sound something like this:

> *We have a holistic lived understanding of our lands and resources. We know we must engage in sharing management with the province continuously from 'start to finish'. Cross-cultural bridge building can only grow in such comprehensive and respectful shared planning initiatives. When our holistic lived understanding is not respected (or when new economic or environmental disturbances occur) in co-managing processes then planning crises happen. To grow from these crises we must acknowledge each other's needs and work together to meet those needs. In this way we can develop a human-to-human bond and a team approach. When we work as a team crises can be seen as opportunities for new understanding and can enhance information sharing and learning. To enhance information sharing and learning with NStQ communities, planners will need to listen carefully and seek first*

to understand before trying to be understood. Planners and policy makers will need to avoid their inclination to do 'cookbook planning' so that we will not have a conflict between holistic and linear ways of thinking and doing. To get started on the right path the Province will need to show respect by recognizing that NStQ natural resources workers are short-staffed and under-funded to properly represent their land and resources management interests in a co-managing process with the Province. The Province should foster cross scale communications among their planners so that learning at the local level is transmitted in continuous dialogue with the provincial level. In this way we can improve our talking and listening skills and co-manage with a shared mandate for decision-making at the local level.

Another story-line also exists in between subsequent categories but is not as strong as in the first group. I invite the reader to create their own story-line to interpret the meaning in the next group of substantive categories (from "diversity and conflict" to "Demdomen is trying to get everyone on the same page").[75]

4.1 Confirming or Rejecting Hypotheses:

There is considerable evidence from theoretical coding to support the hypothesis that the Northern Secwepemc te Qelmucw use of traditional ecological knowledge empowers their leadership in transformation initiatives toward sustainable management in their territories. I cannot explain *how* this is done[76]; but there is much research evidence in the Atlas networks that shows that traditional practices of team-building and informal human-to-human networking is used effectively to lead in organizing local stewardship initiatives from the community level down to the province.

In arguing for this "NStQ leadership" hypothesis I refer the reader to the "Co-managing for New Relationships" network (on p216). It is here that the NStQ leadership initiative is expressed most clearly. The NStQ treaty team are having much difficulty in

[75] I leave this story to the readers' interpretation and discussions, as six of the seven categories in this group were expressed at the same level of frequency and an order of importance relation is not clear. It is also important to respect all of the substantive codes that emerged from the interviews and not just the ones that were most frequently expressed or those that I use to argue for validity of hypotheses. To do this it is necessary to read and understand what is said in each of the 50 networks in Appendix 2 (aggregated substantive codes) that form the research findings. My interpretation as only one analyst cannot begin to approach the level of learning that emerges as a result of varieties and syntheses of community interpretations of the data.

[76] Although in this empirical study I cannot provide a reductive analysis of 'how TEK works', later in this chapter through literature review I show that the teachings of traditional knowledge keepers coincide in many ways with new developments in organizational theory.

making the Province understand that a 'command and control' approach to developing new initiatives and relationships has not been effective. Instead the NStQ believe that empowering people to self-organize to answer the questions and solve the problems that are of concern to them is the right approach. As a whole, the NStQ are leading transformation toward sustainability on a variety of common fronts. These common fronts are examined later in this discussion as co-management principles. The evidence for co-managing principles exists within the case studies. Before examining the evidence from the individual community case studies it is worth referring to three of the networks that were derived from the NStQ Co-Management Visioning Case Study: "Co-managing Planning and Technology" (p224), "Co-managing Process: Heart" (p225), "Co-managing 'Lived' vs. Statistical Understanding" (p228). Respectively, these networks show the difference between the NStQ and the Province's understanding of management, they show a vision for use of Geographic Information Systems to calculate for forest productivity that is ecosystem-based rather than timber volume based and they show how stories of transformation are honoured that teach that through perseverance and team-work new opportunities will arise; whereas Provincial strategies tend to be economically driven and risk-averse. The NStQ Co-Management Case Study is useful in orienting the overall inquiry. Treaty and tribal council staff provides a great leadership service by interpreting knowledge in their communities and trying to reconcile this with Provincial objectives. Perhaps the greatest variety and strength of evidence of NStQ leadership are found in the four community case studies.

The theoretical codes that most literally illustrate NStQ leadership were derived from the Spokin Lake Case Study.[77] The Spokin Lake natural resources workers are clear in their assessment of the consequence when the Province planners have authority only to inform- but not necessarily to respond to community concerns. They further confirm that the NStQ are leaders in encouraging planning-as-adaptive-learning rather than planning as simply following standard provincial procedures to 'get logs to the mill-yard'. The network "Spokin: Avoidance Dance" (p231) illustrates the T'exelc natural resources workers' concept map of their situation in the planning process. T'exelc natural

[77] Here is a forceful style of leadership. The leaders in T'exelc were essentially forced to adopt this style of leadership after many years of unsuccessful negotiations with government and industry.

resources workers knew as well as provincial and licensee planners that the forest legislation only required that licensees provide information to the communities. Interpreting their community planning mandate as consultation and avoiding learning of community interests in the area became the main concern of the provincial and licensee planners. At successive meetings that T'exelc hosted with regional planners it became clear that although the licensees were practising due diligence according to the consultation requirements of the forest legislation, their main concern was to liquidate forest resources according to their original five year development plan and to offload consultation or 'co-management' responsibilities to the province. As long as legislation does not require learning or successive adaptation in forest development plans to accommodate community interests – the planners' job was avoidance of learning. Despite the hypocrisy of the planning meetings the avoidance dance of pretending to accommodate the communities interest is required as a 'log and talk' method of achieving harvesting objectives. The 'avoidance dance' is particularly awkward because the parties at the table knew that there was an ability to communicate. Although there was a potential for negotiation there was no incentive for the licensees and the province to discuss the issues of concern with T'exelc, sincerely and respectfully. The network "Spokin Management" (p232) illustrates the steps that led to the community information picket and road-block. The network "Spokin: FPC vs. Holistic Understanding" (p233) shows how the T'exelc systemic vision of how to manage in traditional territories contrasts with the Provincial planning approach. The network "Spokin MOU" (p235) illustrates the T'exelc hope for coming to negotiate terms of a respectful shared process for co-managing the Spokin Lake area. The combined information of these networks shows the clarity with which the natural resources workers and elders understand their stewardship task in their traditional territories. The fact that the same community after nearly a decade of struggle are still able to peacefully talk to industry and government to come to some reasonable terms of co-management indicates a persistence and equanimity that is characteristic of the greatest leaders[78].

[78] A significant part of the struggle was simply in finding out who were the responsible representatives of government and industry to negotiate with. Company mergers, changes of provincial government and constantly changing government and industry employees made this task very difficult.

The Tsq'escen case study of the mountain caribou crisis indicates that Tsq'escen community involvement is not well facilitated nor welcomed by caribou researchers. Consequently it has been especially difficult for the NStQ to offer leadership in this situation. When federal funding was cut for an NStQ participant to attend the regional conferences to discuss a 'caribou recovery strategy' – NStQ attention was necessarily directed to other critical priorities. For centuries Tsq'escen guides have been leaders of hunting expeditions into caribou habitat and now the community is left on the margins in response to the caribou crisis. Representatives of snowmobile, forestry or mining associations are much more powerful in access management decision-making than those expressing conservation concerns. Nevertheless, there are community visions for leadership in the caribou crisis that could grow. The network "Caribou and Tsq'escen Ecotourism Threatened" illustrates the issues and concerns and potential business opportunities that have been identified.

The theme indicating that Demdomen society is a catalyst for adaptive learning organizations is informed by five theoretical codes.[79] The theory is grounded in substantive codes concerned with Demdomen's traditional ecological knowledge, its knowing in relation to others, its self knowledge, and its knowledge of the Xat'glem/ Stswecemc community. The concept of a 'decision-making catalyst' is basic to leadership. The NStQ leadership hypothesis is well supported by the five networks that describe Demdomen's role as an "adaptive learning organization catalyst". Also, specific examples of Demdomen leadership are found in the following networks: "Demdomen-NStQ/ BC Parks Management" (p251), "Demdomen-NStQ/ MoE and Wildlife Administration" (p252), and "Demdomen-NStQ/ MoE Regional vs Site Specific" (p253). In these four networks respectively, Demdomen and the NStQ are assisting in adaptively improving the effectiveness and efficiency of archaeological review processes, Demdomen and their community leads in an initiative to teach that wildlife administrative boundaries could better coincide with biogeoclimatic land classifications and Demdomen and their community are again proving to be leaders in linking people across territories and across management scales to work to resolution of

[79] This is a theme that is expressed in two parts "Demdomen as ALO catalyst – form of communication" and "Demdomen as ALO catalyst –content of communication".

wildlife management conflicts. In the networks "Demdomen-NStQ/ MoE Wildlife Crisis" (p254), "Demdomen-NStQ/MoE Wildlife Staff Education Challenge" (p255) and "Demdomen-NStQ/MoE Joint Hunter Checks" (p256), there is evidence that Demdomen plays a lead role in helping their community leaders and natural resources workers to find opportunity and to 'put the brakes on' an escalating communication crisis with provincial wildlife administrators.

The Likely/ Xats'ull Community Forest (LXCF) Case Study provides evidence that there is NStQ leadership in their joint venture with the Village of Likely. The case study suggests that the LXCF through intensive collaboration with many other interest groups provides a similar leadership service in Xats'ull traditional territories as does the Demdomen Society in the Xat'glem/ Stswecemc territory. LXCF is a catalyst for adaptive learning by leading in innovating small-scale forestry joint ventures between non-indigenous and an indigenous communities. In the three networks "LXCF Process Strength: Trust Building" (p261), "LXCF Process Tasks: Future" (p262), and "LXCF Process Tasks: Present" (p263), there is evidence that the LXCF is leading in learning how to build cross-cultural trust through operating a joint venture business enterprise. There is evidence that LXCF are leading in learning how to value the intangible or potential values of a forest tenure shared by indigenous and non-indigenous residents and there is evidence that the LXCF are leading in developing clear and acceptable local community forest policy language that can become a point of reference for cross scale comparison with other community forest organizations in the province. In the four networks "LXCF Operations: Community" (p265), "LXCF Process Strength: Teaching and Learning" (p259), and "LXCF Process/Areas where the Province/ Areas where the LXCF Board can improve" (pp257-8) there is evidence indicating that the LXCF are leading in demonstrating at regional and provincial forestry forums the capacity for small communities to renew themselves by linking the sustained yield of the forest with small scale sustainable forest economies.

The hypothesis of NStQ leadership informed the development of the grounded theory in this research. However, other hypotheses emerged with the grounded theory that can be supported here with reference to the data. The first of these is the hypothesis that shared knowledge emerges from growth opportunities in crisis situations. Although

one of the interview questions inquires about "what triggers change in planning processes" I had no preconceived understanding of "a theory of growth in crisis" at the time of the interviews (Appendix 4, p272). It is true that I had found evidence at the beginning to cause me to restructure the survey to address cases of crises in co-management- but at this time I did not see any organizing effects of crisis nor was I trying to test for these. Nevertheless from 933 substantive codes, the "crisis" code emerged as the fourth most important code in this study and the "crisis as new understanding" code emerged as the sixth most important code in terms of frequency of times expressed by interviewees (see list of Common Substantive Codes above). A theory of NStQ leadership in organizing co-management was anticipated, but a theory of co-managing opportunities from crises was not. The theory is represented in the networks however, and so it is described here.

The five case studies presented in the last chapter tell of crises and opportunities for communities in the territories of the Northern Secwepemc te Qelmucw. In selecting a communication crisis for study the question "what constitutes a communication crisis" I had left to the determination of natural resources workers in each of the communities. It was not an easy selection to make since there were so many levels and layers of crises of concern to all the communities. For example, the mountain pine beetle epidemic is continuing as an all-consuming crisis for all of the communities. Nevertheless each community selected a crisis for the case study and their selection is respected. However as a grounded theory of crisis was emerging in the theoretical codes so too was my concern about connecting stories of learning through crisis in NStQ territories with theories of crisis in the organizational literature. I found that an accepted operational definition of the concept of crisis in the organizational theory of Seeger, Sellnow and Ulmer (2003) was very similar to the conception that the natural resources workers and I had when we determined our crises for study in the beginning of this research:

> Crisis suggests an unusual event of overwhelmingly negative significance that carries a high level of risk, harm and opportunity for further loss. For organizations, crisis often conveys a fundamental threat to system stability, a questioning of core assumptions and beliefs, and threats to high-priority goals, including image, legitimacy, profitability and even survival. (4)

To distinguish the individual case study crises from the ongoing overlapping systemic crises that are continuous in the background of co-managing in NStQ territories it became important to examine defining characteristics of the crises. Seeger, Sellnow and Ulmer (2003) suggest that a key, defining feature of organizational crisis is that there is a pivotal point in the process when participants suddenly become aware that a crisis is occurring. Interview themes from the case studies indicated that there is a point in each process when participants become aware that a crisis is occurring. For example, the crisis point in 'co-managing' the Spokin Lake five-year logging plan was a community decision to set up an information picket thus stopping forest service road construction into an environmentally sensitive area. Reference to the substantive codes for this can be found in the network "Spokin Management" (p232). The crisis point for Tsq'escen' in co-managing Mountain Caribou came with the shock of learning that the herds in the Caribou Mountains were included in the red-listed category of the federal government's 'species at risk'. Reference to the substantive codes for this can be found in the network "Caribou Process: Tsq'escen Administration" (p239). The crisis point for Demdomen and the Xgat'tem/ Stswecemc communities came as the realization that their plea to closely monitor and adapt local hunting regulations with the Ministry of Environment would not be implemented in time for the 2006 hunting season. Reference to the substantive code for this can be found in the network "Demdomen-NStQ/MoE Wildlife Crisis"(p254). The crisis point in the process of implementing the Likely/ Xats'ull community forest tenure occurred when representatives of both communities suddenly realized the magnitude of the task that was required of them and their lack of experience in working together. Reference to the substantive codes for this can be found in the network "LXCF Process Strength: Teaching and Learning" (p259) and also by reference to the author's personal recollection of the event.

The hypothesis of shared knowledge emerging from growth opportunities in crisis situations is reflected in the NStQ story above and is supported in organizational research literature. Organization theorist Peter Senge (1990) argued that organizational structures of many businesses may function well in step-by-step routine planning processes, but when they confront crises their cooperative resolve tends to disintegrate. Senge's research shows that learning organizations have the potential to emerge from crises with

a renewed sense of purpose. Crisis events represent a chance for the organization to acquire new information, skills, insights and capabilities. For example, the crises in each of the case studies in the previous chapter may result in the growth of learning organizations. The crisis of meeting treaty deadlines may result in pulling together the NStQ, provincial and federal negotiators, as a self-organizing learning group. The Spokin Lake crisis of responding to mountain pine beetle and logging threats in T'exelc's sensitive heritage areas may result in a learning organization to negotiate an acceptable co-managing protocol agreement. The Mountain Caribou crisis of Tsq'escen' may result in a learning organization with the Province and local tourism and recreation groups that can initiate a new relationship with the Mountain Caribou. The on-going challenges of hunting management in Xgat'tem/Stwecemc territories may help Demdomen society to accelerate their knowledge and influence as a learning organization to assist others in NStQ territories. The crisis of economic survival for the village of Likely and the Xats'ull First Nation and their decision to work together in a business partnership in an increasingly centralized forest industry has resulted in the beginning of a co-operative of learning organizations within and between the Likely and Xat'sull/Cmetem'c communities. The wisdom of the above NStQ story and traditional knowledge of envisioning crises as 'strategic opportunities for adaptive management' is summarized in Seeger et al (2003):

Figure 3

Re-envisioning Crisis (Seeger et al, 2003)

From:	*To:*
Threat to stability	Opportunity for change
Restricted communication	Public dialogue
Control	Irrepressibly dynamic environment
Preserving power structures	Adapting to a dynamic system
Short-term profitability	Long-term social responsibility

There is a new role for communication practitioners in public service organizations in British Columbia. Communication when understood to be public relations, issue management, community relations, and media relations is only associated with post crisis management and response. More recently the role of communication in organizational crisis has expanded. Drawing from the perspective of models suggested by Weick (1979, 1988, 1995) and Seeger et al. (2003), from concepts of the learning organizations and knowledge emergence suggested by Senge (1990), Nonaka and Takeuchi (1995), and from the social-ecologists Gunderson and Holling (2002) scientists are now beginning to understand that communication relates to all aspects of organizational crisis.

> An impressive body of literature exists to advise organizations on the steps for avoiding crises. In contrast, the view outlined here suggests that crises are an inevitable part of the organizing process. As organizations seek to establish and protect their stability, they face the inevitable consequence of disruption, failure, wrongdoing, collapse and disasters. The probability of these events occurring is increasing. This escalation suggests that crisis management will become an increasingly common function of modern management. In fact, crisis management is becoming the essential function of long-term organizational success. (Seeger, p.273)

4.2 Accepting the Crisis Model

A problem for institutions in adopting a crisis and social learning model for planning is that acknowledging unpredictability challenges the security of institutions in following simple linear planning models prescribed by central controlling authorities. The historic bias of western science toward linear models of understanding was briefly examined in Chapter one and is also discussed later in this chapter. The history and philosophy contributing to logical and positivist thinking is so pervasive in western culture that an unprecedented enthusiasm for adaptive learning will be necessary to transform British Columbia public service institutions towards broadly accepting a mandate for learning interactively with rural communities. The model for team learning proposed by Peter Senge (1994) will be useful in this process. The NStQ case studies suggest that the wisdom of a team learning approach is not new. Drawing from indigenous knowledge, Eber Hampton describes an approach for aboriginal education that coincides well with

Senge's Five Disciplines for organizational team learning[80]. Co-managing the recent knowledge of organizational theorists with the ancient knowledge of indigenous peoples could assist in building new learning institutions that can respond with resilience in adapting to change and crisis. Four co-managing principles are suggested in the knowledge derived from the case studies and these are presented later in this discussion.

There are probably many examples of British Columbia public service agencies becoming more responsive in understanding and managing organizational crises. Unfortunately there is presently no way to learn effectively from these crises, especially in a systematic way across management scales and regions. The province may learn to respect the leadership role that the NStQ contributes in co-managing natural resources. The province may learn to self-organize from the site level to the provincial level in responding adaptively in these co-managing processes. The NStQ has been assisting provincial planners in their cross cultural learning and feel that they could do more. Demdomen is encouraged by recent indications of improvement in co-managing wildlife resources. They note that they are pursuing goals of funding First Nations biologist/ enforcement officers, making provincial scientific education more practical, and empowering and co-managing adaptive learning organizations at the site level. They also suggest that there are more easily realized goals such as government planners improving their basic education in First Nations studies. The theme "Co-managing Lived vs. Statistical Understanding" (p228) is a useful reference here. Although Demdomen members are willing to help in developing cross- cultural understanding, the local knowledge and history of First Nations' cultures is not well understood among regional planning staff in all the provincial ministries. A review of the themes "Demdomen as a Catalyst for Adaptive Learning Organizations" provide a useful reference here and for the next few paragraphs.

Demdomen members are willing to collaborate with the Province to assist in interpreting First Nations tacit knowledge at the local level. In the meantime, to conduct business properly with First Nations, written requests for developing agreements require follow up by in-person meetings with representatives of affected groups. Developing

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[80] A chart showing relationships between Eber Hampton's 12 values for aboriginal education, Senge's five disciplines and the questions posed by this research is shown in Appendix 2 (p262).

agreements should include field visits to relevant back-country locations. Demdomen volunteers and Stswecem'c/ Xgat'tem natural resources workers have noticed over the past decade that provincial planners have very variable skills at talking and listening. Some planners are ill-prepared professionally to represent the province in co-managing initiatives. Demdomen volunteers offered to assist provincial planners in learning about traditional resource management; but they add that this is difficult, as they have no funding and government employees are not encouraged to work and stay in one region or to work closely with First Nations groups.

There are negotiation and back-country survival skills that future natural resources planners should learn early in their education in college and university. To build working relations with First Nations natural resources workers and community leaders, future wildlife biologists and forest planners will need to know how to recognize and make explicit tacit knowledge of complex social ecological processes. These skills of negotiation and field-level training in university curricula are not well-tested and monitored in required courses before graduation and are usually considered optional and relegated to course electives. Wildlife biologists and forest planners tend to be rewarded for their expertise in publishing scientific research and not for their abilities in facilitating back-country public meetings. Natural resources planners that know "what's being said in communities and always have a smile" are 'rare specimens'; but through encouraging conviviality among planners and community leaders, assisting learning organizations among community volunteers, resources workers, education institutions and the Province, such rare specimens could become a viable population. Ministry of Environment wildlife planners of the Cariboo Chilcotin Coast region know that they must improve their co-managing service to rural communities. They are currently considering developing a pilot learning organization with a First Nations group. The demand for these groups region-wide will probably exceed the current supply of Ministry of Environment management resources.

All of the case studies show clearly that it has been an ongoing challenge for communities to properly fund and support self-organizing learning groups to address the problems of co-managing crises with the Province. In examining the conditions that lead to organizational crises Seeger et al. (2003), find that organizations prepare for crises that

are "least threatening to the collective ego of organizations" and thus accept only a far too narrow definition of the types of crises that can occur:

> Pauchant and Mitroff (1992) like Turner (1976) argued that crisis 'usually sends off a persistent trail of early warning signals, or symptoms, announcing a probable occurrence'. They also suggested that in crisis prone organizations, managers and employees are 'very skilled in blocking out the signals of impending crisis,' whereas crisis-prepared organizations 'are able to sense even very weak signals'. It is the failure to receive, enact or attend to these signals that allows a crisis to erupt. The phenomenon of organizational members distorting or ignoring messages signalling potential problems is a kind of systematic information distortion. This distortion is most common with upward communication in organizations that have defensive climates and low levels of superior-subordinate trust. Signal detection, then, can be expected to function most effectively in a context of high superior-subordinate trust and supportive climates of communication. (95)

Though the 'collective ego' of public service institutions in BC understandably coalesce to support the short term objectives for re-election of the government, the NStQ case studies here suggest that there are low-risk initiatives that astute Provincial institutions can support to improve co-managing processes for the long term. Funding multi-stakeholder natural resources education projects, funding research and development initiatives for community forest tenures, and creating an organizational climate that rewards public service institutions for their community development initiatives would be a start. The Province could commit to assist cross scale organizational development and implementation of effective co-managing principles that embrace and understand crises.

4.3 The Co-managing Principles:

The grounded theory from this research is not complete in simply supporting the "NStQ leadership" and the "crisis bringing new understanding" hypotheses. There is additional information in the data that suggests that there are four principles that could be implemented to navigate existing methods of natural resources management onto a path of continual improvement. The first principle that emerges from the case studies is the principle of adaptive co-management.

4.31 Co-managing Implementation of Adaptive Management:

Organizational theorists have evidence that suggests that crises are fundamental to organizational development. Managing for surprise or catastrophic changes in forest management systems was first described by the ecologist C.(Buzz) Holling in 1978 and later elaborated by Walters in 1986. According to Holling and Gunderson (2002), resilience of a system cannot be guaranteed but it can managed adaptively. "Adaptive management" as Holling called it, is defined by the BC Ministry of Forests as: "the careful combination of management, research, monitoring, and techniques so that dependable information is gained and management activities are modified by experience"[81]. Holling (1978) notes that:

> Ecosystems and societies with which they are linked involve unknowability and unpredictability. Therefore sustainable development is also inherently unknowable and unpredictable...Evolving systems require policies and actions that not only satisfy social objectives but also achieve continually modified understanding of the evolving conditions and provide flexibility for adapting to surprises. (1)

Through community discussion and consultation about impacts on forests we learn to develop priorities for further specific areas of monitoring, research and operational adaptation. In an adaptive forest management context, the accuracy of prediction, the formality of reporting and the associated research design is directed by those who are closest to the forest (Holling 1978, Baskerville 1990).

It is useful to refer to the network "Co-managing for New Relationships" (p216) as a guide toward discussion of the NStQ research data related to adaptive management. In this network it is suggested that the province, the federal government and First Nations might learn to co-manage for new relationships by negotiating methods in treaty for communities to self-organize. The NStQ do not prescribe a method for self-organization. Such a method must be adaptive to new information as this emerges. To negotiate treaty with a mandate that does not respect the self-organizing capacity of First Nations is to deny inherent rights to self-determination. The networks "Co-managing Adaptive

[81] The BC Forest Service definition of adaptive management is found in a glossary of forestry terms at the website www.for.gov.bc.ca/pab/publctns/glossary/glossary.htm

Improvement of Co-managing" (p219), "Co-managing Process: Weak Consultation vs Co-management" (p221), "Co-managing Institutional Change" (p226), and "Co-managing Is Not Consultation" (p227) further elaborate on the problem of how to adaptively develop co-managing relationships. An example of the undesired consequences of implementing a consultative, rather than an adaptive learning approach in co-managing areas of high aboriginal values, is found in the Spokin Lake Crisis. The network "Spokin: Avoidance 'Dance' illustrate the specific problems when there is only planning intent to inform, but not to adaptively co-manage in areas of high aboriginal values. The networks "Caribou Recovery Implementation Group" (p241), "Caribou Public Involvement Process" (p243), and "Caribou Regional Research Bias" (p242), indicates some of the inconsistencies between identified adaptive learning tasks and the actual research initiatives that are occurring in an effort to manage for recovery of mountain caribou in the traditional territory of Tsq'escen.

The Demdomen case study suggests that key tasks for adaptive learning organizations in their territory will be to facilitate adaptive learning of necessary traditional ecological knowledge, to facilitate adaptive learning of multi-stakeholder concerns, and to facilitate adaptive learning of the purpose and process of the adaptive learning organization itself (this includes continual 'grass-roots' community contact). The following four networks are useful references here: "Demdomen as ALO catalyst (TEK)" (p246), "Demdomen as ALO catalyst (knowing in relation to others" (p247), "Demdomen as ALO catalyst (Demdomen)" (p248), and Demdomen as ALO catalyst (Community)" (p249) respectively. The Demdomen case study also indicates that there is a role for the adaptive learning organization to assist professional natural resources managers, planners, biologists, professional organizations and research institutions to understand their learning and teaching role in the communities.

Autobiographical Note:

> *Two giant LeTourneau diesel-electric machines designed only to crush trees were used to smash the valuable standing timber that was then left to rot in Williston Reservoir*[82]*. In the haste of flooding the rivers to meet their schedule for opening the*

[82] Williston Reservoir was named for the Minister of Forests, the honorable Ray Williston who first initiated forest legislation that encouraged the sell-out and merging of small crown timber licences into giant corporate holdings.

WAC Bennett Dam in time for the provincial election, the government did not require that loggers salvage much of the timber before flooding. Instead the mega-decision was made to purchase two gigantic machines to crush the forest so that the trees would not later dislodge roots and all, and spring to the surface causing a boating hazard. According to provincial government information the 'lake' would become a wonderful tourism attraction. As it turned out, and as according to many loggers' predictions, the mega machines only got stuck on the muddy river floodplains and were unable to accomplish their task in eliminating the boating hazard. It also turned out that the recreation potential of the reservoir is negligible. Severely cold weather, and high winds and waves make boating unpleasant and dangerous. One of the tree crushers was left at the bottom of the lake and the other which spent many years at Finlay Forks was brought to town to rest ominously across the street from the forest service district office.

4.311 Western History and Philosophy of Adaptive Management

Adaptive management is an application of the ancient Greek concept of *praxis*. Although it was the Greeks who first wrote down their thoughts about practical reasoning, 'thinking and doing' is an activity that humans have been engaged in for hundreds of thousands of years (Bronowski 1973). The idea that our thinking about a subject should be progressively modified by our evolving experience with the subject seems intuitively correct. Considering the influence of positivism, it is not surprising that many scientists now find adaptive management pernicious or bewildering. In laying the epistemological foundation for "A Theory of Justice" John Rawls defends his challenge to positivism and this 'new' approach to understanding and rationality as "thought with reflection" or "reflective observation" (Rawls 1971). Possibly encouraged by the new philosophic base for rationality permitted in the 1970s, and promoted by Rawls and other humanists, some theorists of forest management also became interested in applying the simple theory of praxis or 'thought with reflection'.

Paradoxically, natural resource managers in British Columbia have long been requesting adaptive management systems that rely less on theory, written words, models and literacy and more on practice interacting with the forest and forest workers (Holling 1978, Baskerville 1990). The historic difficulty of incorporating intuitive and oral knowledge into a scientific framework is often characterized as a problem in the relationship between practitioners and planners. The extent of face-to-face communication between foresters and logging contractors, or architects and building

contractors, affects the quality of the final result of the projects. The problem of separation of theory and practice and theorists and practitioners is deeply embedded in the philosophical underpinning of western thought. A convenient arrangement for the theorists, it is also suggested that the separation of theory and practice is not only political, but that it is systemically related with the separation of subjects and objects in the structure of the English language (Bateson 1979).

Whatever the exact cause of these divisions in our 'collective reality', performance knowledge, namely, precise information about how to accomplish certain tasks, often defies description in language (Marchand 2002). Words mean nothing to us written on a page until they are given voice if only silently in our 'mind's ear' and in a specific context (Ong 1982). For example, a written procedure for tree felling could be dangerous and misleading without a requirement for additional contextual and performance knowledge to accomplish the task. Evidence from linguistics and anthropology indicate that it makes good scientific sense to acknowledge that all of our conversations from the field level down to the policy level inform our forest management strategies. It is the quality of these conversations and the links between these conversations that determine the overall quality of the forest management.

4.312 The Practice of Adaptive Management

The legislation that empowers the Minister of Forests and Range to manage forests is contained in many volumes of literature. To be effective on the ground the legislation must be interpreted to forest workers orally and especially in the context of real forest ecosystems. In order to make forestry literacy effective in the field, knowledge must be developed interactively and adaptively, in inclusive and respectful spoken discourse up to the field level. A proposal for reform to forest practices regulation in British Columbia made interpretation of rules more 'results-based' and less dependent on the 'letter of the law". However, an 'oral tradition' of forest management in BC, and an ability for foresters to respond using their expertise at the field level, communicating face-to-face with other resource users in trusting relationships is essential to avoid undesired results. Efforts of conservation officials to enforce regulations with results-based evidence can

prove to be difficult in an adversarial legal context after damage has occurred. When forest management praxis fails and legal interpretations of results are invoked then it is often too late to utilize common-sense knowledge to accept and learn from mistakes.

A more hopeful example of adaptive forest management is found in the history of the adoption of the technique of "faller-select" logging. Until the mid 1970s the practice of maintaining stand structure in the interior Douglas fir stands of British Columbia, meant that foresters had two choices in implementing the silviculture systems. They could mark all the trees for harvest themselves or they could give their contractors graphical information of their target diameter classes for harvest. Both were poor choices[83]. Foresters did not have time to mark all the harvest trees, and most did not have skill in tree felling. It also became apparent that the contractors were not interested in learning the theoretical side of forestry, at least as it was being presented to them. Charts of reverse J curve diagrams ended up naturally under the seat of the company pickup. Logging in fir stands changed only a little. A forester who had logging experience found that simply exchanging ideas verbally in discussions on the site was a good way to help develop an intuitive sense for which trees to leave and which trees to log. The fallers readily participated because their ability to make qualitative and intuitive judgements was respected and valued. The faller-select method of harvesting began in the mid-1970s and the system proved superior to the methods of tree selection used previously.[84] The method was better because it was adaptive to concerns of government policy managers, industry managers, biologists and the fallers themselves. The method acknowledged both orality and literacy in the use of natural resource information. The oral component of interacting in spoken dialogue among fallers and foresters was as crucial in the silvicultural system as the written prescription. The method is still being used today to ensure that stand structure attributes are maintained for wildlife habitat. The practitioners

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[83] European forestry requires that foresters learn the art of 'mark to cut' selection logging. The primary task of foresters is to mark the trees in selection logging operations and also to supervise the implementation of the harvesting.

[84] The previous methods used for maintaining stand structure in Douglas fir in the Cariboo were diameter limit logging and the use of inverted J curve distribution tables (in the field). The problems associated with both of these methods for modelling the future stand was that they assumed that the diameter of the tree was the only variable determining the importance of the tree to the forest structure. In diameter limit logging many veteran fir trees that provided important seed and environmental values were felled –often without exception. Most fallers and many foresters were more interested in site factors than in the interpretation of inverted j-curve distribution tables (pers. comm.,.J. Szauer Cariboo Regional Manager ret.)

of the faller select method for creating habitat were pioneers of what we consider adaptive and ecological forestry today. They were also participating in one of the first learning organizations linked to a forest management database. Unfortunately, a systemic link to indigenous knowledge and to indigenous government was missing in the early implementation of adaptive management.

Another example of adaptive management practice is in found in woodcarving. We may begin with a set of goals that define how our finished carving should be; but our actions and our sensitive observation continually influence our original concept of what the figurine actually becomes. The rationale for "adaptive management" is that simple. As an adaptive manager, the skilled carver intimately observes the process knowing that the "ideal" must continually be modified by real world constraints of tools, costs, material quality, and time. The carver adaptively manages the process and the correspondence of the evolving product with the original idea. The carver is able to adjust the carving process by sensitive and continual observation and reflection to suit an evolving concept of what the carving should become. The difficulty in matching the original concept with the finished product depends on the skill of the carver. In understanding a wood carving system in a systems intervention the carver may define boundaries around the carver, the tools, the materials, the carved object, and perhaps the customer, and then analyse their relations. If we studied the information transmission and decision-making process as a systems ecologist we would notice a 'forward loop' of growth in decision-making; but we would also notice a backward loop of re-organization and restructuring. At the 'macro scale' of the adaptive carving process, advertising, securing the customer, an initial vision and getting started on the carving could be considered 'forward loops'. Within each of these activities are also countless 'backward loops' checking forward loop decisions, where different advertising media are considered rejected or reorganized, customers are interviewed and initial visions are restructured according to real world constraints. At the 'micro scale' of the carving system the 'backward loop' or 'negative feedback loop' of the carver in the actual woodworking process is the intimate relationship between the carver's assessment of the tool's last cut, the reorganization of how this change has affected the ideal, and the 'forward loop' that is the result of the next cut. At the 'micro scale' it is sometimes said that the carver is 'at

one' with the carving. In other words, the feedback loops are so numerous and small in the system that it can make sense to define the carving system of 'carver, tool and material' as one living system.

The woodcarving system described above likely evolved from even simpler origins. In non-western societies the woodcarver' skill may have become refined from a childhood apprenticeship and purchasing supplies and selling products might be as convenient as the community market. In western society business organizations are complex and have many workers with different roles. In an economy based on information and exchange, relationships can be distant between the worlds of financing, producing, and marketing. However, in an important sense the woodcarver and the corporate manager have a similar challenge. Whether they are 'hired hands' of the corporate manager or the artist hands of the woodcarver, both managers rely on their 'hands' to provide them with continuous feedback about the production process. In highly integrated production systems like that of the woodcarver sometimes the 'hands' can work without the conscious control of the manager. Adaptive team learning organizations in large corporations can also adaptively learn to respect and empower 'visible hands' that can seamlessly integrate the decision-making levels more closely with the production levels of the system.

4.313 The Challenge of Adaptive Management

The transition from "command and control" bureaucracies to self-organizing adaptive management systems is occurring slowly, but the need for this transition is not yet widely accepted. It has only been recently that people of the western scientific tradition are beginning to adaptively develop a place for themselves in nature. In the 1970s and 80s, several sub-fields emerged that served to integrate the natural and social sciences. Ecological economics, environmental ethics, human ecology, political ecology, environmental history, common property and traditional ecological knowledge studies have been valuable in repairing the dichotomy. The knowledge of relationships between society, business and nature is slow in becoming operational knowledge in government and industry. Nevertheless compared with previous bureaucratic approaches to forest

management in British Columbia, the past two decades have seen improvements in implementing adaptive management, cross-cultural learning and negotiation in relation to indigenous and scientific knowledge. Based on the escalating interest of rural communities in developing sustainability if self-organization is supported then learning is likely to continue and accelerate. In summary a co-managing principle for adaptive management is suggested below:

In practice, the resistance of bureaucracies in organizations present significant barriers to implementing adaptive team learning approaches to the integration of environmental and social interests. Bureaucratic organizations can be powerful arbiters of land use decision-making. In the NStQ studies evidence of the resistance to change to adaptive management practice in provincial ministerial bureaucracy was illustrated in the following networks: "Spokin: Avoidance 'Dance'" (p231), "Caribou Management is Top Down" (p238), "Caribou Process: Tsq'escen Involvement" (p240), "Demdomen as ALO Catalyst (planners)" (p250), "Demdomen-NStQ/Moe Wildlife Crisis" (p254), "Demdomen-NStQ/MoE Wildlife Staff Education Challenge (p255), and "LXCF Process/ Areas for the Province to Improve" (p257). Vested interests in not 'doing the back loop' of continual restructuring can be significant barriers to adaptive management (Holling 1978, Walters 1986, Holling and Meffe, 1996, Gunderson and Holling 2002).

In order to implement adaptive management in large complex business organizations it is necessary to start with the two basic principles of systems epistemology. Midgely (2000) suggests that an intervention is first required in order to discover where problems reside in integration and communication between the 'head' and the 'hands' of the organization. To intervene in the system it is essential to be aware that the process of intervention itself affects the system. A manager is ill advised to conduct the intervention as an 'outside observer' since in order to understand the organization fully managers must know their own relations to the organization. Secondly, it is essential for the elements of the system to learn to become conscious of how they are intimately linked to all the other parts of the system. When essential system boundaries and relationships are described, well understood and fully accepted, the system itself can implement the necessary backward loops of re-structuring to accommodate system changes before the next forward loop of growth. If phenomena for study are appreciated comprehensively as

interacting systems then it will be the interests of those who represent points within the system that will determine the boundaries of the subject and direct the inquiry, and not managers or outside experts.

The NStQ case studies (networks cited in first paragraph of this section) show that inflexible "command and control" bureaucracies are still a significant impediment to systematic adaptive improvement of co-managing process. Sudden change becomes inevitable and necessary when "command and control" organizations are found to be intolerable (Gunderson and Holling 2003). This sudden change in management approach was initiated in the T'exelc decision to road block in their traditional territory – (refer to network "Spokin Management" (p232)). The initiation of joint Ministry/First Nations hunter road checks is a sudden change in management approach that likely would not have occurred had Xat'glem/ Stwecemc natural resources workers not proposed to do their own checks- (refer to network "Demdomen-NStQ/MoE Joint Hunter Checks" (p256)). Sudden change in management approach is sometimes necessary but the change should be implemented with respect. To improve the organization, transformation must be managed adaptively to maintain system resilience for the benefit of long-term learning (Berkes et al., 2003). Historic failures of Mill's 'invisible hand' guiding market economies have become more apparent in the increased frequency of related social and ecological crises. In response to the economic, social and ecological crises resulting from failures of historic "laissez faire" management approaches in British Columbia, a program of adaptive learning will be required. In British Columbia, learning will advance more efficiently if it is encouraged and supported from provincial and local agencies systemically, with respect and knowledge of the orality and the literacy of the learning process. Tacit knowledge that is developed by teams in informal conversations can be organized to help direct and optimize benefits and costs of subsequent rigorous scientific inquiry. Explicit knowledge that is nurtured and grounded in community conversations could then evolve for use regionally and provincially for cross-scale comparison and adaptive theory development. A process of transformation of institutions and of forest management procedures can occur when adaptive management is achieved systemically, across scales from the field level down to the policy level (Baskerville 1990, Holling 1978).

4.314 Co-management Principle #1 **Implementing Adaptive management**

Allocate and ensure long-term funding for community-based adaptive learning organizations with reliable cross-scale decision support systems founded equally on scientific and indigenous knowledge.

> *"... we could all be working on the same thing instead of all of us walking down this wide road with everybody in different places... Each person talks about what they know - I think this would work ..."*

4.32 Co-managing for Community Development

Results of a study of natural resources information needs of First Nations in the Southern Interior of British Columbia (Michel et al 2002) and results from the NStQ case studies suggest that broad acceptance of a principle of aboriginal community empowerment is essential to the process of co-managing natural resources in British Columbia. The power to self-organize adaptive learning organizations as outlined in the previous section is key to implementing an adaptive process for community development. In this section I present evidence of specific requirements for community empowerment from the NStQ studies. I then argue that community empowerment is essentially an adaptive learning process to apply traditional ecological knowledge that has been lost, or is not respected due to the legal authority of knowledge from western science and technocracy. I explain briefly the historic background for hegemony of scientific knowledge and I review briefly some of the history of a relatively recent epistemological revolution in theorizing knowledge. Finally in this section I present a method that proposes community empowerment through the integration of conflicting planning approaches. With this background then I propose the second co-managing principle of community development.

4.321 Support for Co-management Facilitates Community Empowerment

Co-managing implies shared responsibility for goals and objectives and sharing employment in research and development (network "Co-managing Process: Weak

Consultation vs. Co-management" (p221). Co-managing implies that there will be adequate funding for First Nations to participate in processes (network "Co-managing Process: Heart" p (225). Co-managing implies that there should be legislated power for meaningful community participation in development of management plans (network "Spokin: Avoidance 'Dance'"(p231). Co-managing implies that there be demonstrated sensitivity to adaptive learning process to reflect emergent knowledge in planning (network: "Spokin: FPC vs. Holistic Understanding" (p233). If adaptive learning for community empowerment is to work effectively then emergent knowledge should include growing respect for traditional knowledge (network: Demdomen as ALO Catalyst (Planners) (p250).

A process is needed for enabling communities (including provincial planners with responsibilities in indigenous communities) organizationally, financially, and legislatively so that systemic and adaptive learning can begin. The need for empowerment to participate in adaptive learning process also shows clearly in the Tsq'escen Caribou management crisis, Demdomen's Wildlife Management Crisis as well as in the LXCF Community Forest developments. Evidence is shown in the following networks, respectively: "Caribou Recovery Implementation Group" (p241), "Caribou Public Involvement Process" (p243), "Demdomen-NStQ/MoE Wildlife Crisis" (p254) and "LXCF Process/ Areas for the Province to Improve" (p257).

4.322 Community Empowerment as Adaptive Use of Traditional Knowledge:

With the acceptance of oral knowledge as "admissible evidence" established by law in Canada, there is now an emerging relationship between scientific literate knowledge and traditional ecological knowledge. The Delgamuukw (1997) decision confirmed the validity of oral knowledge in establishing aboriginal rights and title. The decision confirming that aboriginal title to lands and resources exists in Canada found that definitions of prior use and ownership in the code of ritual, dance and stories were admissible evidence to the court (Delgamuukw vs British Columbia 1997 cited in Thom 1999). In a comparison of oral and literate legal codes John Borrows (2002) finds a similarity in the function of the common law of Canadian society and the moral teachings

of stories recorded in Aboriginal societies, though he notes that not only is Aboriginal law compatible with Canadian common law it is also more adaptive to changing social contexts. Borrows argues that the degree of fluidity of story telling is superior to the common law method of encoding moral teaching in writing:

> First Nations use an oral tradition to chronicle important information, which is stored and shared through a literacy that treasures memory and the spoken word. While the common law is itself continually reinterpreted to meet contemporary demands, the degree of fluidity is arguably greater within Aboriginal oral cultures than it is within the common law. (15)

In her discoveries with the Tutchone and Tlingit people of the Yukon, Julie Cruikshank (1998) noted that one interviewee felt secure in translating stories to English as it was considered "just another of the native languages". It was felt that it is not in the speaking - but it is in the writing of English that the power of the story, the purpose of the storyteller, and the attentiveness of listeners is most seriously harmed. A good multi-lingual storyteller can ensure that meaning is expressed properly by preparing listeners for the story and by ensuring that the content of the story is updated and made relevant to a given context. Cruikshank (1998) convinces that the enduring communicative value of language is realized through story telling. She also refers to the work of investigators Innis, Bahktin and Benjamin and notes that:

> As communication technology proliferates...information becomes fragmented and detached from the moral philosophical guidance we think of as knowledge and might once even have called wisdom. The power of narrative storytelling lies in its capacity to interweave such elements by combining drama and practical experience with moral content. (154)

Cruikshank (1998) also observes that:

> By the very act of telling stories, narrators explore how their meanings work; by listening, audiences can think about how those meanings apply to their own lives. (154)

Co-managing natural resources among First Nations, the crown and resource development licencees is prescribed in the Delgamuukw decision. However, successful models for co-managing are urgently needed, or a 'business-as-usual' approach to timber harvesting might continue on traditional lands and crises will grow even more severe.

(Haida Nation vs BC and Weyerhauser 2002). Community empowerment for First Nations will occur as provincial scientists and policy makers begin to understand co-managing cross-scale natural resource use decision-making as an aboriginal right. However, understanding acceptable co-management process as an aboriginal right will require better guidance from the courts.[85]

The practice of management of BC forests for a diversity of social, economic and ecological values is improving with the development of systems for more knowledge sharing from the policy level up to the field level of management (FORREX 2002). What constitutes "knowledge" is still a subject of some concern among scientists and policy makers. In his assessment of the 'integration' of indigenous knowledge and science, Paul Nadasdy (1999) notes that our western scientific literate tradition "continues to treat traditional knowledge as a set of discrete intellectual products which are completely separate from the cultural milieu that gives them meaning". (5) Nadasdy also suggests that the planners' own paradigm of science and literacy inhibits their ability to comprehend traditional knowledge:

> That traditional knowledge might be used to re-think unexamined assumptions about how people should relate to the world around them (including other humans), which unconsciously forms the basis of scientific wildlife management itself, is a possibility that scientists and resource managers never entertain. (5)

The NStQ case studies illustrate how the problem of communicating local knowledge in scientific terms, and communicating scientific knowledge in local terms currently eludes most foresters and biologists. To assist in community empowerment, the effective use of Traditional Ecological Knowledge (TEK) depends on the ability of planners to work in ways that does not fragment systemic knowledge. The integrity of the stories, places and community/family relationships is an essential attribute of TEK and should be maintained (Nadasdy 1999). Referring scientific knowledge in spoken discourse to familiar situations and stories encourages respect for relations between science and oral language, among participants. Terms like "information database", "decision-support system", and "adaptive management" provide conceptual tools,

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[85] Chapter 3.11 refers to John Borrows (2002) and describes some of the Supreme Court legal reasoning why aboriginal rights are ultimately defined by western stereotypes of 'pre-existing societies'.

embedded in technical literacy for planners; but they are not helpful to people whose primary focus at the beginning of a plan is in deciding whether or not to become involved. George Elwert (2002) notes that the credibility of literacy campaigns fail when the inherent value of oral knowledge and culture are not respected:

> Oral communication is less costly, less complicated, it can make better use of relational meanings (defined by context), it can use direct reference to the dialogue as a very parsimonious means of information transfer, it produces information fit for direct absorption by memory, it can use personal presence as a means for validation and creation of trustworthiness. Literate culture, seen from the perspective of functioning oral culture, is very complicated, clumsy, untrustworthy and elitist. (56)

Autobiographical Note:

> *In the summer field seasons I worked for the forest inventory division of the British Columbia Forest Service. As a compassman, it was my task to assist forest classifiers to conduct forest inventory fieldwork within Public Sustained Yield Unit (PSYU) management areas. The purpose of the PSYU classification and update was to refine estimates for calculation of allowable annual cut within PSYUs and to give the chief forester the best available data for management of the Provincial Forest timber supply. Some dramatic changes were about to take place in the management of provincial forests. It was becoming clear to the provincial government that the administration of forests through numerous loosely organized and somewhat autonomous ranger districts, was not keeping up with the increasing demand for BC softwood and pulp. It was determined that a centralized provincial forest economy administered through fewer forest districts could manage the increasing international demand for a reliable timber supply source. Dramatic increases in the provincial allowable annual cut occurred in the 1970s and into the 1980s. Following a government commissioned study, new legislation was introduced to enable a radical restructuring of the British Columbia Forest Service.*[86]
>
> *The Forest Act and the Ministry of Forests Act of 1978 aggregated the smaller Public Sustained Yield Units into larger Timber Supply Areas for analysis and compilation of Annual Allowable Cut. Critics of the legislation said this was because many PSYUs had already been gutted of timber and were now facing*

[86] The report was completed by a Royal Commission headed by Peter Pearse. Legislation suggested by the Pearse report was introduced in 1978 as the Forest Act and the Ministry of Forests Act. Although significantly improved from previous forestry legislation, in the Forest Act of 1978 "forests" were still defined essentially as timber supply. It was not until the Forest Practices Code Act of 1987 that multiple use management became conceptually re-organized as integrated resource management and foresters began developing concepts of carrying capacity for disturbance and more ecologically defined criteria and indicators for management and monitoring.

> *timber supply shortages and this would be reflected in reduced allowable cuts. Justifying current AAC levels with un-tested assumptions about future economic operability in distant stands was considered good forest management by provincial authorities. I discovered that the paradox of forest management had to do with a conflict of local and Provincial interests. The Provincial interest was to maintain an even flow of timber to mills for the advantage of urban centres. The local interest for indigenous residents was simply in long-term survival. The homogenization of rural environments for urban benefits, and a tyranny of majoritarianism, became good forest management in BC in the mid- 1970s. By 2004, as easy access to timber supplies diminish within TSAs the old provincial timber planning process has been reinvented and accelerated by new forest legislation that essentially proposes to aggregate TSAs in an effort to sustain Provincial fibre-flow.*

4.323 Western History and Philosophy of 'Community Development'

With reference to a concept of "community" Jeremy Bentham (1748-1832) states: "the interest of the community then is, what? – the sum of the interests of the several members who compose it" (85). Liberal philosophy as outlined by Bentham and Mill required government to govern according to the interests of the most powerful in society. It was popularly thought that logical positivism, empirical science and the 'invisible hand' of the market-place would accurately evaluate all things for the benefit of all advancing in a direction of social progress. However, along with some benefits of positivist rationality also came the costs. Vital costs were left unaccounted. The 'invisible hand' of the market did not consider the 'external' costs of exploitation of rural communities and the environment. Projects of science and rationality have been successful in ordering society for production efficiency; but it has also bureaucratized, commoditized and fragmented traditional values and relationships inherent of human culture and nature. It was less than a century ago that bureaucracy was considered an improvement over the way organizations had been managed previously in cottage industry (Guastello 2002).

> Bureaucracies assigned clear responsibility for decisions to job roles. By making clear assignments it was possible to make decisions efficiently within the boundaries of policies that were set by people in other job roles. The definition of policies for the use by other organizational members removed the necessity of

> restating a policy every time an example of a decision had to be made. It also produced a hierarchical structure. The nature of a role meant that there was a disconnection between the set of actions denoted by the role and the human being who was incumbent in that role. This disconnection was thought to ensure that decisions were results of policy rather than individual whim, nepotism, or other kinds of organizational politics. The system of roles would also provide equal treatment of personnel and clients. Bureaucracy delivered on its expectations to a great extent, although extrication of politics from organizations was a fantasy. There were human costs to this efficiency as well. (2)

During the industrial revolution a division of labour was found to improve the efficiency of production. Management controls were determined by outside experts in a clockwork order as a hierarchy of mechanism thus asserting levels of controls on organizational communication from the top down. Now organizational theorists insist that it is time for another shift in management paradigm (Senge 1990). They suggest that organizations are alive and that the technology of instantaneous and global communication requires that management bureaucracies must delegate decision-making downward. Today organizational theorists encourage dynamic conversation across system boundaries so that opportunities to instantly harmonize with global system changes are not lost. However, in moving from ponderous "command and control" bureaucracies to agile adaptive management systems facilitated by electronic communications there is still the problem of where to draw the system boundaries. There is still the problem of how to develop the management system to be continually informed by the "ill defined associations" of society and nature. Though there is apparently much excitement about "organizational life forms", there are no references by Guastello to the realities of linking corporate and social goals and building social resilience within ecological contexts:

> Now that organizations are recognized as being alive, we can proceed with questions regarding how they stay that way. How does an organization interpret signals and events in its environment? More importantly, how does it utilize the events in its environment to its own benefit? How does it harness its capabilities as a living system to make effective responses? How and when does it change itself from one form to another in order to enhance its viability as a big collective living organism? How is it affected by other organizational life forms. (2)

Gunderson (2002) in his analysis of interactions between social resilience and ecological crises suggests a slower transition out of old mechanistic and bureaucratic forms of communication. Guastello indicates that a revolutionary change in organizational management paradigm has already occurred in the corporate world, whereas Gunderson sees the change as ponderously slow in comparison with the problems at hand. It is interesting to contrast Guastello with Gunderson's words:

> ...until management institutions are able and willing to embrace uncertainty and systematically learn from their actions, adaptive management will not continue in its original context, but rather will be redefined in a weak context of 'flexibility in decision-making. (43)

It is worth noting the tension in these differing views of implementing adaptive management. Some organization and systems theorists adopt a post-positivist approach that seeks to affirm that there is a 'reality' that is not socially constructed. However rather than attempt a scientific construction of that 'reality' in the Popperian tradition sometimes these analysts subtly substitute a 'reality' that is no more than a corporate construction. A 'value-free' approach in a corporate systems analysis is often a thinly disguised attempt to try to assume legitimacy in combining social, ecological and profit oriented values of a corporation, as one for the whole of society. In forest management this can result in references to landscapes as the 'factory floor of the forest'.[87]

Organizational theorists who live in 'command and control' societies structured by corporations that regard themselves as distinct from natural systems have a different view of change than ecologists and activists who work to sustain social resilience within ecological contexts. Private sector organizations are well funded and empowered to transform themselves out of bureaucratic forms, whereas publicly funded and volunteer organizations are not. Public sector and volunteer organizations work in much longer time scales and with much broader asset bases than private sector organizations in order to 'balance their books'. Though much simpler to accomplish, the successes of implementing systems interventions and adaptive team learning management approaches in the corporate world can still be a source of inspiration and knowledge for those posing systems interventions in land management bureaucracies that govern social-ecological

[87] Weyerhauser Ltd. "Vision for Forest Management" brochure (2004)

systems. The theory of learning organizations developed by organizational theorists for 'distinct' corporate worlds can also be applied to systems analyses encompassing humans in the biosphere.[88]

Autobiographical Note:

> *I found that a new classification for disciplines of thinking was a refreshing change from the high school curriculum. I found useful tools for thinking from history, philosophy, psychology, English literature, biology and mathematics. Now being introduced to the various 'species of ideas' in a freer western 'taxonomy of knowledge', the university provided me with tools to sort out my own thoughts about my existence in the world. Pain and anxiety was gradually being replaced with knowledge and understanding. By 1976 I had settled on a specialty in the 'systems stream' with the school of Communication at Simon Fraser University. The School of Communication helped me to develop a philosophy of mind that I felt comfortable with. The 'Gaia hypothesis', (Lovelock 1973) that the entire planet is alive in all of its relationships, is one of the most succinct descriptions of this philosophy. An ancient world-view, it is well known in traditional knowledge of indigenous cultures, but it was considered irrational, strange and even perverse in most of the other faculties at the university. Nevertheless, it had a home in the School of Communication with the "second-generation Batesonians"[89] of the time. It was an exciting place, intellectually.*
>
> *It was in Lytton, in the summer of 1978 with the people at Kumsheen,[90] that I first began to understand the magnitude of the problem of developing sustainable local community economies in British Columbia. I had just graduated from Simon Fraser University with an undergraduate degree in communication. I was influenced by my teachers and by the writing of Gregory Bateson and John Dewey. Idealistically I wondered, as was common in academic circles at the time, how communication could be understood more as a bio-social process of evolution, and less as a technocratic process of domination and control. I found myself wondering about the communication tasks of the Forest Service for developing a multiple resource use mandate that were supposed to become law under the new Forest Act. There was much change 'in the air' as the forest service was being reorganized to implement an ambitious forest management project on the authority of timber-oriented forest management legislation.[91]*

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[88] For example, I rely heavily on the organizational management research of Peter Senge (et al. 1994).

[89] The research of Gregory Bateson (1979) combining philosophy, modern general systems theory, biology and anthropology was of interest to creative thinkers in the 1970s. Seeing relationships between things rather than the things themselves, was a challenge for systems thinkers. The blend of art and science advocated by teachers like Paul Heyer, Bob Anderson, Barry Truax and Anthony Wilden of the School of Communication at Simon Fraser University provided for a more comprehensive and freer rationality.

[90] "Kumsheen" is translated as a "place where the rivers meet". The confluence of the Fraser and Thompson rivers has been an important historic meeting place for many thousands of years.

[91] The 1978 Forest Act and Ministry of Forest Act was not ecologically constrained, it did nothing to help to define constitutional aboriginal rights guaranteed by the federal government and it was not sensitive or

Many Victoria-based foresters were relocated to regional and district offices that were outfitted with the latest computer communication technology. Fax and email replaced telex machines and cutting permit applications were processed much more quickly.

4.324 Navigating Toward Systems Thinking:

Rational analyses in the 17th century did not associate the subjects with the objects of analysis because to do this would undermine the dualism on which rationality was founded. It was necessary to define reality as dually composed 'out there' and discrete from the consciousness inherent within rational individuals. In this way reality could be dominated by schooled initiates and logically organized according to scientific principles. In the binary universe of rational analyses there could only be *both* subjects *and* objects or *either* subjects *or* objects. An examination of the relationships between subjects and objects would undermine the dualism on which rationality was founded and perhaps would be thought to stray into the realm of the 'magical worlds' of 'less enlightened times'. Where the observers' role was only to undertake measurements and to numerically quantify differences in observed phenomena, the separation between observer and the observed was easily defended. The observed was simply that which was measured and the observer was he who had authority to measure. Mathematical descriptions contributed much to the parsimony of an objective, quantitative approach to analyses. To question that the trained observer was anything but a rational component of the measurement process was itself not logical within the context of the inquiry. Considerable success in realizing efficiencies in industrial production was achieved using this approach. Social philosophers dominant at the time were unaware of the problem of observer bias and social constructivism in the use of their analyses. They had decided *a priori* through philosophical introspection what characteristics of rationality would prevail for "man", mastery and for society and then they applied this definition with rigour and candour in an effort to encourage 'progress'.

After the Second World War, disappointment in a perceived failure of the promise of modernity fostered new philosophical debate. Democratic socialists and liberal

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enterprising enough to recognize the diverse opportunities, attributes and unique needs of local communities. In 2004, these problems are still inherent in the provincial forestry legislation.

democrats began joining forces and by the mid 20th century an increasing political consensus occurred that admitted that while the market was fine in its place, the failures of the market were such as to require the presence of a large and widely ramified state. By the early 1970s scholars began to move beyond mere analysis of ethical ideals and principles. They began to collectively examine which social ideals or principles to advocate. A new creativity was stirring as enlightenment ideals waned and suspicion of traditional philosophy, scientific methodology and economic practices flourished. Scientific reductionism and mechanism had reduced physical matter to sub-atomic particles, but was having difficulty reconstructing 'the machine' so that it functioned according to established laws of physics. It seemed that light was sometimes composed of particles, and sometimes it was composed of waves, depending on the type of question that the observer asked. The idea of objective science known to enlightenment philosophers was shaken after it was shown that the 'structure of the 'outside world' was influenced by the observer. 20th century philosophers and scientists discovered that there was not a reliable correspondence between knowledge and reality. New discoveries in science proved that the relationship between language, knowledge and reality was not as predictable, or as necessary as enlightenment philosophers had assumed. New philosophical investigations were required on which to base scientific methodology and practice that did not depend on a 'real world objective observer', positioned 'in between' an inside and outside reality. The 'post-positivist' method proposed by Karl Popper (1963) to mitigate this problem was to test theories based on conjecture and refutation. A scientific theory didn't necessarily have to verify a commonly accepted 'real world'; it could be nothing more than a good story about the 'real world', but the story had to be falsifiable in principle through empirical testing. Presumably the real world truth would eventually be born out of the process of falsifying untrue hypotheses. Popper's main concern is the development of a philosophy of science so that in the blurring lines between physics and metaphysics, reality could still exist if only in theory. Post-positivist philosophy advocates that a scientific method of questioning can be advanced separately from moral and subjective concerns. Post-positivists believe that it was possible to frame 'real world' questions in a way that the pursuit of truth can be divorced from political interests.

In contrast to Popper's 'post-positivist' philosophy, Kelly (1955) argues that a separation between political interests and science is not only unattainable it is also deceptive. Midgely (2001) points out how subjectivists argue that "such a separation (between political interests and science) blinds us to the ways in which 'truths' are normatively constructed by forces of power, and prevents us from appreciating alternative 'truths' that may only be surfaced through moral and/or subjective explorations."[92] Kelly questions the distinction between "knowledge" and "world" and suggests that all we can have is access to knowledge. In Kelly's personal construct theory there can be as many "worlds" and "realities" as there are human beings. Personal construct theory assumes that the individual is the primary generator of meaning, since by their unique activities they work to construct their own realities. While he does not rule out social or linguistic dimension to the construction of realities, he regards these influences as secondary. The focus of personal construct theory is on how individuals bring forth markedly different realities. The implications of subjectivism on scientific practice are significant. For Kelly it would not be a valid methodology to construct hypotheses for testing, since there would be no external reality to hypothesize about. It is only valid to explore individual subjectivities and then only in a way that is action-focused. Not only does Kelly's subjectivist theory contrast with Popper's post-positivism it is also distinct from other anti-realism, subjectivist philosophies that advocate social or linguistic production of reality.

Jurgen Habermas (1998) provides a different subjectivist approach in the use of philosophy to define valid methodology and practice. Habermas, in contrast to Kelly believes that language is the active force that brings forth realities. Although Habermas identifies an 'inner world' of the individual he advocates a social construction of reality through language and a 'communicative rationality' for valid planning practice. In his view everything we know about ourselves and the world is given in the words we use. Giddens summarizes his position:

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[92] A variety of subjectivist philosophers disagree with Popper's philosophy of post positivism. (see, for example, Marcuse 1964; Habermas 1972, 1976; Foucault 1980; Ulrich 1983, 1996; Bhaskar, 1986; Rorty 1989) –cited in Midgely 2001 p.26

> When I say something to someone else, I implicitly make the following claims: that what I say is intelligible; that its propositional content is true; that I am justified in saying it; and that I speak sincerely, without intent to deceive. (Midgely 27)

In Habermas' view there are three worlds (natural social and internal) and since language is structured so that we can differentiate them, a theory of rationality ensues. A position is rational when it is possible to distinguish the natural from the social and the social from the internal. In Habermas' view popular philosophies such as Social Darwinism could be quickly dismissed as irrational since the foundation of their philosophy depends upon a confusion of our conception of the social and natural worlds within language (Midgely 2000). Midgley summarizes the method proposed in Habermasian philosophy:

> From his theory of rationality Habermas derives a methodology (although he doesn't explicitly use the term). He argues that they should engage in *communicative action* where they set up 'ideal speech situations' (situations free of power relations, allowing open debate) in which rational argumentation can take place that involves statements about, and challenges to, information relating to all three of the natural social and internal worlds. (28)

The three philosophies presented by Popper, Kelly and Habermas illustrate a wider scope for rational practice than was available prior to 1950. The philosophy of logical positivism promoted by the enlightenment philosophers since the 17th century has been significantly modified or even abandoned completely in theory, over the past 50 years in the effort to ensure that planning methods do not repeat errors of the past. Nevertheless, the Popperian notion that issues of science and morality can be properly separated is still common in scientific practice, and (as the autobiographical sketches and case studies illustrates) obvious errors are still made. Midgely (2000) neatly summarizes the key relationships between the vastly different 20th century philosophies for proposed rational scientific practice of Popper, Kelly and Habermas:

> Habermas's position is certainly broader than that proposed by Popper (who, in Habermas's terms, places a primary emphasis on natural world exploration), and it is also broader than Kelly's (Kelly prioritises the internal worlds of the individual). Nevertheless, the three worlds of exploration are framed within a theory of the need for exploration (in Kelly's terms), when divorced from wider debates, are not strictly legitimate from a Habermasian point of view. (28)

A foundation for a modified approach to scientific practice was prepared through scientific discoveries and historic mistakes. Positivism had failed and utilitarianism became questionable. Philosophers and scientists in an attempt to redefine rational practices were beginning to encourage a broader perspective for 'the objective observers' of the 21st century.

4.325 Systemic Knowledge and the Learning Organization

Peter Senge (1994) suggests that a tendency of science to reduce a complex problem into smaller ones can be erroneous without first developing an overall appreciation of the existing relationships of the whole:

> The primacy of the whole suggests that relationships are, in a genuine sense, more fundamental than things, and that wholes are primordial to parts. We do not have to create interrelatedness. The world is already interrelated. (25)

The idea that natural phenomena are best understood as wholes rather than as collections of parts, underlies systemic knowledge (Checkland 1981, 1984). That nature can best be understood by reducing it into constituent parts is the bias of reductionism, in the pursuit of scientific knowledge (Dawkins 1986). The two different approaches to knowledge, the reductionist and the systemic are complementary as long as they are used with respect. The principle of respect however, tends to be an emergent property of systems, rather than an easily observable thing and so often eludes scientists. The effect of the observer on the thing being observed, and vice versa, is welcomed in systemic knowledge, but is carefully 'controlled' in the pursuit of scientific knowledge (Bell 1996). In developing systemic knowledge, the observer participates with a collection of related things and in this way learning is organized interactively. In developing scientific knowledge, on the other hand, the observer attempts to remain separate from the observed things so that learning is organized by the "expertise" of the observer.

Peter Senge (1994) defines team learning as learning through conversation, dialogue and skilful discussion – the aim is to achieve 'collective mindfulness'. The success of negotiating local knowledge in development plans has mostly been achieved with the recognition of the credibility of local intuitive knowledge systems. Hobart (1993) argues:

> Local knowledge often constitutes people as potential agents. For instance, in healing the patient is widely expected to participate actively in the diagnosis and cure. By contrast, scientific knowledge as observed in development practice generally represents the superior knowing expert as an agent and the people being developed as ignorant, passive recipients or objects of his knowledge. (5)

Complete agreement between scientific and local, oral knowledge systems is not expected or desired all the time, but opportunities for exploring mutual learning should occur within learning organizations in key areas of mutual interest.

4.326 Conflicting Systems, Knowledge Emergence and Community Empowerment

In daily usage the word "system" is not applied in a strict sense and can often mean little more than "thing" or set of related things. Although there is considerable discussion about definitions and systems terminology, Bell and Morse (1999) suggest that the definition of "system" used by Peter Senge (1994) is widely accepted among consultants and academics:

> A system is a perceived whole whose elements 'hang together' because they continually affect each other over time and operate toward a common purpose. The word descends from the Greek verb *sunistanai* which originally meant: 'to cause to stand together': As this origin suggests, the structure of a system includes the quality of perception which you, the observer, cause it to stand together. (90)

The qualities of perception that cause the system to 'stand together' are mostly implicit in the constitution of the group and are incorporated more inter-subjectively by the group oral tradition, than by objectively written terms of reference. In this way, scientists absorbed in a knowledge system of western logical positivism stand together, and often against, groups who identify with a sense of participation in intuitively credible knowledge systems, such as Traditional Ecological Knowledge. 'Standing against' should not imply an unproductive degree of tension between systems where learning organizations are involved and well-represented by their different constituencies. Different systems can evolve their relations in ways that allow them to stand together on key issues, ensuring a climate of co-operation rather than conflict. However, to do this routinely in business practice requires implementing a program of learning and transformational praxis so that each knowledge system can remain strong while decision-

making is adaptive to changing environments. As we have seen this has not yet happened in managing B.C. Forests. There are different 'camps' or distinctly different ways of understanding how to solve problems and how to build knowledge. Scientists tend to prefer a post positivist planning approach. Foresters and civil servants tend to defer to trial and error incremental approaches of knowledge building and environmental groups advance an advocacy approach to 'get at the facts'.

In this thesis I consider the possibility of utilizing the strengths of four different planning approaches in one planning system. One of the barriers to combining the different planning approaches is that the separate 'camps' do not understand the value of the other's approach to knowledge building. Since each of the planning 'camp's' techniques are not clearly understood by the others' then the relationships and benefits of working together are not seen. In the next section I identify and summarize characteristics of the four different and often conflicting planning techniques used in B.C. that have provided the kind of non-systemic, or implicitly systemic results that Lindblom (1959) described as "muddling through". I also suggest for discussion purposes, a model for integrating the different planning approaches to help navigate on a path where planning can become adaptive to changing contexts from the field level down to the policy level.[93] Four often-conflicting planning techniques are explained in the following paragraphs. These planning methods were suggested by theorists in an attempt to explain whatit is that planners do when they address planning problems (Lindblom 1959, Davidoff 1965, Friedmann 1981). History has shown that among western colonial powers, those with authority to design complex plans for others have been very few in number compared to those who are expected to abide by the plans (Brownowski 1978). The "rational-comprehensive" model of the planning process depends exclusively on the scientific reasoning of a few experts and with such a limited base of information it is therefore the least resilient of all the decision-making models. This notion of the planner's role assumes that analytical skills (the planners expertise) can be used to discover the 'best' solution to a particular problem (Susskind and Ozawa 1984). The model presents a way of conducting planning according to logical, scientific reasoning. Planning is assumed to proceed much like a scientific experiment. Hypotheses are tested

[93] A model for integrating four traditional planning approaches is shown in Fig. 4.

against data and decisions are made on the basis of inductive (statistical) and deductive (logical) reasoning (Lindblom 1959).

Peter Boothroyd (1991) proposes a rational-comprehensive model that can be used to guide any planning process. The seven-step model proposed is mechanical and generic in its approach to planning. Such approaches are criticized by Chris Paris who states that: "To view planning theory as a separate internally coherent set of logics operating in 'given' situations is at best to make it a cookbook of instructions or doing 'planning as a job' but at worst it could be a deliberate attempt to focus on the uncontroversial and the mundane (Paris 1982). Planners emphasizing such rational-comprehensive approaches are expected to provide efficient and effective solutions to planning problems within well-defined parameters. A problem with the rational-comprehensive approach occurs when the parameters of a planning problem cannot be well defined (Lindblom 1959, Davidoff 1965, Holling 1978, Friedmann 1981). Planners strictly using the rational comprehensive model may not be sensitive to local concerns that are not 'standard' and cannot be foreseen at the 'drawing board' (Davidoff 1965). Despite its ostensible lack of regard to subjectivist concerns, the rational comprehensive model of planning can be useful to communities. The formal sequence of steps in the planning process does not in itself present difficulties. The adherence to a rational-comprehensive process is encouraged by plan participants as well as by facilitators (Wondollek and Yaffee 2000). The challenges occur when meaningful community consultation is not encouraged to embrace both the orality and the literacy of the process. Or problems occur when planners and politicians become effectively the only participants in the process. Perhaps the biggest problem for the proponents of the rational-comprehensive approach to planning is that no matter how objectively or rationally planners and scientists propose courses of action, the acceptance and implementation of their recommendations are almost always beyond the scope of their influence (Lindblom 1959, Davidoff 1965, Holling 1978, Susskind and Ozawa 1984). Full implementation, monitoring and control of planning effects is beyond the domain of the technology of a rational comprehensive model.

The incrementalist planning technique takes a different approach to the planning process than the rational-comprehensive model. In this paradigm the implementation of

planners' recommendations is the goal (Lindblom 1959). Plans are crafted to be acceptable at least among members of the central planning agency that designs them. Thoroughness and scientific rigour is not the primary requirement for the acceptability of a plan. An initial plan is drafted and then subjected to analysis by other planners. The analysis is mostly subjective, based on past experiences and accumulated expertise of the reviewers. The plan is returned for revision iteratively until a scenario is considered acceptable among all of the reviewers. Planners do not attempt to remain 'value neutral'. The test of a 'good' plan typically is that various analysts find themselves agreeing on the value of a proposed policy or plan (Lindblom 1959). The forest planning system in British Columbia currently follows this incrementalist model. Timber harvesting plans are routinely initiated by the timber industry or the Forest Service and then sent through bureaucratic channels for approval by fish and wildlife, recreation, range, protection, water management and resource officials in the Forest Service and other ministries.

In promoting and describing the value of the incrementalist approach Lindblom maintains that rational comprehensive planning by itself relies too heavily on data analysis and procedure and not enough on the past experience of the planners. The incrementalist model of planning minimizes the problem of non-acceptance of a planner's recommendations. The likelihood for a plan to be rejected is thought to be less if the responsibility for acceptance of the plan is shared by a larger number of authorities. The problem with the incrementalist approach is that due to the reliance on accessible and experienced planners, the process can ignore or minimize the conflicting ideas from individuals and associations outside the central planning agency (Davidoff 1965). If residents opposed to certain aspects of the plan are not heard, then the success of the plans' implementation will be jeopardized from the start (Davidoff 1965, Vance 1990, Wondolleck and Yaffee 2000).

The advocacy model takes a different approach to planning process. Proposed by Paul Davidoff (1965) it requires that the ideas and alternative plans of special interest groups be heard and defended in a planning forum. Davidoff suggests that rather than have one agency try to simulate the political spectrum of alternative planning scenarios, the planning agency should ask different groups to formulate and present their own alternative plans. The identification and resolution of value conflicts is the essence of the

advocacy model of planning. Rather than proceed as though value conflicts do not exist (as in the rational comprehensive model); and instead of proceeding as though these conflicts can be mitigated by discerning policy advisors (as in the incrementalist model), the advocacy model invites value conflicts into the planning process. The advocacy approach encourages the incorporation of value conflicts as a means of bringing new information and possibly new directions into the planning process. The role of the planner in the advocacy model of planning is analogous to that of the cross examiner in a courtroom trial (Davidoff 1965). The planner is required to elicit the facts and to show the bias in each of the advocates' presentations. The central planning authority is then required to compare the points of view and ultimately to select the best approach or the best synthesis of approaches from each of the advocates' positions. For example, in a forum for meeting the challenge of controlling tourists' access into sensitive ecosystems several competing 'solutions' are proposed. Each 'solution' is likely to reflect the special interest of each of the proponents. The overall solution must respect each of the advocates' interests as much as possible so that one solution, or synthesis of solutions can be formulated for access management in the sensitive areas.

An organized approach in the use of the advocacy technique to 'get at the facts' is expressed in the environmental impact assessment review process used by the Canadian federal government. At one phase of the decision-making process a panel of judges deliberates on several different advocates' views concerning the possible consequence of a proposed major project development (Beanlands and Duinker 1983). Natural Resource Use Commissions often adopt the role of the 'cross examiner' to help separate facts from exaggerated or conflicting claims. This is done to arrive at a more credible formulation of recommendations for government to change management legislation or policy.

There is a fundamental problem with the advocacy method. The institutional arrangement is such that final decision-making power is in the hands of a central planning authority (Davidoff 1965). Community residents can be discouraged from participating in the planning process when it is understood that the interpretation of community information and the final decisions will fall in the hands of outside professionals (Forester 1989, Pinkerton 1999, Wondolleck and Yaffee 2000).

Other planning models have centred on the concept of social learning (Friedmann 1981). This planning approach regards planning as not so much concerned with the making of plans as with "mutual learning". According to Friedmann's "transactive planning style" planners should implement methods that are less centred on documents than on dialogue. The approach emphasizes more dependence on the transactions of individual persons than on abstract institutional perspectives. The planning model is different from the other models because of its focus on planning to "accurately reflect the genuine interests of the people engaged in the social production of their lives" (Friedmann 1981). The degree to which the public is engaged in the planning process and the degree to which planners are accountable to the statutory authority of central decision-makers are what differentiates it from other models. Without the often distorting 'filters' of technocracy in the rational-comprehensive, the incrementalist, and the advocacy approaches, the users of the social learning model are well positioned to incorporate negative feedback directly from social-ecological systems while steering a transition to ecological and social sustainability. In the rational-comprehensive, the incrementalist, and advocacy models the central planning agency of the state always assumes control of the planning process. Friedmann argues that the required change in planning style to allow local communities' decision-making authority in planning would require a fundamental 'shift' in the planning paradigm. He calls for a greater degree of public involvement in planning so that decision-making authority rests more strongly in the hands of the affected public. Permitting communities to make their own decisions requires that a community be active in exercising some control over the conditions affecting its livelihood (Friedmann 1981).

There is a possibility of combining the different planning approaches so that they work as an integrated system adaptively managed within a social learning framework. I have proposed this model in Figure 4 below, for discussion.[94]

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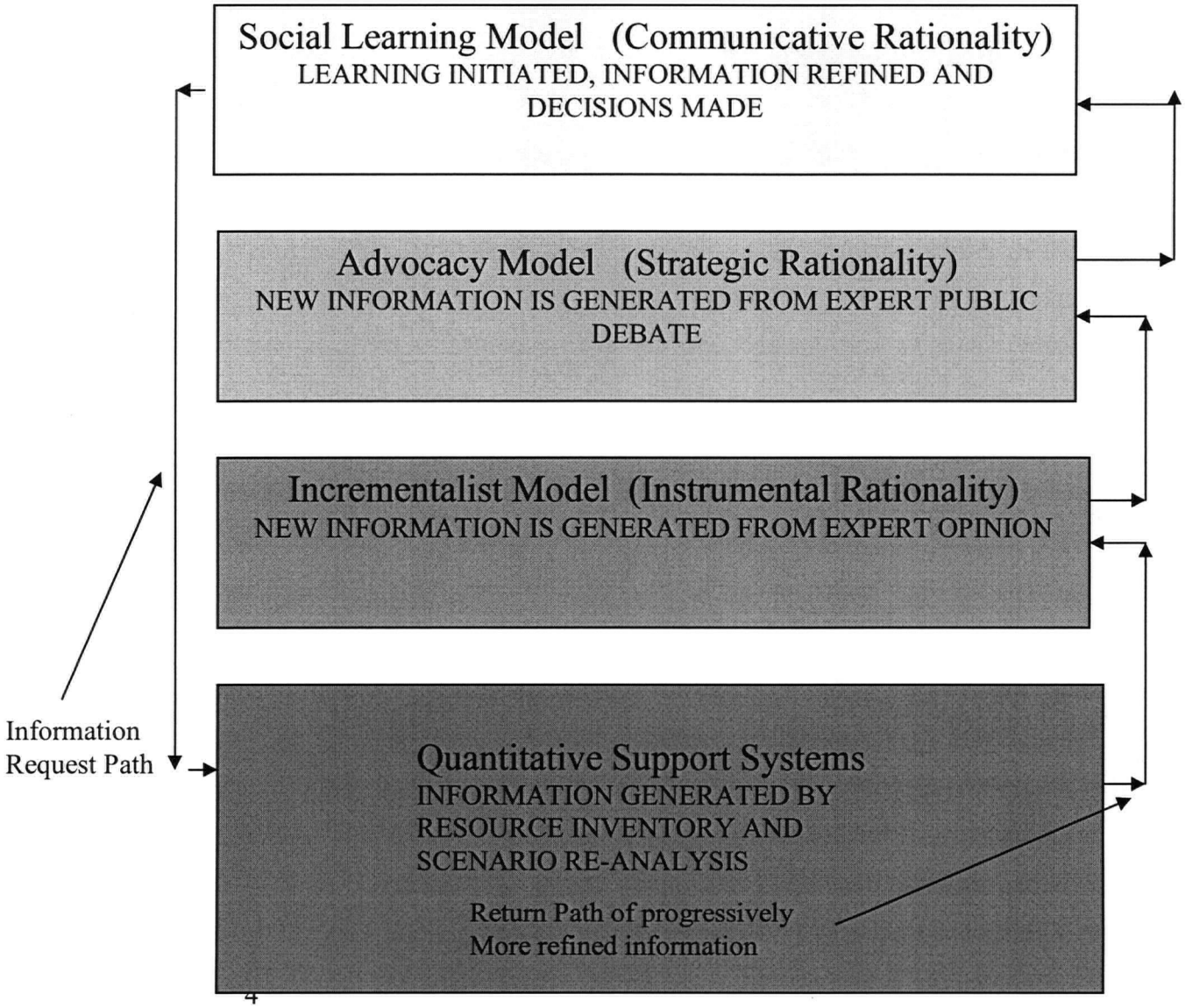
[94] That Habermas' (1998) categories of "communicative rationality", "strategic rationality" and "instrumental rationality" seem to align with the social learning, advocacy and incrementalist planning models respectively, may also provide interesting discussion and support for this conceptual planning model.

Figure 4 Planning for Adaptive Social Learning



4.327 Co-management Principle #2 **Implementing Community Development**

Negotiate method to self-organize in communities and to encourage government and industry scientists and technicians to develop their knowledge in specific places. Too much authority and responsibility lies solely with distant bureaucrats and politicians who are strangers to site-sensitive co-management processes.

> *"...maybe I'm at the age where my learning is outdated...but I think there's a lot of what I know is coming back... The odd times I try to push it on other people but it don't work...people have to go about learning at their own place..."*
>
> *"...I really do believe it's sitting down together, working together in a team approach and taking the other parties seriously and vice versa and making decisions that are for the best of the natural resources. That's how we can improve co-management."*

4.33 Co-managing Problem-Based Learning

Autobiographical Note:

Thirty five years ago w*hen my family first moved to the small community of Colwood, south of Victoria I had no idea that the land was well known and populated by indigenous peoples for thousands of years before us. My readings in primary school taught me that the land was just 'empty' or 'wilderness' before the white man 'discovered' the region. In social studies, indigenous cultures were considered outmoded and their traditions dead. I had no idea of the history of injustices endured by indigenous peoples in BC, or why Indians lived on reserves. It wasn't until the early 1970s after an environmental and social impact inquiry conducted by Chief Justice Thomas Berger, when Canadians began to collectively question the social impacts of increasing domination of nature and indigenous peoples in the 'far north'. Canadians are still just beginning to learn how destructive processes of colonization can be averted. Our curriculum in school stressed the study of British history in social studies and it stressed the importance of objectivity in scientific inquiry. It is not surprising that the best students in my school became strangers to the natural history of their local environment and communities. We learned that we should somehow become detached, rational and British. The local newspaper was the "Victoria Colonist". Except through my discoveries at play, I never grew to understand the history and local knowledge of the natural places that I lived. I was never taught that science and structured learning could occur outside of a laboratory. Near where I lived* Xʷayəŋ *was "the fast flowing water" that had supported good life, for centuries. I wasn't taught anything of what the Coast Salish people already knew.*

I didn't learn that the local inter-tidal areas were populated with species that were systemically related and rich in diversity. I was not taught to learn to respect how this rich and diverse habitat of plants and animals supported richly organized peoples in the region for thousands of years. I knew about salmon, cod, halibut, crab and oysters; but I didn't know how they were related to each other and to human culture. Through centuries of learning from natural systems, the Salish people at the Beecher Bay reserve knew the relations between the land and sea resources: gull eggs, sea urchins, mussels and barnacles, as well as snails whelks, chitons and other intertidal invertebrates. In my primary school grades we were not taught that indigenous people valued and managed the land and water ecosystems of our local environment, for their survival... I remember that we were taught to put our hands over our heads and hide under our desks in the case of a nuclear war.

A third co-managing principle suggested is the promotion of problem based learning in co-managing contexts as the highest learning priority for provincial natural resources management agencies, professional organizations and academic institutions. NStQ case study information indicates that planning is done to build statistical or scientific concepts of management problems at the expense of building accessible, practical knowledge that is linked across management scales. Authoritative forms of relevant, scientific knowledge can be respected in adaptive, community based learning organizations and authoritative forms for tacit understanding of traditional ecological knowledge should also be equally respected and utilized.

A conception of promoting the lived understanding of TEK and site specific knowledge as authoritative knowledge occurs throughout the NStQ case studies. The networks "Co-managing 'Literacy' Crises" (p220), "Co-managing Process 'Heart' (p225), "Co-managing Institutional Change (p226), "Co-managing 'Lived', vs. Statistical Understanding" (p228), provide a more detailed understanding of the contrast between Western and NStQ ways of knowing. Examples of problems of imposing scientific knowledge without respect for TEK and site specific knowledge are found in the networks "Spokin: FPC vs. Holistic Understanding" (p233), "Caribou Process: Tsq'escen Involvement" (p240), "Demdomen-NStQ/MoE Wildlife Crisis" (p254), "LXCF Process/ Areas for the Province to Improve" (p257).

Traditional Ecological Knowledge is valued for its accuracy and richness as factual knowledge for assisting in resolving problem based learning tasks. There is also performance knowledge of best practices in managing planning processes. There is evidence in the networks that the NStQ have listening and speaking protocols and skills that are superior to negotiating methods used by provincial planners – see, for example networks "Demdomen as ALO Catalyst" (p246-250). The principle of co-managing problem based learning suggested in this research builds on the NStQ examples (networks cited in the previous paragraph) that learning organizations in rural communities can balance orality and literacy by asking relevant questions, monitor the environment for answers, and implement corrective changes in management direction when required. The results of the NStQ case study research implies that encouraging systematic conversation within learning organizations may provide a fast track to a "new literacy" for co-management institutions.

4.331 Orality, Literacy and the 'Here and Now' of Problem Based Learning[95]

"Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?" T.S. Eliot (1947) "The Wasteland"

Kathleen Tyner (1998) suggests that a "new and improved literacy" may be required "at the end of one century marked by the tangible commodities of industry and another century that is synonymous with the more abstract and less tangible concept of information". (16) That this new literacy may also need to be supported by a 'new and improved' systems epistemology that supplants our quantitative focus on objects with a qualitative concept of relationship, is a subject for further discussion in this thesis. Regardless of which way our task of explanation and planning with science is conceived, Tyner (1998) echoes the lament of T.S. Eliot (cited above) that:

> It is becoming increasingly obvious that there is a disconnect in the old adage, "Knowledge is power." In fact, the relationship between the two gets murkier by

[95] There are many senses of the terms 'orality' and 'literacy'. Graff (1995) notes that the recent uses of the term 'literacy' has evolved from the technology of reading and writing, to include facility with communication technology of computers, film, video and telephone and video-conferencing. For the purposes of this project, 'orality' (utterance) refers to the skills necessary in order to foster understanding by talking and listening. 'Literacy' (information) refers to the skills needed to foster understanding by reading and writing.

> the day: Data is certainly not information and information is not, in itself, knowledge and knowledge does not, necessarily lead to power. And so, what good does it do to live in an age of information? And furthermore, where does improved literacy that is responsive to the times at hand fit in? (16)

Ecologists and foresters have volumes of diverse historical research in ever-expanding databases on various types of forest impacts. Sociologists and economists have libraries of research indicating the impact of forest management on rural communities. Geographic Information Systems (GIS) experts have technology to accurately simulate and compare growth and yield projections of forest stands with costs and benefits according to ecological parameters. The challenge of sustainable forest management is not found merely in exchange of written information. It is also found in the discovery of the best conversations to initiate that will have the potential to discover the relevant questions to ask.[96]

The ontology of orality and literacy will never be complete. There will always be something new to learn about their basic powers. Applying knowledge of orality and literacy where necessary to support problem-based-learning initiatives in co-managing processes will be a worthy problem for anthropologists, psychologists, managers and educators- and foresters in the coming century. Since the research work in distinguishing literacy and orality is relatively new, the conceptualizing of orality and literacy has epistemological and axiological problems as well. The philosophical and ethical problem of using literacy to describe orality is the subject of Derrida's criticism of Rousseau and Levi Strauss.

How can scholars presume to know about orality and literacy at all? How can scholars do this with the literacy that itself proves to only dimly grasp reality, if at all, and does violence to everything that it touches (Foucault 1980, Derrida 1980)? And having unrightfully assumed this epistemological platform how can scholars then go on to craft the grand "metanarrative" about what civilization should do? The writing of Derrida and Foucault brought a serious challenge to the foundations of enlightenment philosophy on which the value of literacy was well established. A 'post-modern' world

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[96] Initiating systematic dialogue with community members minimizes the risk that planners will neglect planning for important community values. With a judicious blend of scientific fact and community values, resource managers can avoid the 'naturalistic fallacy' of jumping to conclusions which have embedded in them, their own value judgements.

resulting from challenges to enlightenment philosophy is now advocating a new intellectual platform, the deconstruction of language and civilization. Ironically, or perhaps partly as a result of the recent philosophical challenges to reason, language and rationality, business has been brisk for social scientists seeking new facts about language and literacy. Ong states that "in the past few decades the scholarly world has newly awakened to the oral character of language and to some of the deeper implications of the contrasts between orality and writing". (3)

The importance of orality in language should not be too surprising since the imperative of literacy is a relatively recent phenomenon in the history of human societies. In the past 30,000 to 50,000 years of evidence of human society, it is estimated that the earliest forms of writing began only about 6,000 years ago. It has only been since the invention of the printing press that societies have evolved a significant dependency on the printed word (Eisenstein 1980). Of the 3000 languages that exist today, about 80 have a literature (Ong 1982). Cultural anthropologists suggest that writing would be of little utility for communities of nomadic groups and farmers whose oral traditions remained strong. Michael Harbsmeier (1989) refers to the 652-year-old notebook of the Muslin traveller, Ibn Khaldun. Harbsmeier states that:

> Although he (Khaldun) was aware that the tribal Bedouin people were illiterate he also claimed that the 'group feeling' and 'social cohesion' which he saw as the foundation of the leadership and superiority of the tribal dynasties and thereby of power were themselves in no way dependent on literacy and writing: on the contrary, literacy and writing tended to deprive people of the very basis of their strength and superiority. (14)

The attitude of superiority of literacy over orality, or worse, an attitude by which traditional ecological knowledge (TEK) can somehow be coded in writing and then utilized as an information 'commodity', undermines trust in planning and negotiation process. Not only are scientists now being challenged in their ability to write and speak comprehensively; they are also being challenged in their ability to listen and integrate the oral form of information into a decision making process.

Ong (1982) suggests that in the elaboration of protracted thoughts, group discussions are effective so that memory is sustained and shared. Problem-solving and problem-

based learning in groups has been effective for communities for many thousands of years. Although it is often marketed by management consultants as a '21st century systems tool', Senge's (1994) essential concept of the importance of conversation and team learning in business organizations is not new. Conversation is composed of words; but the words are given voice and infused with meaning only by conscious or unconscious use of tone and rhythm. Language evolved first as utterances within social contexts. For this reason linguistic theorists suggest that writing only symbolizes meaning if is related to a 'world of sound' of real contexts (Ong 1982). It is not difficult to imagine that the power of the symbols of sounds in denoting things is robbed by its visual representation in writing. For example, the sound for 'tree' having no ocular representation in print, would elicit feeling for a more immediate relation to a tree. Ong (1982) speculates that an epistemology of cultures with no writing would be different from that of literate culture.[97] He proposes that a deeply personal and intimate relation is established between non-literate societies and environment, to the extent that a separate inner and outer reality would be unthinkable.[98] Just as the power and excitement of being completely in 'the here and now' is eclipsed by writing, so too is the power of oratory and rhetoric diminished. The 'music' in language has been curtailed by writing though it is not completely eclipsed. Successful educators and orators are aware how the tone and rhythm of their language affects their influence on the audience. The use of rhythm, timbre and tone in language is an important device for increasing emotional involvement and a learning process for an audience. First Nations' teachers themselves taught in oral tradition are especially knowledgeable in using speech techniques, facilitating apprenticeships and dramatizations as teaching method (Vansina 1985).

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[97] Subsequent research by Scribner and Cole (1981) indicates that extraordinary interest in logic and classification may only be a peculiarity for English language speakers but not necessarily a key characteristic of literates in general.

[98] Literates' propensity for not living in the 'here and now' is described well by Eckhart Tolle in "The Power of Now: A guide to spiritual enlightenment" (pp 47-67) New World Library Calif. (2004). Our preoccupation with a logic of distinct subjects and objects and domination by a relentless and linear concept of time restricts our ability to maintain our wholeness and spiritual presence in relationships. Due to limitations of the printed word in conveying meaning, a spiritual dimension of co-managing, though absolutely essential, is regrettably very difficult to describe in this academic research. It must be experienced. Trust building results from the strength of spirit and wholeness in a co-managing process. Senge's five disciplines for learning organization delivers a communication system that can allow strength of spirit to emerge; but it does not speak to what this "strength of spirit" is. For this, a holistic 'lived' understanding and knowledge of the Creator is required. Respectful and diligent pursuit in understanding indigenous knowledge is likely to provide more than just an introduction to this wisdom.

4.332 Balancing Orality and Literacy to Serve Problem-Based Learning

It will be a challenge for 21st century forest managers to listen and speak as well as they read and write and to *learn how their meanings work* at the field level. Evidence from oral cultures shows that face-to-face conversation imbues information with context, meaning and excitement for listeners. Making information relevant, interesting and vital to listeners is a primary task of story-tellers. Attentive listening and interactive participation is required from the audience so they will understand "how those meanings apply to their own lives". Skilful story telling by managers and scientists requires that they will need to explore carefully how their research directives and policy devices can work at the field level. To do this effectively a program for problem-based learning must be implemented in curricula of natural resources programs at the high school and university levels. If our socio-linguistic capacity for making meanings and influencing behaviour is acknowledged, then communication of oral language will be of much interest to forest managers and story-tellers.

Provincial planners often assume that scientific knowledge founded in English literacy provides the best way to explain ideas, and to show evidence (Batiste and Henderson 2000). Olson and Torrance (2001) note that:

> Because literacy and schooling were seen as the causes or engines of social change, then the obvious means to producing psychological and social change was through imposing literacy and schooling ....The personal and social aspirations, interests, competencies and traditions of the learners could be ignored and overwritten by imposing literate standards and literate practices on them" ... "such practices are now widely recognized as oppressive. (3)

The work of Street (1987), Prinsloo and Breier (1996) and Scribner and Cole (1981) inquires further into the problem of the bias of literacy. Their research advances problem-based learning models of literacy to prevent advancing European models of literacy established in Western philosophy and to encourage models of literacy that can be culturally sensitive in specific contexts. Coutts (1994) suggested training and extension programs that recognize different strategies for communication according to the complexity of the subject. In Figure 5 and 6 (pp 171-2) I have adapted Coutts'

strategy to indicate a relation between the oral and literate that communities and educators might find useful. Figure 5 indicates the relation between rural communities need to improve their literacy depending upon the complexity of the community development initiative required of them. As the community development initiative increases in complexity so too does the need for literacy. Figure 6 indicates a relation between planners' need to improve their awareness of oral and non-verbal communication in co-management. The power of literacy to create positive change is acknowledged by indigenous people (Batiste and Henderson 2000). However, a reciprocal respect from the dominant society, for the oral traditions of indigenous people is lacking (Batiste and Henderson 2000, Smith 1999).

The barriers both in understanding scientific literacy and traditional ecological knowledge could be addressed by First Nations and the Provincial planners and participants engaged in problem-based learning organizations. A "fast track" to natural resources management education, could be a two-way track where listening and learning, as well as talking and teaching can work equally well in both directions. In this way, barriers to understanding of both indigenous and science knowledge can be addressed, at least to the extent that field level problems can be negotiated and resolved. We must ensure that teaching, research and learning is focused on adaptively resolving relevant site-level management issues and concerns. We need to navigate onto a path that leads the transformation of our current 'co-management' approaches from being exploitative and mono-cultural to eco-systemic and bi-cultural.[99]

4.333 Co-management Principle #3 **Implementing Problem-based learning**

Proven problem-based learning practices and methods should be utilized to help direct learning organizations in their communities and across management scales. An adaptive learning program to support and evaluate benefits of field level and cross-scale learning down to the Provincial level must begin in high-school

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[99] Davidson-Hunt and Berkes (2003) and Gunderson and Holling (2002) provides definition of "a humans in ecosystem perspective" that has been useful in conceptualizing "eco-systems" in this research. Ostrom (1990) provides a starting place for understanding "co-management" and the research of Pinkerton (1992) has helped to identify challenges for implementing "co-management". The term "bi-cultural" currently lacks definition. Presumably, a definition of "bi-culturalism" in the context of managing natural resources will emerge as co-management process is instituted in British Columbia.

science curriculum and further develop in university level and professional upgrade problem-based learning opportunities.

"...continuing on the education process at the high school and college and university level ...I think we have to do a better job of understanding the roles and attitudes and values that the First Nations people have toward the land base. Their values are different from the way we were born and raised and we need to understand their values. Once we understand their values it is easier to come to agreements..."

"...I think First Nations to the extent that they are still on the land probably come up with an appreciation of the forests which is superior to the non aboriginal understanding of the forests and I would say that the traditional education where it functions is superior... so I think it needs to be taught at the high school level... and at the college level it has to be there... And it has to be on-going because there's new information coming - new applications forthcoming - so it's got to be part of professional upgrade and extension work..."

"...he couldn't work with them on this forest project to make up a forest plan that would make a little bit of sense... They're managing to an annual allowable cut - what a pointless complete ignorance of ecosystems and variances in the land! I think BC forest management is in crisis - and you and I are young enough that we are going to see what's going to happen with all of this..."

Communication Skills and Community Accountability in Co-managing

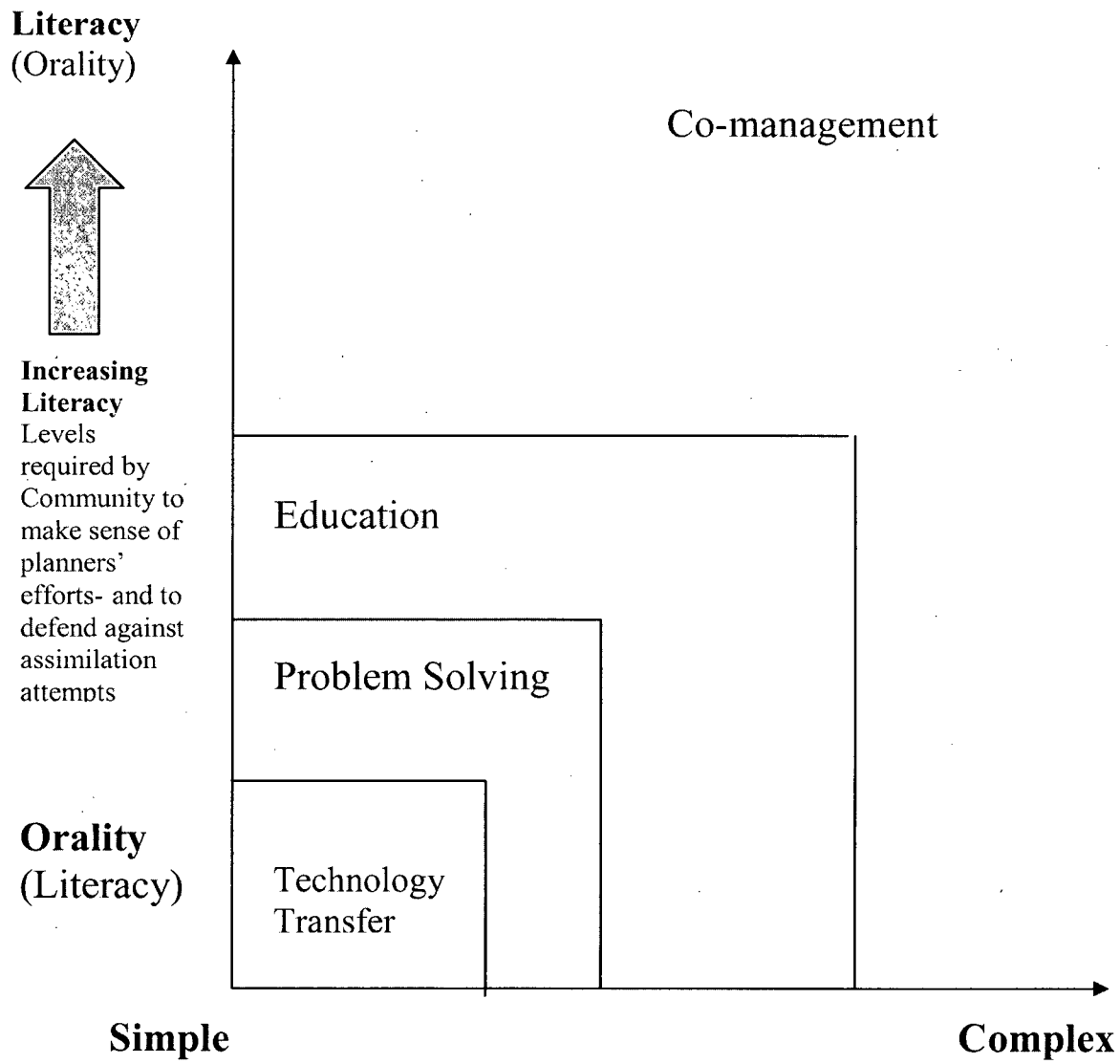

Figure 5

Communication Skills and Planners' Accountability in Co-managing

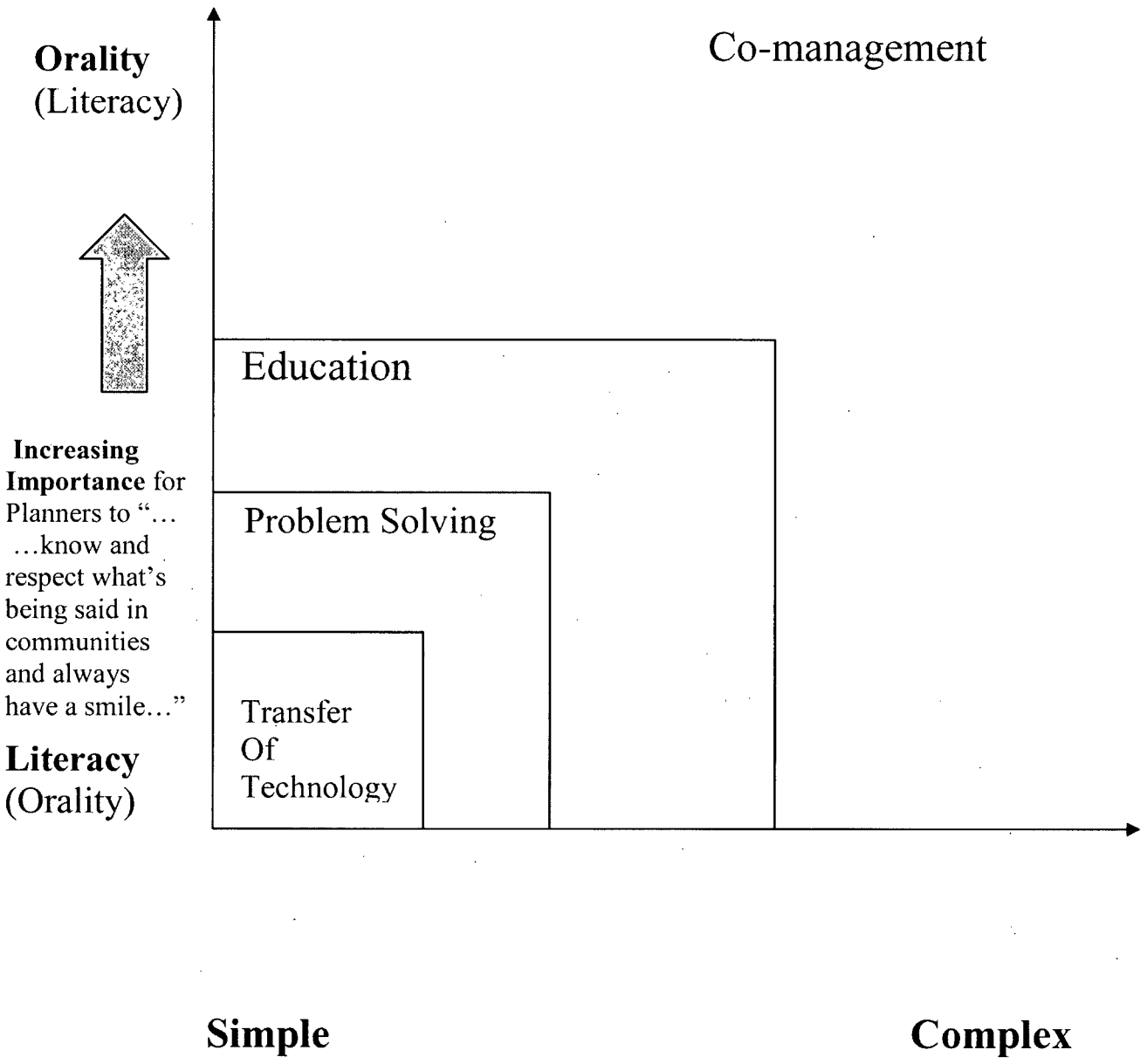

Figure 6

Autobiographical Note:

I recall that there was much anxiety and uncertainty in the community of loggers and fisherman where we lived. There were some wealthy farmers –landowners whose ancestors had pre-empted rich land and had become established in the late 1800s providing farm produce to the town of Victoria, BC and to the gold-rush miners. But most people were dependent on scarce seasonal work from local fishing, logging or saw-milling operations. Some of the children at my school were poor and neglected and wore ragged clothes. I could sense their helplessness when others teased them about their difference. I spent a lot of time by myself. My responsibilities were to endure school, and to go to church on Sundays with my sisters and mother. In my free time I played the piano or I went for long walks in the hills, or to the ocean, fishing from the shore. When I was a boy I fished for greenling, sea bass, and rock cod and felt cold mists and smelled the tides. The natural beauty and temperate climate of the area eventually became the primary resource of the western communities. In the 1960s the economic forecast for Vancouver Island was for slower growth as logging and fish resources were being depleted. Few had foreseen the impact of globalization as an information and service economy grew. By the mid 1970s 'the stage was set' for growth in the western communities that would see many natural areas being displaced by strip malls and subdivisions. A swamp and wetland forest where we played as children, and where we watched sandhill cranes, ducks, gulls, beaver, muskrat, otter, fox and deer, was filled in with gravel and became new housing associated with the Canwest Shopping Mall. Meadows of wildflowers on rock bluffs of fragile moss, arbutus and douglas fir ecosystems, became building sites for new houses on Triangle Mountain. Secret places with our associated childhood memories were buried in gravel and pavement. The two-lane road to Sooke became a four-lane highway; and then the constant stream of traffic and burgeoning development pressed chaotically farther into more and more remote areas of the "western communities". Colonization of Vancouver Island had begun in the mid 1800s and it led to the destruction of habitats and destruction of the traditional livelihood of indigenous peoples of the area. It had also led to a new 'goldrush' of land development and real-estate speculation. In the early 1990s the provincial NDP government led by Mike Harcourt, attempted to preserve many endangered ecosystems through a protected areas strategy; but in "the western communities" the goal of 12% preservation of intact representative types was already impossible, even in theory. By the end of the 1980s, in many ecological subzones of southern and eastern Vancouver Island, less than 5% of their original areas were intact.[100] By the last quarter of the 20th century we still

[100] Protected Areas Strategy, Government of British Columbia, Crown Publications, 1994

spoke of 'Crown' land, but by then it was clear that Canada was no longer just a colony of Britain. At the same time, with its assumed wealth of rich natural resources, powerful opportunists in British Columbia were now imagining BC as closer to the United States and Asia, than to Ottawa. Colonization was now called globalization. There are continual calls from environmental and indigenous groups for constitutional protection of First Nations' and biodiversity values in British Columbia. But now Canada does not defer to Britain, it defers to the authority of a global marketplace and it is becoming increasingly unclear where the centers of political power really are.

4.34 Co-managing Understanding of System Technology and Knowledge Emergence

Depending on where the boundaries for analyses are drawn computer technology and systems theory has the potential to homogenize communities or to respect the inherent diversity of communities. The NStQ are aware of the importance of ensuring that whole systems boundaries are respected at appropriate scales. Early in the 1990s, the NStQ developed a facility with Geographic Information Systems technology as they entered into the treaty process to maintain up-to-date knowledge of processes of the storage, retrieval and display of map information of their traditional territories. The NStQ have recently been developing land use plans in each of their communities to find relations with these plans and the provincial Cariboo Chilcotin Land Use Plan. An integration of provincial and NStQ land use plans utilizing overlay analysis and modeling techniques can assist in identifying potential overlap areas and potential levels of conflict for land uses. New knowledge can emerge for continual assessment as interest areas are compared systematically through GIS analyses and as mitigation and accomodation is monitored adaptively in pilot projects. The networks "Co-managing Institutional Change" (p226), "Co-managing 'Lived' vs Statistical Understanding" (p238), and "Spokin: FPC vs. Holistic Understanding" (p233) refer to the challenge of integrating Traditional Ecological Knowledge Systems with Statistical and Literate Systems of Knowledge. A model for integrating planning approaches (Fig. 4) is proposed as a system for adaptively integrating different planning methods to encourage knowledge emergence while respecting self-organizing authority of the community.

General Systems Theory was proposed as a language by which scientists could transcend the fragmentary boundaries of their disciplines to develop more comprehensive analyses in their interest areas. Systems theory can serve the same purpose in co-managing processes. Midgely (2000) notes that: "if something can be described as 'systemic', it is (as far as possible) completely understood." (34) Midgely (200) quotes Von Bertalanffy (1956) as an early proponent of General Systems Theory describing its purpose:

> A unitary conception of the world may be based, not upon the possibly futile and certainly far-fetched hope finally to reduce all levels of reality to the level of physics, but rather on the isomorphy of laws in different fields...this means...that the world, that is the total of observable phenomena, shows structural uniformities, manifesting themselves by isomorphic traces of order in its different levels of realism. (34)

The original vision of General Systems Theory posed by Von Bertalanffy has endured and is growing in use in many different science disciplines. The work of Howard Odum (1983) has been important in integrating interdisciplinary understanding of ecological systems. Recently applied ecologists Berkes, Colding and Folke (2003) describe General Systems theory as:

> General Systems Theory is concerned with the exploration of *wholes* and *wholeness*. It emphasizes connectedness, context and feedback, a key concept that refers to the result of any behaviour that may reinforce (positive feedback) or modify (negative feedback) subsequent behaviour. It argues that the understanding of the essential properties of the parts of a system comes from an understanding of not only these components but of their interrelations as well. Understanding comes from the examination of how the parts operate together, and not from the examination of the parts themselves in isolation. (5)

4.341 Four Systems Planning Approaches (Bell and Morse 1999)

The Soft Systems Method Approach (Checkland 1981, 1984)	The Learning Organizations Approach (Senge et al. 1994 ; <http://www.learning-org.com>)

Participatory Rural Appraisal Approach (Chambers 1997)	Logical Frameworks Approach (Coleman 1987, Bell 1996)

Bell and Morse (1999) assist in our understanding of the relation of planning approach and systemic knowledge by presenting a comparison of four essential methods for participatory and systemic problem solving. They see the approaches as being in a range from methods that are implicitly systemic to those that are explicitly systemic. The implicitly systemic method is focused on finding answers to pre-defined questions, whereas the explicitly systemic method is more concerned how method participants are involved in defining the questions and learning from the answers. The soft systems approach (SSM) and the learning organizations (LO) approach are regarded as explicitly systemic since these methods emphasize team learning and adaptive transformation that is self-directed as a consensual process among participants. The logical frameworks (LF) and participatory rural appraisal (PRA) approaches are considered to be more implicitly systemic, in that learning is somewhat controlled by expert participants. Participant learning in the PRA and LF method is loosely organized according to the aptitudes and enthusiasm of individuals directed by an executive group during a project completion. Due to the unstructured involvement of participants, it is possible that the results of the PRA and LF planning process may go unnoticed at higher levels of government, or influence higher level plans and government policy without the knowledge of the participants. The more structured participation and learning in the SSM and LO approach require a responsible and accountable overall team commitment to a democratic or consensus based structured learning process. Due to the 'built-in' accountability to the decision-making process, the results of explicitly systemic learning approaches are likely to be more carefully respected by government planners and policy makers. The following four case studies of community development/conservation planning process illustrate the four methods.

Anticipating continued interest in development planning of traditional lands and resources, the Vuntat Gwich'in people of the northern Yukon completed a community impact assessment first for themselves and then for the overarching Yukon treaty process

(MacPherson and Netro 1989). The motivation for doing this planning project was attributable to immediate and widespread community concern about the conservation of traditional values and threatened wildlife species. There was a need to present a well-structured community account of traditional values in the communities' 'own words' in advance of government planners' interpretation of indigenous knowledge. The community assessment of goals, values and sustainability indicators was structured in a descriptive and comparative manner similar to the implicitly systemic method of the logical framework (LF) plan approach (Bell and Morse 1999). It included a comprehensive description of the community goals associated with culture, elders, economy, environment, education and training, employment, individual and community health and well being. The approach used by the Vuntat Gwich'in community is described by Macpherson and Netro (1989):

> How then to translate practically what is meant by traditional knowledge? The residents of Old Crow suggested starting with their goals – what is important to them as a people and a community – then extracting "values" from these statements, and identifying events or activities that could be measured to act as indicators. (37)

The framework of traditional values and knowledge provided by the Vuntat Gwich'in community contributed to the Old Crow Community Planning project and to the Yukon Indian Land Claim Framework Agreement. Using a logical framework (LF) approach, the Vuntat Gwich'in method transcribed essential community values and sustainability indicators from discussions among the people. The elders and their interpreters assumed the role of experts with respect to providing guidelines for discussion of community values and acceptable use of traditional knowledge. The approach was 'expert driven'[101] and did not engage outside interests in the process of formation of the community plan and so is considered implicitly systemic, typical of the LF approach. The community is not expecting outside interests to learn explicitly about their traditional values, so long as those values as described in their framework and are respected implicitly within larger planning systems.

[101] Interestingly, in this case the experts were the elders.

In another implicitly systemic planning method involving the Batak people of the Phillipines, the participatory rural approach (PRA) was used. The participatory rural approach (PRA) is illustrated here by an ethnographic study of underlying communication between project planners and the Batak people of the Phillipines (Novellino 1994). In this ethnographic research into the planning process it was found that the local viewpoints were vulnerable to misrepresentation in "countless ways". Novellino argues that miscommunication occurs because:

> ... people's presentation of their own knowledge, and the representation of the latter by external agents, is always rooted in the attitudes and stereotypes that the two parties have of each other, and in the stigmatisation that may follow from these perceptions. (273)

Novellino concurs with Gewertz and Errington (1991) and finds "failure to make the Batak participate in conservation-development projects" was due to the fact that the relationship between Batak and the planners (government, NGO's, representatives) 'falls far short of equality, either perceived or actual' (Gewertz and Errington 1991 cited in Novellino 1994). The PRA approach used by Novellino to understand systemic knowledge within the Batak community indicates a significant impasse between conservation-development project proponents and participants.

Learning the subtleties of the polite though reluctant response of the Batak people to the plan process was best achieved by the ethnographic, implicitly systemic, "participatory rural appraisal (PRA) approach". The assumption made by government and industry planners that the Batak people were participants in the process turned out to be incorrect. Without the full participation of the indigenous inhabitants the credibility of the planning process was questioned by international conservation and development agencies. We have noted from the NStQ case studies that the same problem of credibility occurred for government and industry planners when they did not respectfully gain full participation in their planning initiative.

In contrast to the implicitly systemic approaches described above, the Soft Systems Method Approach (SSM) and the Learning Organization Approach (LO) are called "explicitly systemic" (Bell and Morse 1999). These approaches to planning method encourage structured learning among participants. An example of the SSM approach is

found in the land claims settlement of the Inuvialuit of the Western Arctic (Canada DIAND, 1992). An important work in developing a model for co-management, the Inuvialuit agreement did not assume that their task was 'clear' at the outset. A learning process that engaged the community was required first to develop the planning agenda. Expert driven, and scientific technical Logical Framework (LF) approaches in the community had only limited success in the past, because they were dominated by outside government interests and they made the participants feel excluded from the planning process. At a certain point in the history of the Yukon treaty planning process it had become clear that an explicitly systemic plan method was needed (Canada DIAND, 1992). The Soft Systems Method adopted by the Yukon Government and the Inuvialuit selected two separate councils, the development-oriented Inuvialuit Regional Corporation (IRC), and the conservation-oriented Inuvialuit Game Council (IGC), each took time to perceive the problem of co-management and the associated tasks and issues. Within the overarching systems of the IGC and IRC, there were management subcommittees of scientists and there were native leaders informed by hunters and trappers committees and community corporations. The directors of the IGC are chosen by hunters and trappers committees and the directors of the IRC are chosen by community corporations so that, in theory, the structure of decision-making of the councils is responsive to community interests.[102]

The SSM approach however, does not specifically set out to monitor the community commitment to participation, and so depending on the qualities of directors in the process, the SSM approach could become self-serving and distant from community needs. On the other hand, the SSM approach does provide an explicit system within which diverse stakeholder groups can engage in problem solving. The SSM approach for bringing co-management to the Inuvialuit is considered successful in providing a method for 'government-to-government' communication on land and resource management issues (Canada DIAND, 1992). The Inuvialuit Land Claim Agreement relies on a creative tension and negotiation between different interests in order to incorporate different perspectives in decision-making. The decision-making process makes

[102] In practice, this explicitly systemic approach for decision-making will require on-going monitoring and adaptation. Specific areas for improvement could be identified and made explicit by respectfully encouraging indigenous groups to do research using their own PRA or LF methods.

transformation according to an activity plan, in this case to adaptively institute resource co-management over areas previously managed by the crown. The extent to which this agreement can transform itself and continually adapt to changes in the broader social, economic and ecological environment, will be the extent to which the IGC and IRC can link their activity plan with the real world of the Inuvialuit.

The Learning Organization (LO) Approach described by Senge (1994) is the explicitly systemic method of problem solving which stresses team learning through conversation, dialogue and skilful discussion. The LO approach is more rigorous than the SSM method because it requires that plan participants of the IGC and IRC individually commit to practice the five disciplines essential for team learning. To the extent that the members practiced the five disciplines described by Senge (1994), they would be moving from the Soft Systems Method (SSM) to a Learning Organization (LO) approach. Where forms of extension and demonstration in the examples above were too dependent on literacy these forms have been shown only to encumber the learning process. Finding an appropriate combination of orality and literacy is key in learning/decision making forums. Also necessary is an institutional structure that is supportive of oral forms of discourse, and an educational method that utilizes a 'team approach' to learning. The Learning Organization (LO) method uses the social learning model in the integrated system of planning approaches illustrated in Figure 4.

4.342 The Learning Organization Approach

Social scientists and management theorists warn that literate, bureaucratic communication will continue to undermine a systemic approach to organizational development unless bottom-up, systemic and conversational decision-making processes are implemented (Heyer 1988, Senge 1995). With these insights from linguistic theory, management theory and social science, how can forest management organizations be designed more effectively? Education, training, extension and demonstration can provide some provincial and regional-scale solutions for maintaining information links with forestry communities. However, an effective prescription for individual and group

participation in team learning at the field level is needed to continually inform a local, regional and provincial learning process. The example presented by the 'faller-select learning organization' explained below is used to illustrate a potential application of Senge's Five Disciplines:

1) Systems Thinking: This focuses on understanding system links and loops – information feedback loops which can be reinforcing (positive) or balancing (negative). Timber foresters involved in supervising selection logging of Interior Douglas Fir Stands in British Columbia in the mid 1970s recognized that frequent face to face, on site meetings with fallers provided balancing feedback that resulted in the creation of a better learning organization and a better stand structure after logging. Small but continuous corrections were made to fallers' implementation of selection logging until learning was achieved at new sites. However, participants noted that infrequent meetings resulted in more serious selection errors made over larger areas. Learning was often not achieved before moving to a new site. This resulted in a positive feedback relation damaging to the learning organization. Distrust of the fallers reduced credibility of the method and this resulted in less funding for field supervision, which resulted in less frequent on-site meetings. To practise the first of Senge's five disciplines, all forest managers across management scales should commit to balanced implementation of the faller select method throughout the region.

2) Personal Mastery: This means articulating a personal vision, seeing reality clearly and making commitment to the results you want. The hand fallers exercise personal mastery in developing the habits of thinking that ensure their survival in a hazardous profession. The timber foresters tended to lose their ability at personal mastery within the bureaucracy of the Forest Service, as their personal power decreased as responsibility to larger harvest areas continually increased. To practise the second of Senge's five disciplines, all fallers and foresters should commit to a personal and context sensitive approach to management.

3) Mental Models: Participants develop an already inherent tendency to make mental models of the world as they experience it. To practise the third discipline, fallers and

foresters need to commit to developing an intuitive sense of the landscape in which they are working. A geographically referenced understanding of the economic, operational, reforestation, ecosystemic or cultural challenges in their working area should be part of their mental model. Conversing about mental models must be encouraged at all times.

4) Shared Vision: According to Senge (1994), this discipline is built around six core ideas: that the organization has a destiny; that there is a deep purpose in the founders' aspirations; that not all visions are equal; that there is need for collective purpose; that there is a need to provide forums for people to speak from the heart; and that creative tension is useful and can be encouraged. To apply this discipline in the context of building learning organizations in British Columbia, fallers, log-skidding operators, road builders, timber foresters, wildlife biologists, silviculture planners and community owner/ stakeholder/ licensees must reach agreement on the residual stand attributes that constitute a well logged area.

5) Team Learning: This discipline refers to the need for problem-based learning. There is a need to learn through conversation, dialogue and skilful discussion so that the goal to achieve 'collective mindfulness' is reached. To practise the fifth discipline, the fallers, foresters, biologists and community owners/stakeholders and licencees must commit to acknowledging mistakes and achievements made while learning together the appropriate techniques and strategies to achieve the desired stand structure in all applicable forest types. Forest managers across scales must commit to assist continual transformation of learning organizations to ensure that faller/forester teams are always effective and adaptive in different operating environments.

The fundamental difference between the Learning Organization (LO) approach and the other Systems approaches to problem solving is the intentional nature of learning engaged in by the participants. In the SSM approach, team learning is incidental, and unplanned although it is ultimately instrumental to the process. It has the greatest potential of all the approaches to grow to a LO approach. In the PRA approach, team learning can occur, but it is not focused on the way it will ultimately affect decision-making and transformation in the community. In the LF approach team learning is

defined by expert knowledge and so is limited to the extent that participants can understand and agree with that knowledge. In the LO approach, team learning is the central purpose of the process. It self-consciously and adaptively manages decision-making to suit system and environment needs. In the LO approach the property of systemic knowledge emerges through spoken discourse and begins to direct the plan process from the bottom up, without a requirement for supervision from the 'top down'. When this occurs, 'collective mindfulness' is achieved.

4.343 Co-management Principle #4 **Building Institutional Capacity**

Doing 'what's best for natural resources' must be accomplished systemically from the level of conversations about forest ecosystems at the community level down to the level of written regulations governing First Nations and provincial and federal forest administrations. Emergent knowledge from team discussion can then be tested adaptively using area-based yield-planning techniques across scales ranging from watersheds and traditional territories to the level of regions, the Province, Canada and beyond.

> *"... Sure if you're turning out guys to fill out forms and silviculture prescriptions and stuff – great - but if you want people to really know what's going on in the bush it's the wrong way, wrong way...you'd have to totally revamp what you are doing, and you'd have to move it out here to where people live... so locally based forestry education..."*

> *" ... we should evolve that to a more scientifically based system - using a computer and using science to get an 'honest to God' estimate of what really grows here ... maybe our foresters need to travel around a bit and have a look at what other people are doing."*

4.344 The Co-managing Principles: Summary

The adaptive and systemic 'co-managing principles' suggested here should not be envisioned as some part of a 'master plan' for forest management communication. The principles are only recommendations to navigate from our present course in co-managing social-ecological systems towards a more sustainable direction (Berkes et al. 2003).

Although they may seem challenging to the current system of forest management, these ideas should not be considered unworkable, or unrealistic. On the contrary, information from natural resource managers indicates that it is the current approaches that are now unworkable and exacerbating crises in NStQ territories. The principles are grounded in the day-to-day issues of natural resources managers in NStQ territories, and are verifiably realistic. The first principle is simply for natural resources managers to remember to "learn by doing". Prescribed, unyielding approaches to management are neither respectful of nature or people. The second principle informs us to continually utilize this knowledge from "learning by doing" to develop community from the local level down to the provincial level. The third principle will institute curricula emphasizing problem based learning methods for natural resources students in high-schools and universities. The fourth principle of building institutional capacity essentially is the requirement to develop legislation and policy to enable implementation the first three principles. The principles of implementation of adaptive management, community empowerment, problem based learning, and institutional capacity building, comprise the essential recommendations from this research. They are derived from more than one thousand statements of fact organized in themes related to problems and opportunities in co-managing under conditions of crisis.

Research results repeatedly suggest that communication in NStQ territories can be systematically improved. The reader may examine the tables in Appendix 1 to compare and assess how the principles are connected to the case study themes. To understand how the research themes are then connected to the interview data, the reader should examine the networks in Appendix 2. The principles are essentially theories that are grounded in the networks constructed from the substantive categories derived from the interview statements. They summarize not only what NStQ communities have said they need in order to realize new opportunities, but they also suggest a basis from which policy makers can begin to transform provincial natural resources management institutions in Northern Shuswap territory and beyond.

5.0 Conclusion

"The main problem with our mandate for developing community forest economic plans as FRBC communities' coordinators, was that there was no land base nor timber supply specifically designated for long term community development. Stability of rural-communities in BC is still dependent on the decisions of distant masters of the regional forest economy. On behalf of their communities some coordinators were able to use FRBC funds to advance seasonal partnering opportunities with major licensees, and with governmental and non-governmental organizations. Some communities' coordinators used FRBC funding to build communities skills and asset inventories; and many voiced their concerns about the lack of community forest tenure. The FRBC communities program did not address the question of how to locally link community sustainability with the sustained yield of the forest.

The decision process of the Board of Forest Renewal was an uneven tug-of-war match between representatives from the forest industry on one hand, and the environment, social and rural economic sectors, on the other. Industry and union board members were the 'heavy weights' at the board since they had control of the production that was generating FRBC revenues and they had decades of political experience in influencing land use decision-making. The rural development, social and environmental board members of FRBC were only able to cajole, admonish or advise the forest sector representatives. Forest industry representatives had a multi-billion dollar investment and long-term timber licenses to empower their voice at the FRBC table. On the other hand, the authority of the rural, social and environmental sectors was not in equity and land; but in the strength of moral suasion and the strength of the NDP party in the polls. Balanced decision-making in FRBC weakened further as the NDP weakened in the polls. Many forestry professionals distanced themselves from promising sustainable forestry initiatives in the last months of FRBC in fear that business or job prospects under the Campbell government would be diminished. FRBC weakened even more. Forces of colonization in rural BC were bolstered, when the Campbell government was elected and FRBC was shut down. Most of the urban provincial electorate had grown tired of forestry disputes and became focused on 'New Era' promises such as the 3-week mega-project of the 2010 Canada winter games.

5.1 Learning Organizations of the Northern Secwepemc te Qelmucw

This thesis tested the theory that small and dispersed learning organizations can transform forestry education and forestry planning institutions in British Columbia. Research results indicated that transformation of BC forest planning process has occurred and continues to occur for Demdomen society and for the Likely/Xats'ull Community Forest Corporation. Results suggest that the transformation will proceed more effectively if communication crises are better understood and if four co-managing principles are adaptively implemented in co-managing processes. As a tenure holder the Likely/Xats'ull Community Forest Corporation makes forest and business plans with community guidance and within the constraints of forest legislation. As a registered society incorporated under the BC Societies Act, Demdomen has been able to develop a wildlife management rapport with government agencies, band members, and various stakeholders. Research results indicate that both learning organizations, the board members of the Demdomen Society and the Likely/Xat'sull Community Forest (LXCF), are optimistic that positive change could continue with continued interactive learning with the Province. Funding for such learning processes is essential. Although some effort is made by BC public service agencies to listen for and to incorporate traditional knowledge in plans, there is still much work necessary to create an appropriate systemic response across management scales to the planning crises occurring in NStQ territories. Opportunities for government to systematically learn from their errors have been missed. The Province is missing opportunities to learn from mistakes made in co-managing the Spokin Lake and Eastern Mountain Caribou Planning Processes. The Province can learn how to improve in co-managing the communication of hunting regulations with the Xgat'tem/Stswecemc. The Province has an opportunity to be included in the learning organization of the Likely Xats'ull community forest. Each of the case studies indicated that both explicit and implicitly systemic processes occur and help in the transformation towards systemic planning process that includes community interests. The success of Demdomen and LXCF may be attributed to their persistence and perhaps to their 'arms-length' distance from treaty issues. The NStQ treaty team monitor and assist when they can as Demdomen and LXCF explore thorny treaty issues such as 'co-managing'

relationship with the Province. Certainly, the relationship between LXCF, Demdomen and the communities of the NStQ is explicitly systemic. Both boards feel fully accountable to the NStQ. The challenge now is developing explicitly systemic relationships between Provincial natural resource agencies and the NStQ.

5.2 The Importance of Critical Inquiry:

Critical theory is a powerful tool in encouraging sustainable forest management. Critical method is used strategically. Systems theorists dare to make subjective observations and moral judgments in an effort to alert resource management agencies to their systemic challenges. The strategy of making a subjective assessment is with hope of influencing decision-makers to work on a path of institutional transformation. Systems theorists point out that multi-stakeholder process founder again and again, because entrenched bureaucracies use them for political ends to provide only 'flexibility in decision-making' rather than new information from adaptive learning (Gunderson and Pritchard 2002). Philosophers with sharp tools for critical thinking can expose the artificial constructs of temporary committees designed to prolong ineffective institutions. When deficiencies in planning process are identified and desirable alternatives are implemented across scales and adaptively co-managed, then institutional transformation can occur. Utilitarian models of co-management in current use tend to favor the interests of the most powerful parties in the co-management agreements. Constitutionally-defined management authority accompanying aboriginal rights and title, fiduciary responsibilities and rights of provincial and national government, private property rights, as well as inherent rights of ecosystems and workers are not well defined or understood in rural communities. The responsibilities of managing agencies are not discussed systematically in rural communities before plans are initiated and a lack of understanding, or "collective mindfulness" of initial terms of reference, roles and responsibilities can exacerbate conflict in negotiating plans.

5.3 Social Learning and Democracy

In Senge's approach for management systems, planning is not so concerned with the making of plans as with "mutual learning". In the context of rural community development planning, Friedmann (1981) suggests a similar "transactive planning style" where planners implement methods that are less centred on documents than on dialogue. The approach emphasizes more dependence on the transactions of individual persons than on abstract institutional perspectives. When planners' methods are centred on documents rather than dialogue then uses of words and varieties of jargon become confusing. Graff (1986) notes that institutions can require a different literacy for each of their perspectives and this can alienate plan participants:

> ...the many literacies in addition to or 'beyond' 'traditional' alphabetic literacy- from those of science and numeracy, to the spatial literacy that some geographers term 'graphicacy', to the loudly touted and seemingly highly vulnerable 'cultural literacy,''historical literacy,' and 'moral literacy.' Some among the lengthening lists are long established in presumption but much more novel discursively or semantically: ecological literacy, 'teleliteracy' and other media literacies, food literacy, emotional literacy, sexual literacy. (327)

Freire and Macedo (1987) comment that the use of literacy to separate "literates" from "illiterates" is a "serious and sinister threat to democracy". Similar models presented independently by Freire (1972, 1987), Friedmann (1981) and Senge (1994), are distinct from models that are based on the expertise of outside planners. The alternative proposed by the learning organization is significant because of its focus on planning to incorporate local, systemic knowledge and to "accurately reflect the genuine interests of the people engaged in the social production of their lives" (Friedmann 1981). The extent that the public is engaged in the planning process is what differentiates the learning organization model from other methods. In technocratic approaches to problem solving, the central agencies of the state always assume control of the planning process. Friedmann argues that the required change in planning style to allow local communities' decision-making authority in planning would require a fundamental 'shift' in the planning paradigm. He calls for a greater degree of public involvement in planning so that decision-making authority rests more strongly in the hands of the affected public. Permitting communities to make their own decisions requires that a community be active in exercising some control over the conditions affecting its livelihood (Friedmann 1981).

Autobiographical Note

> *"The task of acquiring new information from tourism operators was difficult to do in the wake of all the volunteer initiatives that operators had been asked to participate in during the Commission on Resources and Environment (CORE) process. When I met with local tourism guides and operators at the Big Creek community hall they emphatically expressed their dismay at the result of the Big Creek LRUP and the Cariboo Chilcotin Land Use Plan. They were not anxious to help me to update yet another tourism inventory, if previous inventories had done nothing except to place their businesses in jeopardy. At least two established trail-riding operations in the area were forced to close because of unplanned logging and road developments in areas of high tourism values. Horse trails to high-country tourism destinations were irreparably damaged by new logging roads. This was done despite assurances made in the Big Creek Local Resource Use Plan that tourism interests of uninterrupted road-less access to the mountains would be protected. Local guides and ranchers were also very concerned that the boundary of the Big Creek protected area had been shifted under forest industry pressure in the last throes of CORE, to exclude forests and to include more historic rangeland. Besides the new concern about grazing cattle within park boundaries, a problem they thought they had already resolved with government, local ranchers were also very disappointed that their park boundary consultations and recommendations were overturned without consultation. Obviously 'another buffoon from government' that day, I listened and took note of their concerns. Even in situations such as these I have been amazed at the willingness of some people to continue to give their time and information with the hope that someone in government will listen.*

Democracy is more hopeful where there is a focus on citizen control and face-to-face discourse in decision-making. Ancient Greek philosophers who named "democracy" as "power to people" had a healthy respect for what critical theorists call "communicative rationality" or "discursive democracy". In the modern word "technocracy", the word for "people" or "demos" (in the ancient Greek) is left out and replaced by the word "technos", meaning technique. In the process of technocracy, just like the word, people are literally replaced by technique.[103] "Communicative rationality" is espoused by critical theorists in an effort to counter technocracy and to bring people into decision-making process that is the foundation of democracy and the 'promise of modernity' (Habermas, 1998). Communicative rationality is much like the ancient Greek ideal of

[103] Angus Reid's (1997) *Shakedown: How the new economy is changing our lives* is a comprehensive reference for understanding the impact of growing technocracy in Canada.

rationality, in which rational ideas are those that can be defended by verbal arguments acceptable to a reasonable audience. Daniel Press (1987) observes that:

> Critical theory posits a "public sphere" wherein an "ideal speech" situation would prevail. This public sphere is not the contemporary state itself but might include all interactions between individuals acting outside of the authority of state. In ideal speech, the search for truth is paramount, no participants themes, or contributions are restricted, and the "winner" to a claim of validity succeeds solely on the strength of his or her better argument. (46)

Where there is no domination by experts or other representatives of the state in the planning process, and where democracy is well-founded on discourse among people, conditions are better for a transformation to a "discursive democracy" – a democracy "based on discourse" (Dryzek 1990). Dahl (1985) in his criticism of technocracy finds that the technical qualifications of the experts do not make up for their serious shortcomings. Technocracies are created because we cannot imagine enough citizens becoming active, responsible and competent to take on the work that we currently delegate to experts. Yet while we expect technocracies to play an administrative role for society, we sense that they make it more difficult for non-expert citizens to understand technical problems. Emphasis on 'expert' advice around planning tables, usually results in proposed topics being discussed in language that participants find obscure or intimidating.

Nevertheless, the case studies show that NStQ communities are developing the capacity to advance Traditional Ecological Knowledge (TEK) in explicitly and implicitly systemic ways in the face of western scientific dominance. The Vuntat Gwich'in people established TEK expertise in their logical frameworks approach to development of their own community plan, which was subsequently adopted in the Yukon Land Claim Agreement (Macpherson and Netro, 1989). The Inuvialuit engaged in an implicitly systemic approach and are attempting to establish their expertise in negotiating Traditional Ecological Knowledge as a continuous co-management process for the western arctic region of Canada (Canada DIAND, 1992). The participatory rural appraisal research with the Batak presented a reminder to technocrats that there is much to learn about listening and respect, so that Traditional Ecological Knowledge can be

recognized (Novellino, 1994). The Northern Secwepemc (NStQ), theVuntat Gwich'in, the Inuvialuit and the Batak each in a struggle to make their traditional knowledge apparent to the dominant government, were attempting to participate in discursive democracy, a democracy based on "discourse". For the Vuntat Gwich'in, it was their own discourse, documentation and framework of interests and values that contributed to the recommendations incorporated by the Yukon Land Claim Agreement. In the NStQ communities, a discursive democracy is growing slowly as learning organizations grow and develop and as logical frameworks, land use plans and learning organizations become organized across scales to make communication with the Province more explicitly systemic. In the Inuvialuit process, discursive democracy was reported to a level that facilitated co-management of natural resources in traditional territories- although monitoring for on-going co-managing should be implemented. For the Batak people of the Phillipines and also for the Northern Secwepemc, the need for discursive democracy has been documented. It will begin when they are able to participate on an equal footing with others in the process.

In an effort to counter the dehumanizing trends in technocracy, Habermas, Fisher, Dryzek and others point out that face-to-face discourse aimed at broadening social understanding should emerge as a useful form of rational political practice. Daniel Press (1994) notes that "For Habermas, the process of decision-making is most rational not when it is engaged in choosing paths to specified ends, but when it seeks to reach communication and understanding". (46) For Habermas as for Senge and Friedmann, decision-making in an adaptive learning process, evolving with environmental change, is more important than 'getting it right the first time'. Although these theorists study at different scales of system, Habermas studies the system of societies, Senge studies the management system of business organizations and Friedman studies rural community development systems they are in apparent agreement on the purpose of conversation, systemic knowledge, and downward delegation of power in decision-making. Press (1984) cites theorists Hult and Walcott, Warren, Sebatier and Ostrom and shows that when the social bases of authority are realized, then technocracies are diminished. The prospect of diminishing central technocratic control may occur in the development of

broad networks of learning organizations committed to transformation to discursive democratic institutions within the technocracy (Press 1984).

5.4 Co-managing Decision-making:

The problem of delegating provincial or federal authority to communities is a problem of redefining the role of the state. Treaty negotiators who are currently defining new relationships between community and government are aware of the difficulty of making the changes. The central powers have good access to the information, financial and human resources necessary for organizational change. Rural communities usually do not have the same access to those resources. First Nations, small town municipal districts, regional districts, land trusts and community forest licences in British Columbia each have some autonomy for managing economic and social development within environmental and budgetary constraints. Multi year strategies between Provincial Federal and First Nations' governments and rural communities are crucial for sustainable regional development. A long-term commitment to social learning and self-organization in rural areas engenders a culture of self-help rather than one of dependency.

A broad understanding of knowledge of interacting ecological, social and economic systems cannot be maintained by a monolithic bureaucracy, due to the complexity of the task. Developing diverse systemic knowledge is necessarily constrained to be an adaptive team learning and teaching effort. Wondolleck and Yaffee (2000) note that communities and managers find co-managing an attractive option when they recognize the "cost of impasse". The perceived risks and costs of not innovating a new approach can be significant enough to result in crises that bring people together to share systemic knowledge. Though, as we have seen in the NStQ case studies it is unfair to expect that a volunteer group should assume all the responsibility for realizing and responding to environmental crisis. Or, as we noted in the LXCF case study, collaborative efforts can be engendered when there is a pervasive mistrust of an existing management system. A shrinking confidence in government institutions has helped to foster innovative and entrepreneurial behavior (Wondolleck and Yaffee, 2000).

To co-manage systemic knowledge for better decision-making at the local level systemic cross scale communication should be encouraged. Wondolleck and Yaffee (2000) quote Ann Moote (1994) who summarized literature on ecosystem sustainability that unanimously advocates management at broader geographic and temporal scales. She found that:

> Ecosystem management must work over larger spatial and longer temporal scales than has been the norm in resource management. It requires management across ecological, political, generational and ownership boundaries. (15)

Wondolleck and Yaffee (2000) note that an organization charged with managing ecosystems must "acknowledge and make sense of the community of interests", "decentralize decision-making", and "provide images of success". The expectation that management authorities will easily give decision-making power to communities and that they can accurately anticipate community needs, may be unrealistic politically, without images of success. Evelyn Pinkerton (1999) has been able to provide some authentic 'images of success' in her research of co-management decision-making process. She attributes barriers to success primarily as management agencies' vested interests and risk aversive behaviour and the corresponding lack of political power in community to introduce change:

> 10 years of research and efforts to implement co-management in B.C. fisheries have demonstrated that we lack neither good models nor the political will in communities to design and test local and regional institutions for successful involvement in various aspects of management. The barriers lie rather in distrust and resistance of management agencies and the lack of broadly organized political support. (22)

In fisheries co-operative management efforts there is still a tendency for government to control data, for fisheries biologists to prefer single-species management approaches and for larger industrial interests to dominate decision-making. In her analysis of the fishing interests in Canada off the west coast of Vancouver Island, Pinkerton found that by developing shared databases, by managing a diversity of fish habitats and species and by broadening the base of community involvement a more decentralized decision-making process can be realized. Pinkerton's efforts to show how barriers to co-management can be successfully overcome are a sobering testimony to the reality of "making sense of the

communities' interest". Her 1992 analysis of the Timber Fish and Wildlife planning process in northwest Washington State also found that the implication of the legal term "co-management" is not yet realized in practice:

> In a land mark case US v Washington in its 1974 Phase 1 and 1980 Phase 2 decisions. The "Boldt decision", as it is popularly called, interpreted the language of 1850's treaties that the US government had made with western Washington tribes as providing a guarantee that the tribes could manage their own fisheries subject to certain conservation restrictions, and to joint planning with state managers (Cohen 1986, 1989). There can be an enormous distance, however, between legal decisions and their application to the practice of resource management, especially when legal rights run counter to prevailing power relationships. (330)

Pinkerton found that despite severe political opposition to co-management, eventually legal rights prevailed and Phase 1 implementation strategies could begin to co-manage fish populations. Pinkerton outlines five stages in the process of translating legal rights into co-management: "1) Adopting a negotiating posture, 2) conducting negotiations, 3) producing an agreement, 4) fully implementing the agreement, and 5) institutionalizing procedures". (331) Pinkerton found that negotiating was swift once the initial negotiating posture had been adopted. Phase 2 negotiations proved to be more difficult however, since this involved protecting habitat, including the forests and timber resource that also support the fishery. Producing an agreement has been difficult due to a number of conflicts not the least of which is that of "the logging companies' inability to identify their interests with the public interest (as) was clearly shown in their inability to accept a sustainable rate of cut". (337) Therefore, Phases 3 to 5 in the process of translating legal rights into co-management practice are still mired in an on-going "triadic" political process. The triadic power model (MacFarland 1987) is described by Pinkerton (1992):

> This model pictures an ebb and flow between the "agency capture" situation (in which the major economic producers dominate agency policy) and a triangle of power in which "counter-vailing forces" (such as tribes and environmental groups) exert enough pressure to break agency capture by the economic producers, which condition is presumed to give the agency more ability to act according to professionalized standards of decision-making, independent of both groups. The power triad, however, is only a temporary reform; as countervailing power ebbs with the lessened activity of countervailing groups, agency capture is reasserted by

> the economic producers. In other words, reforms are not institutionalized, but can be eliminated. (337)

The triadic power model is an illustration of the politics of systemic knowledge in action. Although the model doesn't help promote discursive democracy directly, it does illuminate a dangerous path where decision-making power can suddenly be 'hijacked' in situations where co-managing practice is not yet institutionalized by organizations committed to continuous learning and adaptive management. Pinkerton also identifies a fundamental difficulty with the current system of translating legal rights into co-management practice. Co-managing is usually initiated from the 'bottom up' whereas governments typically initiate their decision process from the 'top down'

> While co-management agreements are usually initiated from the bottom to solve the problems or concerns of communities or groups dependent on resources, corporatist decision-making is often initiated by government to solve the problems of governments with expanded power and high costs of running an orderly process. (338)

In conceptualizing co-management it is useful to combine the co-management perspectives with adaptive management and noting that the resulting synthesis is different from either perspective (Berkes, Armitage and Doubleday, 2006). Over the last decade the scope of co-management studies has expanded somewhat along with social developments to include concepts of trust building, institution building and social learning. Since history seems to be proving co-management to be an evolutionary process then there is a need to develop capacity and institutions that can handle evolving co-management arrangements (Carlsson and Berkes 2005).

In recognizing slow progress in overcoming the barriers to exercising co-management also comes a recognition of the ad-hoc learning strategies employed in a highly centralized, politically dominated process. To constrain learning to occur haphazardly in a centralized political process is to ensure a very protracted implementation of co-management. This is why the four co-managing principles as illustrated in the NStQ case studies emphasize a learning organization challenge rather than a political challenge. When the first stage in translating rights into co-management process is achieved, and a negotiation posture has been adopted, then learning

organizations can be formed to address issues at appropriate locations and scales, to develop information, monitor strategies and begin negotiations. In her study of the co-management prospects for the west coast Vancouver Island fishery in BC, Pinkerton (1999) suggests a number of options for overcoming barriers that are well suited to a learning organization approach to co-management. These are:

> 1) Data-sharing through partnerships; credible 3rd parties and joint data banks;
> 2) Engaging in the scope of activities appropriate to the problems being addressed;
> 3) Broadening the base of support for innovation; Building institutional capacity for alternative solutions. (338)

These recommendations refer to achievable, specific topics that are well suited for the work of decentralized learning organizations. It is interesting to note a correlation between these recommendations and the four principles for co-managing that are put forward in this thesis. Pinkerton's first recommendation corresponds with community empowerment and to systems technology and knowledge emergence. Her second recommendation is basic to adaptive management practice. And her third recommendation for "broadening the support base and building institutional capacity" I suggest will eventually be realized through cross-scale explicitly systemic conversation in problem based learning contexts.

5.5 Toward Sustainable Forest Management in British Columbia

In our historic scramble to develop and implement new 'cost saving' technologies we typically disregard the effect that accelerating changes in industry have on forest based communities and our environment. The BC forest industry has repeatedly pushed, and continues to advance technological developments to the BC forest economy faster than natural systems and communities are able to adapt. If the natural systems and cultural systems are the *horse* pulling our technological *cart,* then figuratively speaking in BC 'the cart has been placed before the horse'. Promoting technology and legislation without adaptively learning what impacts are imposed on social and ecological systems has resulted in forest management systems that tend to reduce diversity of social-ecological systems. Bill Bourgeois (2003) cites Gordon Baskerville (1986) and notes that forest

technology and practices are typically placed ahead of social requirements of forests in British Columbia:

> On the forest management side, we should heed the advice of Dr. Gordon Baskerville, former Dean of Forestry at the University of New Brunswick. In 1986, he recommended that we decide what we want from the forest ***before*** going to the toolbox of forestry policies and practices. To date, however, we have not adopted this approach; instead, we have focused on the "toolbox"..." (3)

The technology of writing has been fundamental to the development of other western technologies. Perhaps the most powerful tool, text and the print medium is also the most subtle and difficult to translate across scales and to apply effectively at the field level. The widespread use and development of industrial technology is made possible through encouraging literacy and effective use of the printed word. This was the optimistic observation made during the period of Western history called the 'age of enlightenment'. The benefits of reading and writing are much touted by our education system. But what use is reading and writing (*information*) if this is taught without equal consideration for the value of talking and listening (*utterance*)? How can reproductions of information alone promote *understanding* without discussion? Graham Smith (2004) suggests that indigenous tools (such as practices of story-telling and protocols for respectful listening) can be used alongside other technologies in the toolbox of sustainable development. The historic absence of careful talking and listening in the process of implementation of forestry plans is what I have learned to be our greatest challenge in developing sustainable forest management. A fundamental issue for ethical forestry is that the future of nature and culture might be subsumed into an oppressive technology of forest management. I have confidence that this future will not prevail in territories where indigenous peoples are successful in asserting aboriginal title and traditional knowledge rights. There are many encouraging stories today from around the world of indigenous groups who will not submit to harmful technologies that promise only short-term economic growth, and destruction of habitat.

For the past two decades in British Columbia, informal community groups, incorporated societies, Indian Bands, community forest corporations, woodlot associations, community lending associations, community-based business associations

and small forest-based businesses in British Columbia have demonstrated potential as participants in "discursive democracy". Their ability to transform forest institutions in British Columbia has been challenged in regional land use planning, treaty and economic development processes. Press (1994) cites Warren (1992) in finding that: "The restriction on this process of transformation is primarily in the capability of diverse interests to form coalitions and learning organizations across political boundaries". The community groups of British Columbia have demonstrated competency in managing information, forest tenures, and manufacturing business for rural development goals. However, the technical competence of these groups is typically overlooked by provincial policy makers who see them as being weak, diverse, or too numerous to deal with. Ironically, it is exactly this diversity of local knowledge of forests that can be applied to find the long term potential for rural community development in British Columbia. That the long-term goals of small rural forest based business often conflict with provincial goals is further evidence that a transformation in education, and movement toward consensus of forest planning approach is needed in forest based communities. Woodlot associations, community lending institutions, regional districts, and community business associations are beginning to challenge the knowledge of centralist forest management policies; but they are often dismissed by the dominant technocratic system of forest management in BC. The global, national, provincial and community concern for sustainable management of BC forest resources will improve our forest management capacity as cross scale systemic linkages are made by learning organizations. To move our current forest management paradigm onto a path of sustainability will be an historic challenge. It will require a significant shift in how forest managers currently view democratic governance across scales locally, regionally, and globally. Our sustainable development task now is to put the cart 'behind the horse', and through cross scale and continuous learning in decision-making within natural and cultural systems achieve sustainability of forest resources. Ollson et al. (2004) found that the self-organizing process of adaptive co-management development has potential to increase resilience of social ecological systems. They found that enabling legislation creates "social space" for ecosystem management and funding for monitoring and responding to environmental feedback (90). Along with improved institutional ingredients, vision, leadership and trust

are also considered essential components in the development of adaptive co-management systems (Ollson et al., 2004). However as it was earlier argued in this thesis, to demonstrate trustworthy leadership styles, forest managers must begin to learn systematically from their own mistakes. They should begin to learn from anthropological linguists and education specialists, and especially from forest based communities, so that they can adopt methods of extension that respect the fact that written words, maps and symbols cannot substitute for human-to-human discourse.

Linguistics asserts the primacy of orality in all languages. We are often preoccupied with written text and analysis, (as we are at this moment) and we typically ignore the oral component in language. The need to practise the simple understanding that language requires sound and sense for meaning can help make our spoken and written words more effective and efficient. We find that varying the amplitude, tone, timbre and rhythm of our speech helps to engage our listeners in our story. Here is the "music" in language. The physical energy of sound and the vital analog component in our communication brings words 'to life' and inspires reflection and action in the world. In matters of everyday life when learning and communicating with others, we find that the profound connections with other people and with nature are usually afforded when we hear our voices resonate within some place. It is desirable to learn, to participate and to interact naturally within real situations. But this can be done effectively only in the context of utterance in real contexts. Access to a diverse, relevant and spontaneous information source is gained through group participation in oral communication. The importance of talking and listening in conducting forestry extension and demonstration must be taught and emphasized in practice to find relevance and purpose, for ourselves and others, in reading and writing text information. Systems philosopher Niklas Luhmann (1984) described three essential elements of communication: *information, utterance* and *understanding*. From a general systems perspective "utterance" for people links materially primarily through sound and vibration to living components in communication networks and aids understanding of information. Understanding is reflected in evidence of a systems' adaptive capability and ultimately its survival. Social-ecological and crisis management methods are beginning to explain how human systems integrate with natural systems. Organizational theorists and systems ecologists suggest that in society we must

communicate to encourage institutions to self-organize in what is described by systems ecologists as the 'back loop' of adaptive change and renewal (Holling and Meffe 1996, Gunderson and Holling 2002). Berkes et al. (2003) find that "some social-ecological systems build resilience through the experience of disturbance, (or "crises" in organizational theorists' terminology) provided that there is memory in the system in the form of both ecological and social sources for reorganization". They suggest that the 'social memory' to make these adaptations is "actualized through community debate and decision-making processes into appropriate strategies for dealing with on-going change". (21) Berkes et al. (2003) pose a number of challenges for the development of adaptive management institutions. These are also important topics for further research in developing co-management models. They ask:

> How do we design institutions and incentive structures that sustain and enhance sources of self-organization and resilience? How can we formulate patterns of emergence of social control and mechanisms dealing with environmental problems? How can we create policies to increase the speed of emergence and increase the efficiency of learning? (21)

This research shows how talking and listening in self-organizing adaptive management learning organizations may be a good way to begin to design the type of institution and policy structures that are suggested above by Berkes et al. (2003). There are many sites of hopeful change in self-organizing indigenous groups that are currently struggling for relevance in a future for sustainable forest stewardship in British Columbia. I propose that a subsequent project could respectfully inquire to develop a 'storyline' for ideas from these multiple sites of change. How do self-organizing indigenous learning groups see themselves as accountable to the overall problem of forest management and how does the provincial forest administration currently see themselves as accountable to these learning groups? Perhaps a collective interest in these multiple sites of change may assist adaptive policy development toward meaningful institutional change provincially and in relationships with First Nations. Talking and listening before implementing plans could have mitigated some of the catastrophic effect on the Carrier and Sekani peoples when the Finlay river was flooded. When the Forest Service was decentralized and reorganized the 'marching orders' were issued 'from the top'. Costly

mistakes could have been avoided in reorganizing the Forest Service if widespread talking and listening were encouraged from the District to Provincial levels. In the 1980s though very unlikely, encouraging openness and talking and listening among foresters and affected communities could have brought credibility to the calculation of an allowable cut in timber supply areas. In the 1990s during the CORE process, talking and listening was encouraged but unfortunately not respected by all the participants or by Government. In the late 1990s, Forest Renewal British Columbia brought more opportunities to talk and listen; but again the talk was not systematic or adaptively managed in learning organizations with broad provincial support, and so was not implemented successfully. I am hoping that my research will bring more understanding and respect for this essential cycle of talking and listening in the development of adaptive, sustainable forest management systems from the 'field level down to the policy level'.[104] The benefit of simply, directly and honestly talking about forest planning problems in plain language with the people who are affected by the plan is that if we are committed to adaptive learning organizations that are persistent and sincere we will open the door to systemic and continuous learning, from the field level down to the policy level of forest management in British Columbia. Not only will we be able to solve more environmental problems more easily, but we will also realize democratic and sustainable forest governance in the process, and perhaps create a fresh start and a new era of forest management. An adaptive and systemic approach to managing social-ecological systems does not prescribe a master plan, but only a recommendation to navigate from our present course in managing social-ecological systems onto a more sustainable direction.

[104] Gordon Baskerville (1990) first advocated this controversial, 'inverted view' of an adaptive system hierarchy to forest managers, in his efforts to connect forestry practices with theory, in Canada.

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APPENDIX 1

Table 1:

Relation of Co-managing Principles to Case Study Themes[105]

Case Study One - An NStQ Vision

Identical ****
Very relevant ***
Relevant **
Some relevance *

Theme	Co-managing Principle: community empowerment	adaptive management	systems tech./ knowledge	problem-based learning
NRM as Comanagment	***	*		
Consultation is not Co-managing	*	***		
Literacy Crisis			*	***
New Relationship	*	*	*	*
Heart	**			**
Holistic and Statistical Knowledge			**	**
Changing Institutional Design	*	*	*	*
Planning and Technology			***	*

[105] I invite the reader to help me establish relevance between the case studies and the co-management principles. The assignments of "*" are subjective. Re-examine the case studies and make your own assignments - indicating your reasons for assigning a different emphasis between the case study themes and co-management principles. Or, develop a convincing argument that there are more, or fewer co-managing principles necessary to describe the themes of this research.

Appendix One - Table 2:

Relation of Co-managing Principles to Case Study Themes

Case Study Two - Spokin Lake Crisis

Identical ****
Very relevant ***
Relevant **
Some relevance *

Theme	Co-managing Principle: community empowerment	adaptive management	systems tech./ knowledge	problem-based learning
Spokin Plan Crisis: Limited Mandate	**	*		*
Avoidance 'dance'		**		**
Entrenched Positions	*	*	*	*
Forest Practices Legislation vs. Local Knowledge		*	**	*
Management	*	*	*	*
MOU for consultation protocol	*	*	*	*
Begin to learn by doing	*	*		**

Appendix One - Table 3:

Relation of Co-managing Principles to Case Study Themes

Case Study Three: Ts'qescen Community/ Mountain Caribou

Identical ****
Very relevant ***
Relevant **
Some relevance *

Theme	Co-managing Principle: community empowerment	adaptive management	systems tech./ knowledge	problem-based learning
Caribou Threats	*	*	*	*
Caribou Research Process	**	*		*
Caribou Public Involvement Process	**			**
Caribou and Ts'qescen Ecotourism at Risk	**			**

Appendix One - Table 4:

Relation of Co-managing Principles to Case Study Themes:

Case Study Four- Demdomen Society and Provincial Wildlife Management

Identical ****
Very relevant ***
Relevant **
Some relevance *

Theme	Co-managing Principle: community empowerment	adaptive management	systems tech./ knowledge	problem-based learning
Demdomen as catalyst for communication a) form	*	*	*	*
Demdomen as catalyst for communication b) content	*	*	*	*
Demdomen and Provincial response to wildlife co-managing crises	**			**
Demdomen/ MoE and Admin. Boundaries	**			**
MoE and Demdomen/ Xgat'tem Stswecem'c joint hunter checking	**	*		*
Demdomen and adaptive learning through co-managing Parks	*	*	*	*

Appendix One - Table 5:

Relation of Co-managing Principles to Case Study Themes:

Case Study Five - Likely/ Xats'ull Community Forest (LXCF)

Identical ****
Very relevant ***
Relevant **
Some relevance *

Theme	Co-managing Principle: community empowerment	adaptive management	systems tech./ knowledge	problem-based learning
Poor Provincial government direction		*	**	*
Likely/ Xats'ull community forest business	**	*	*	
Likely/ Xats'ull community forest shareholder involvement	**	*		*
LXCF problem based learning opportunities	**			**
Future investment for both communities	*	*	*	*

APPENDIX 2

THEORETICAL CODING (Atlas.ti Networks)

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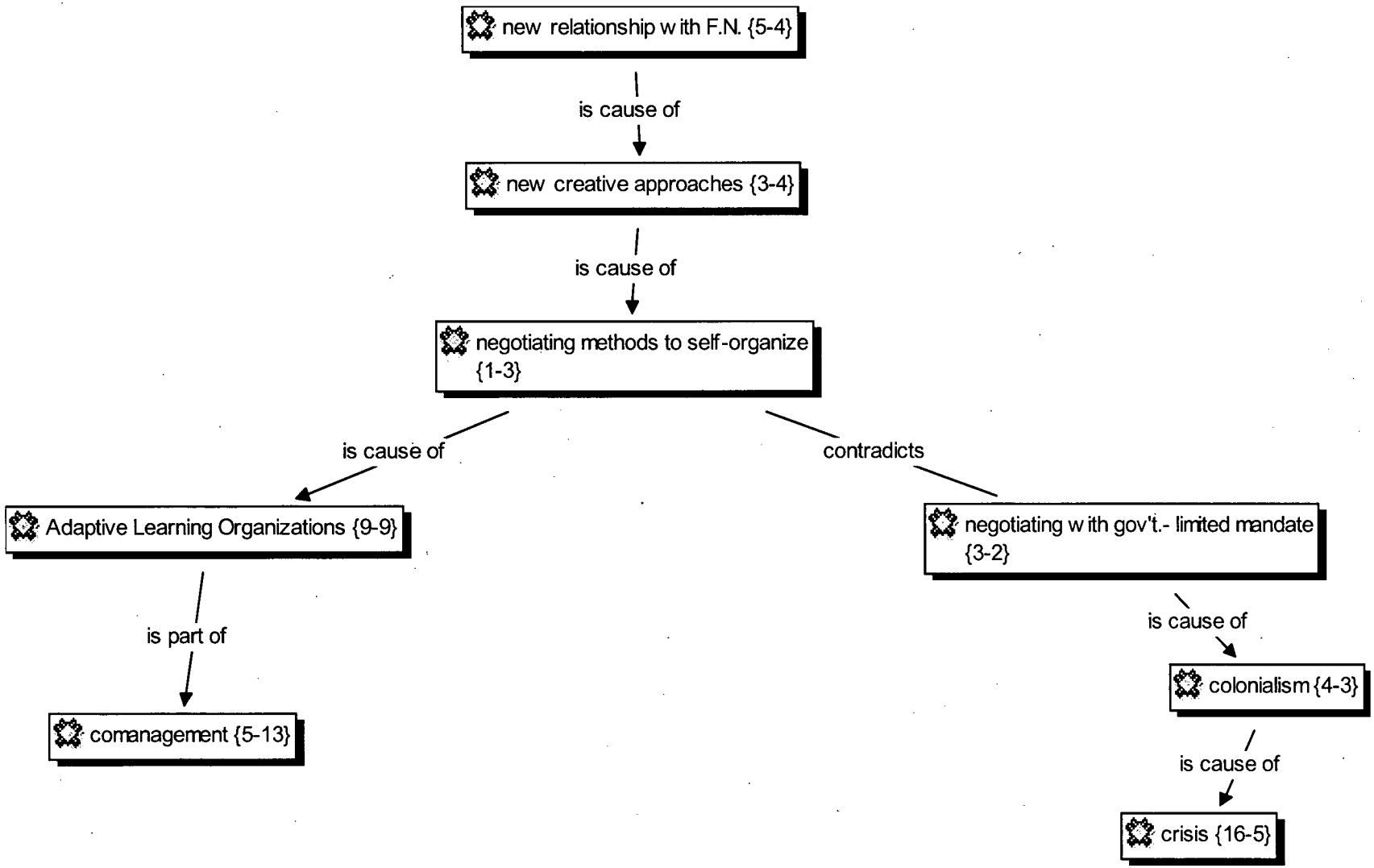
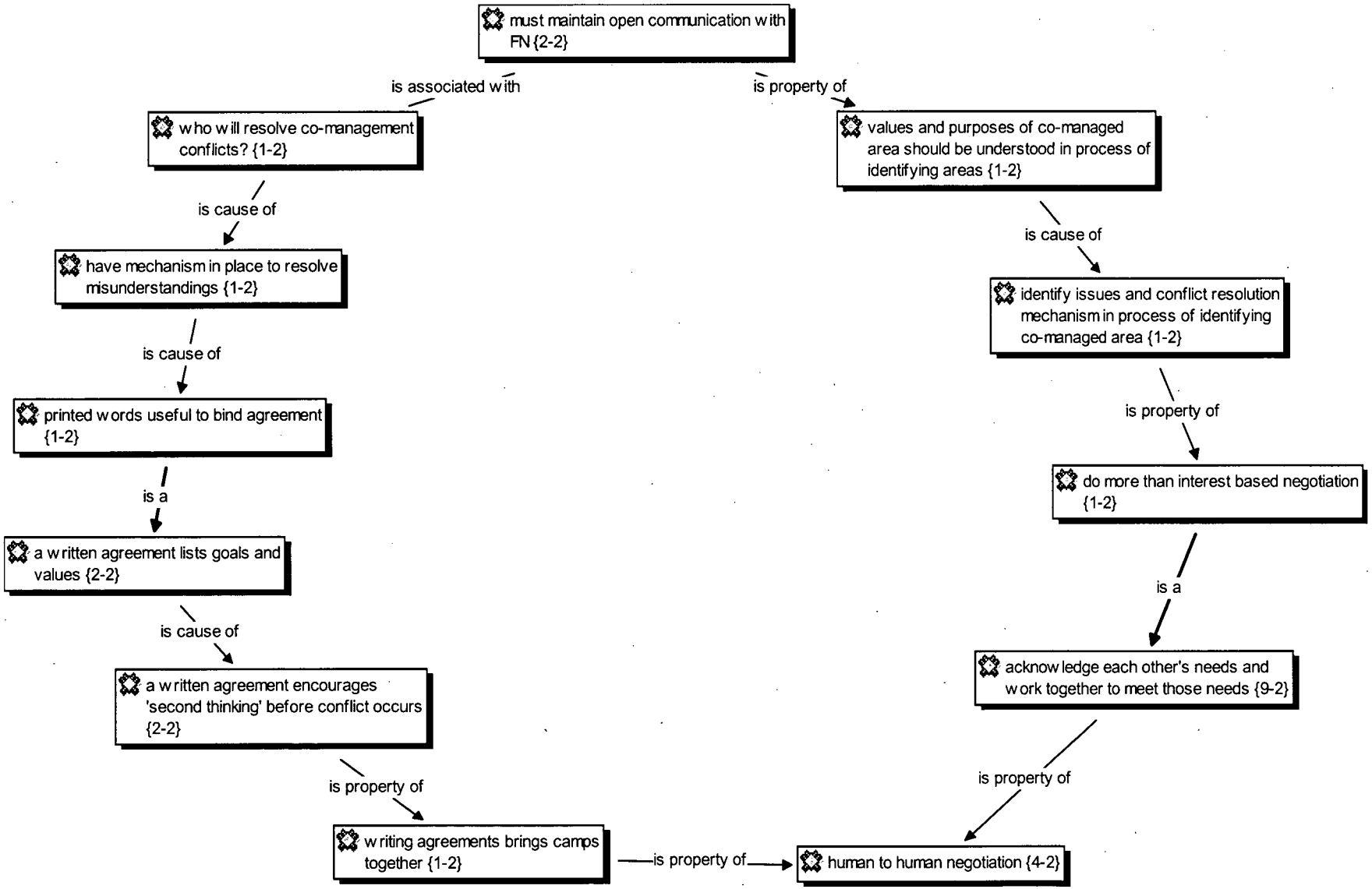
Co-managing for New Relationships



Co-managing negotiations



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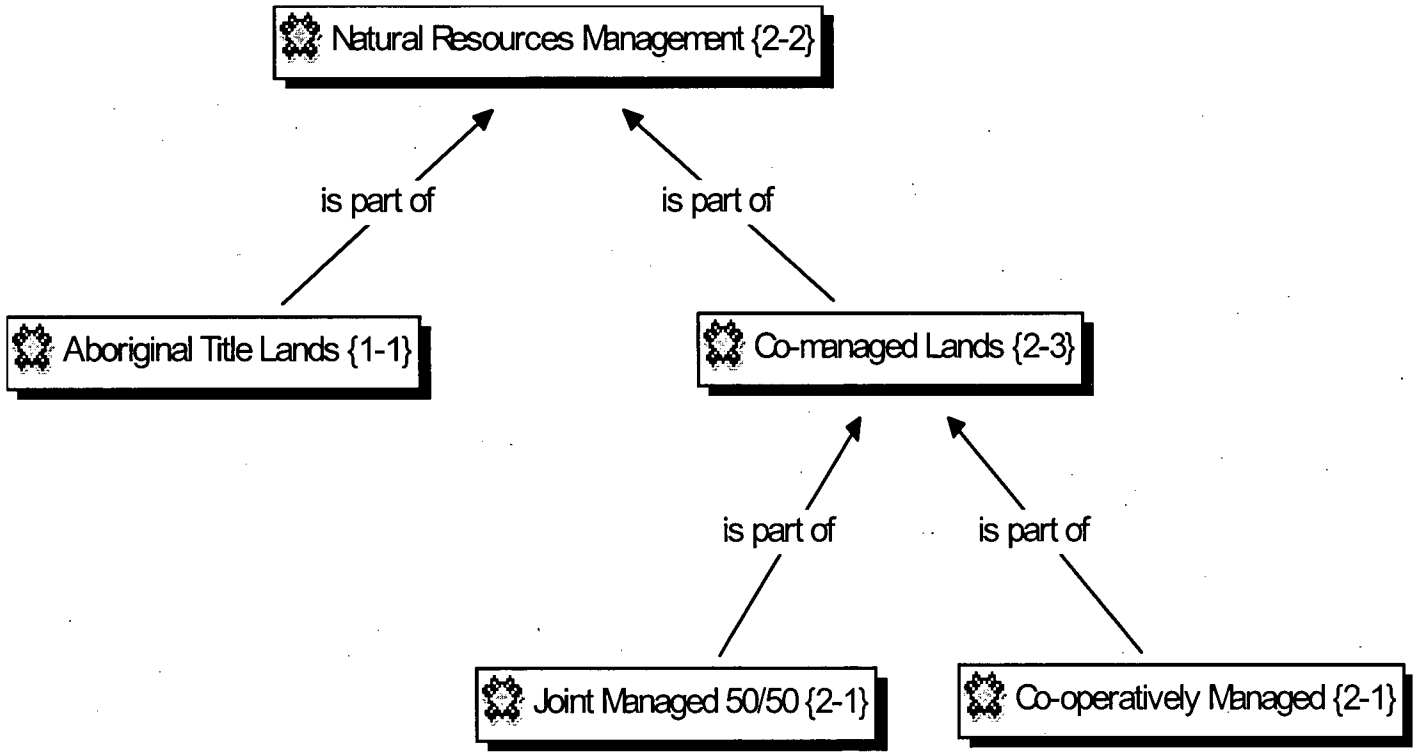
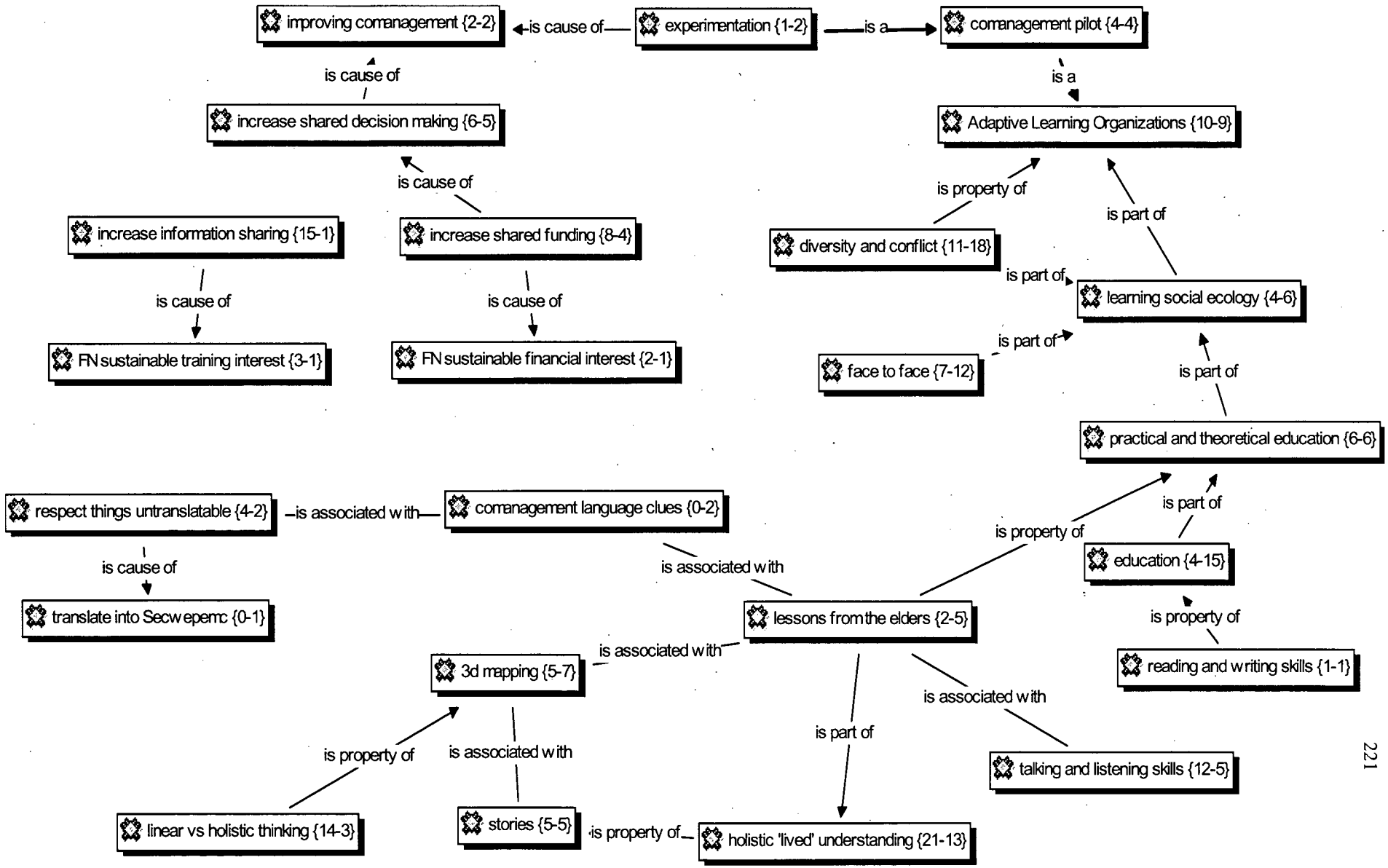
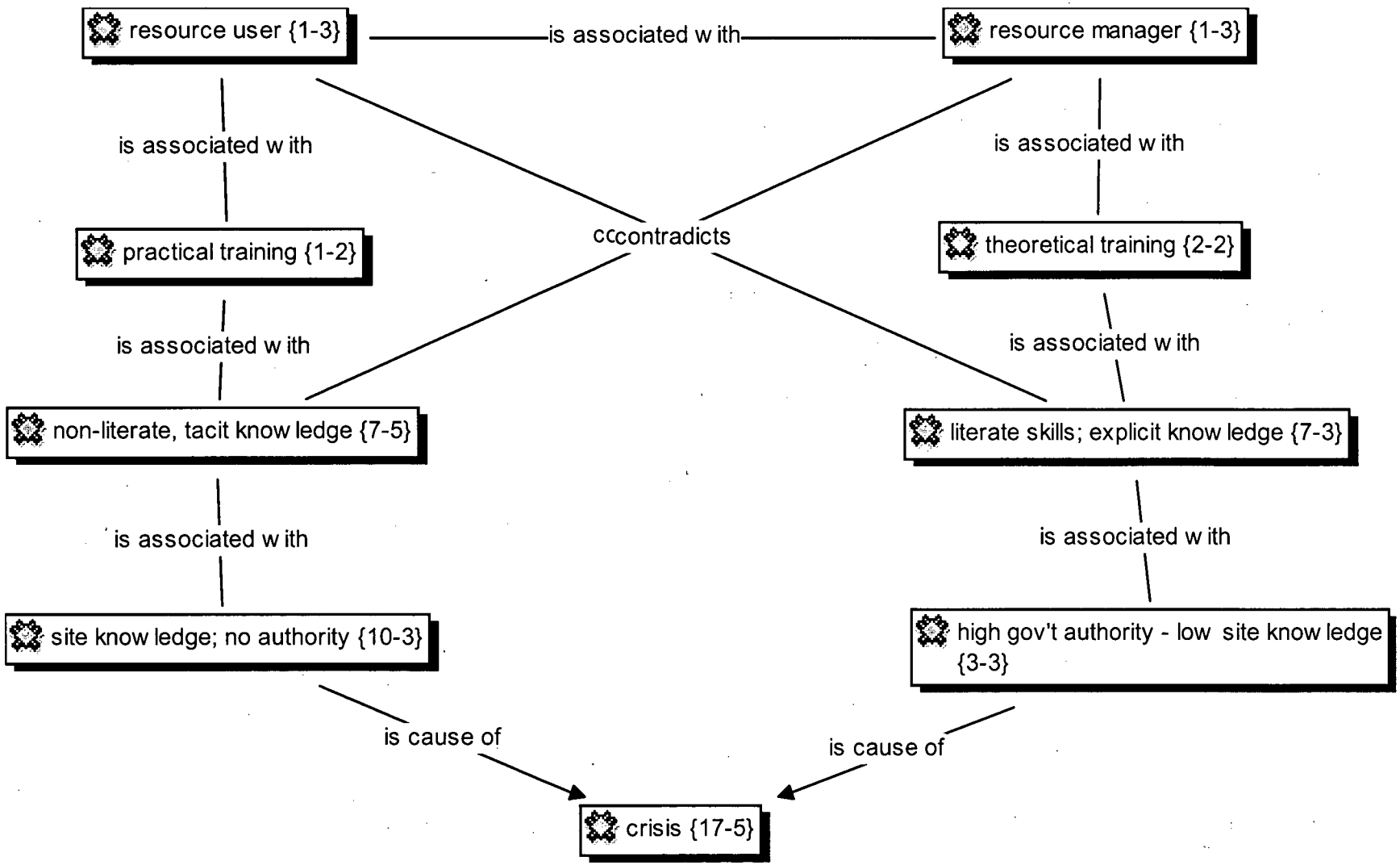


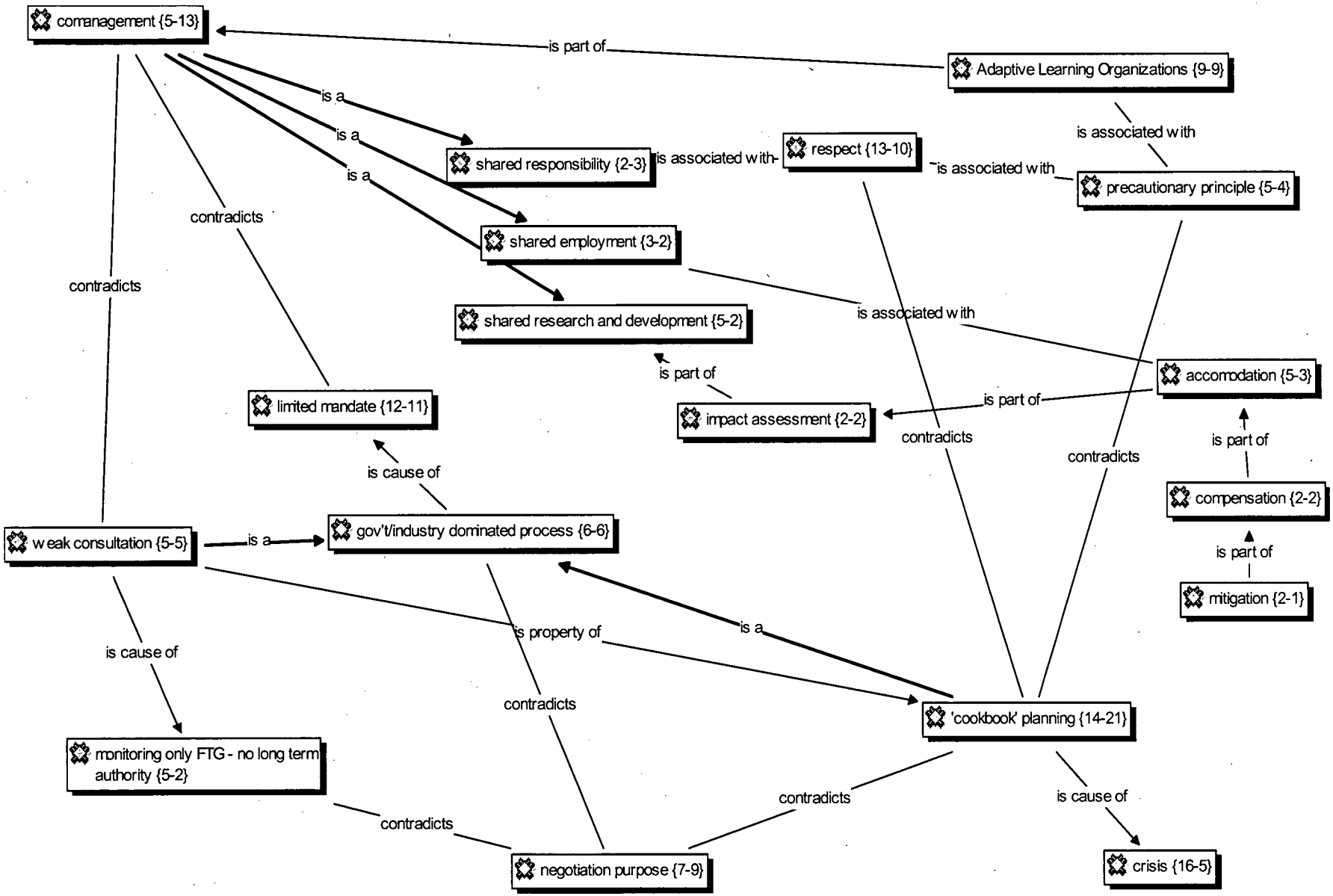
Co-managing Adaptive Improvement of Co-managing



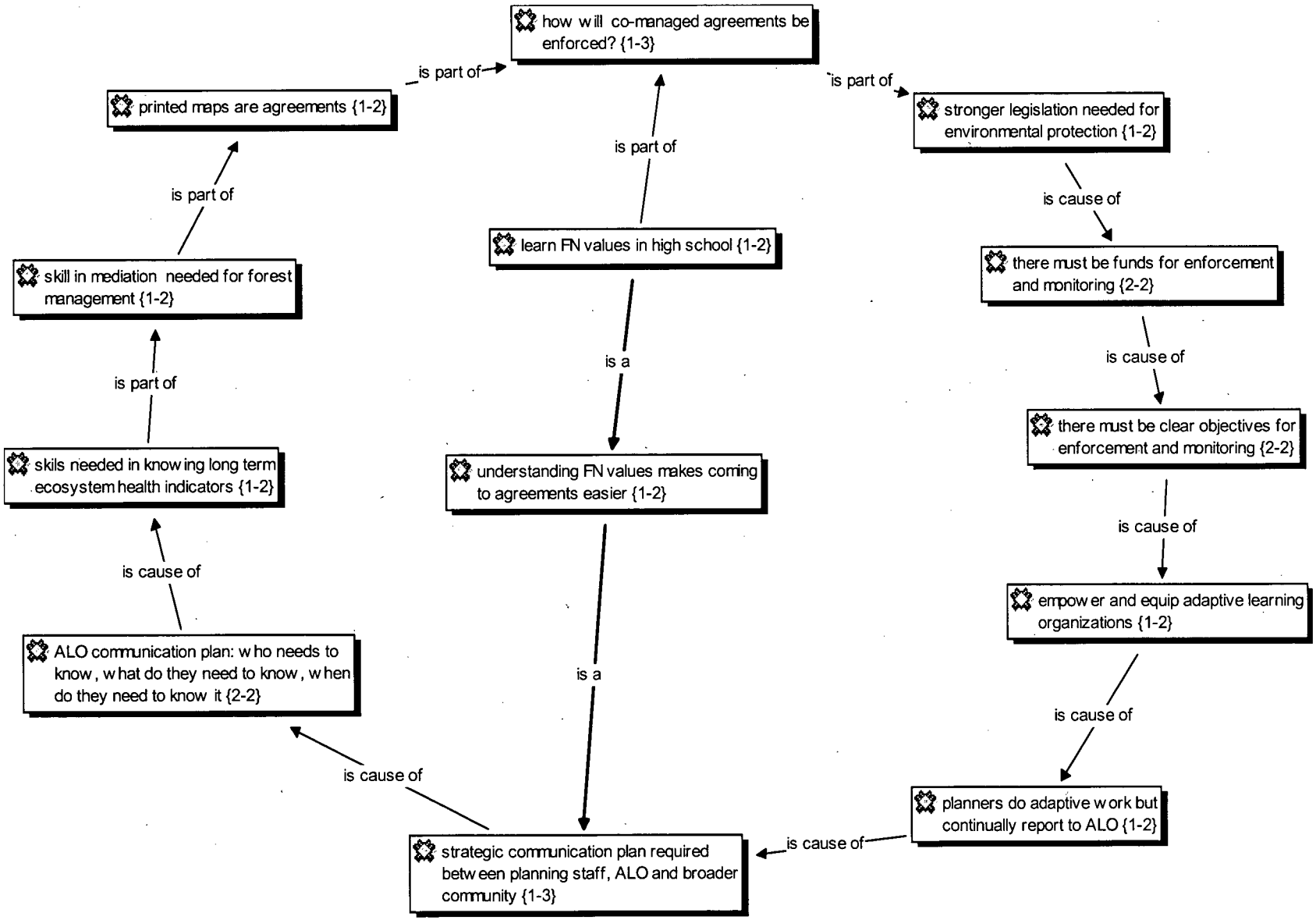
Co-managing 'Literacy' Crises



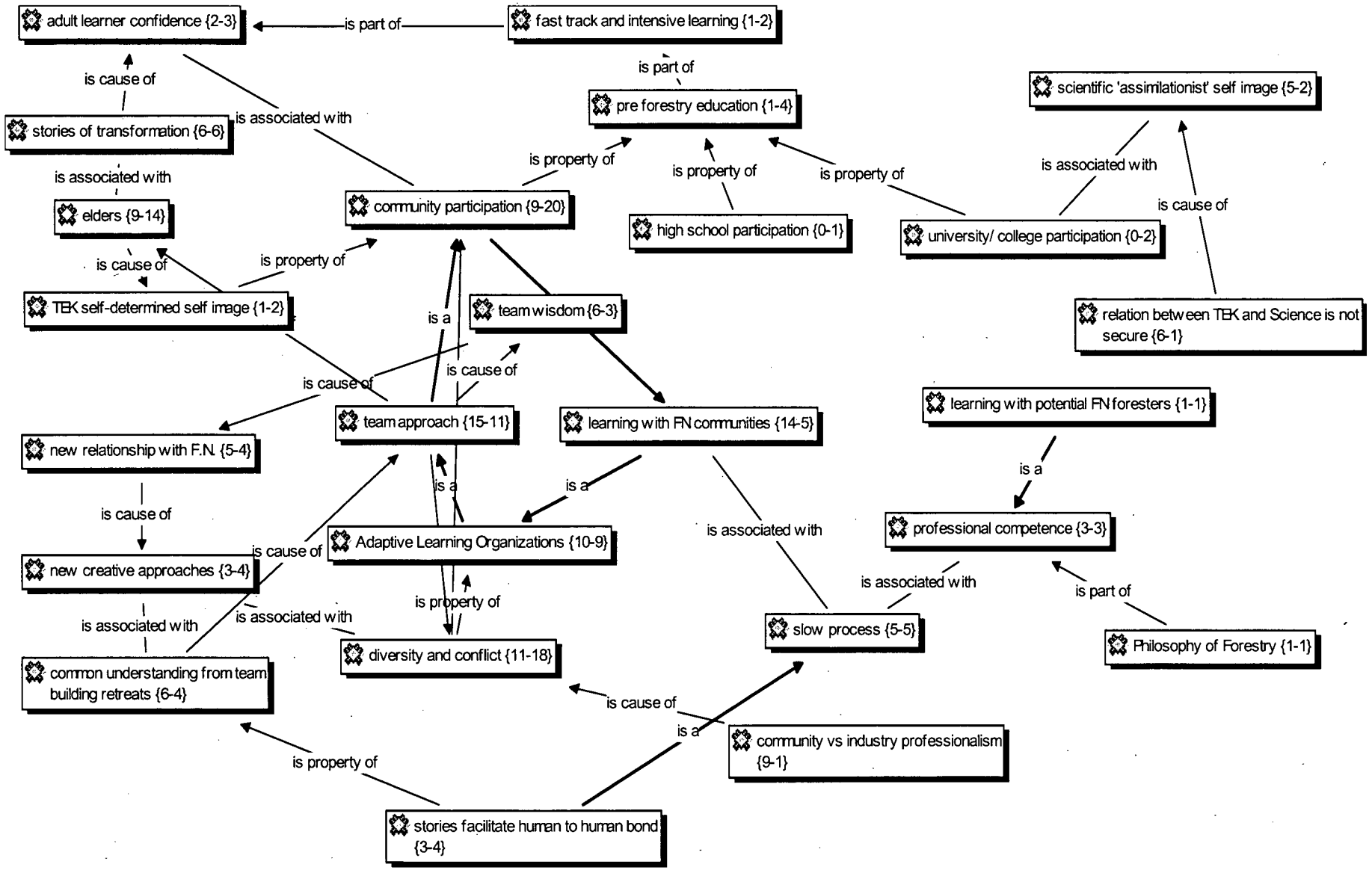
Co-managing Process: Weak consultation vs. comanagement



Co-managing Adaptive learning organizations



Co-Managing Problem Based Learning



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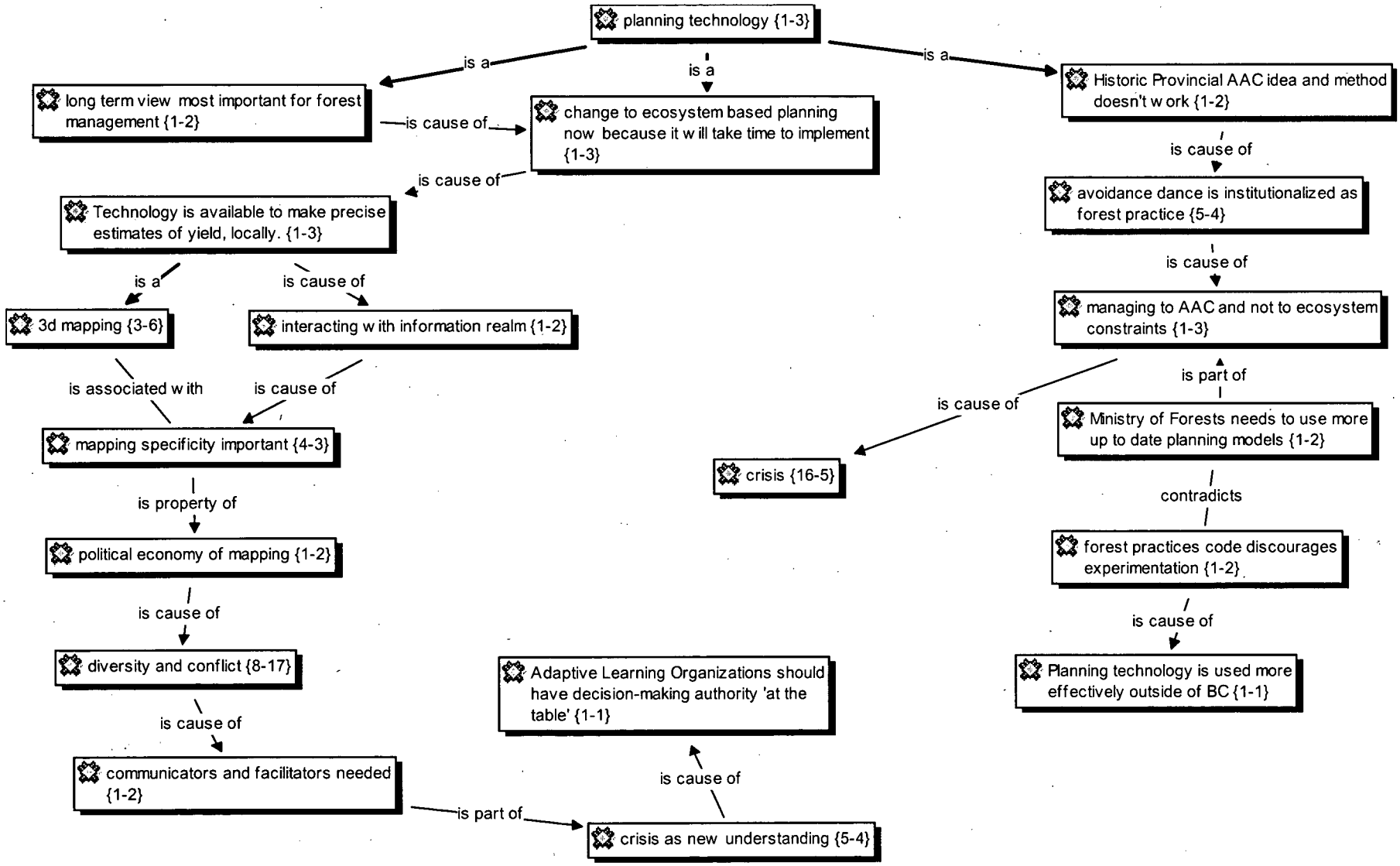
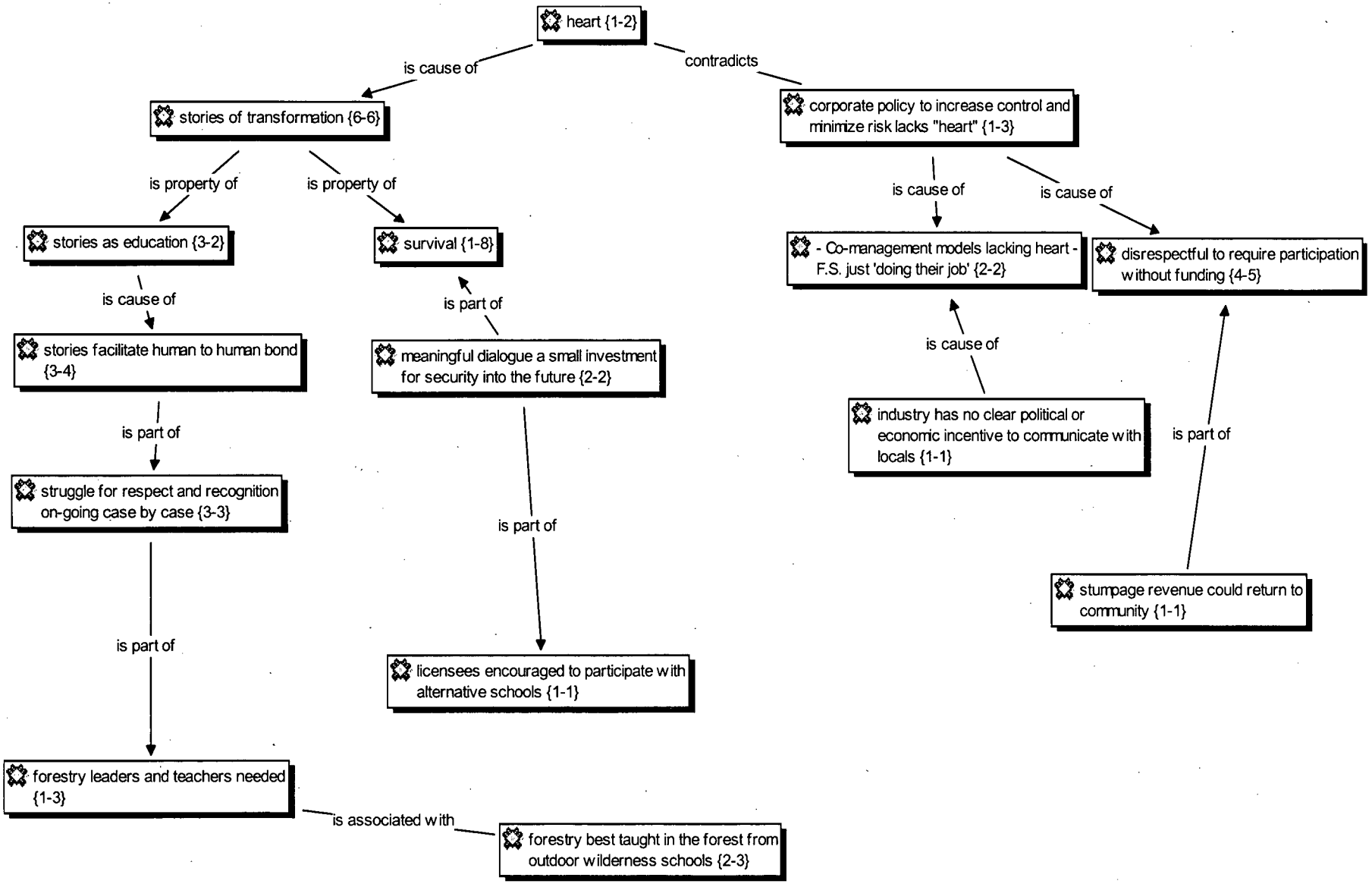


Co-managing Process: 'Heart'



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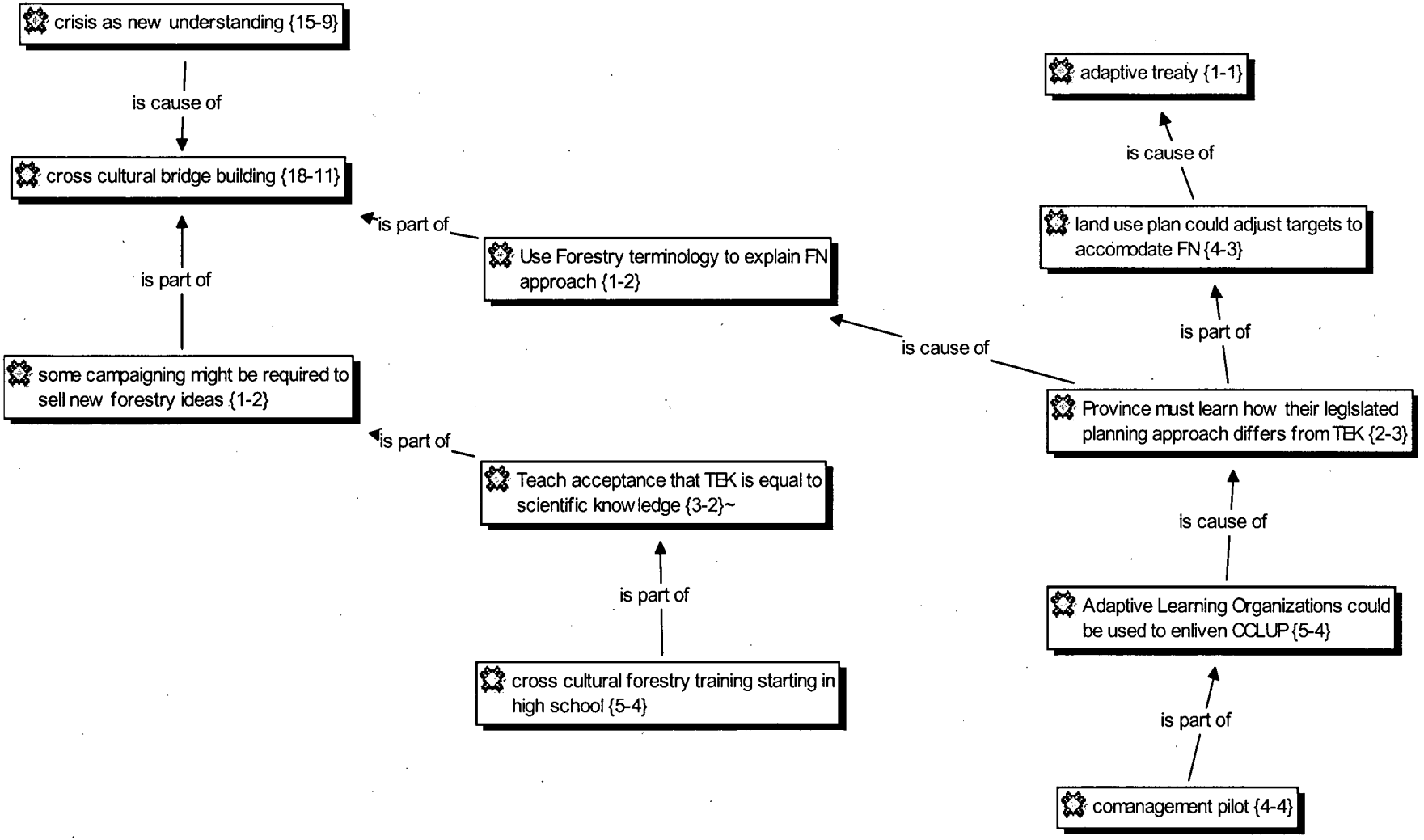
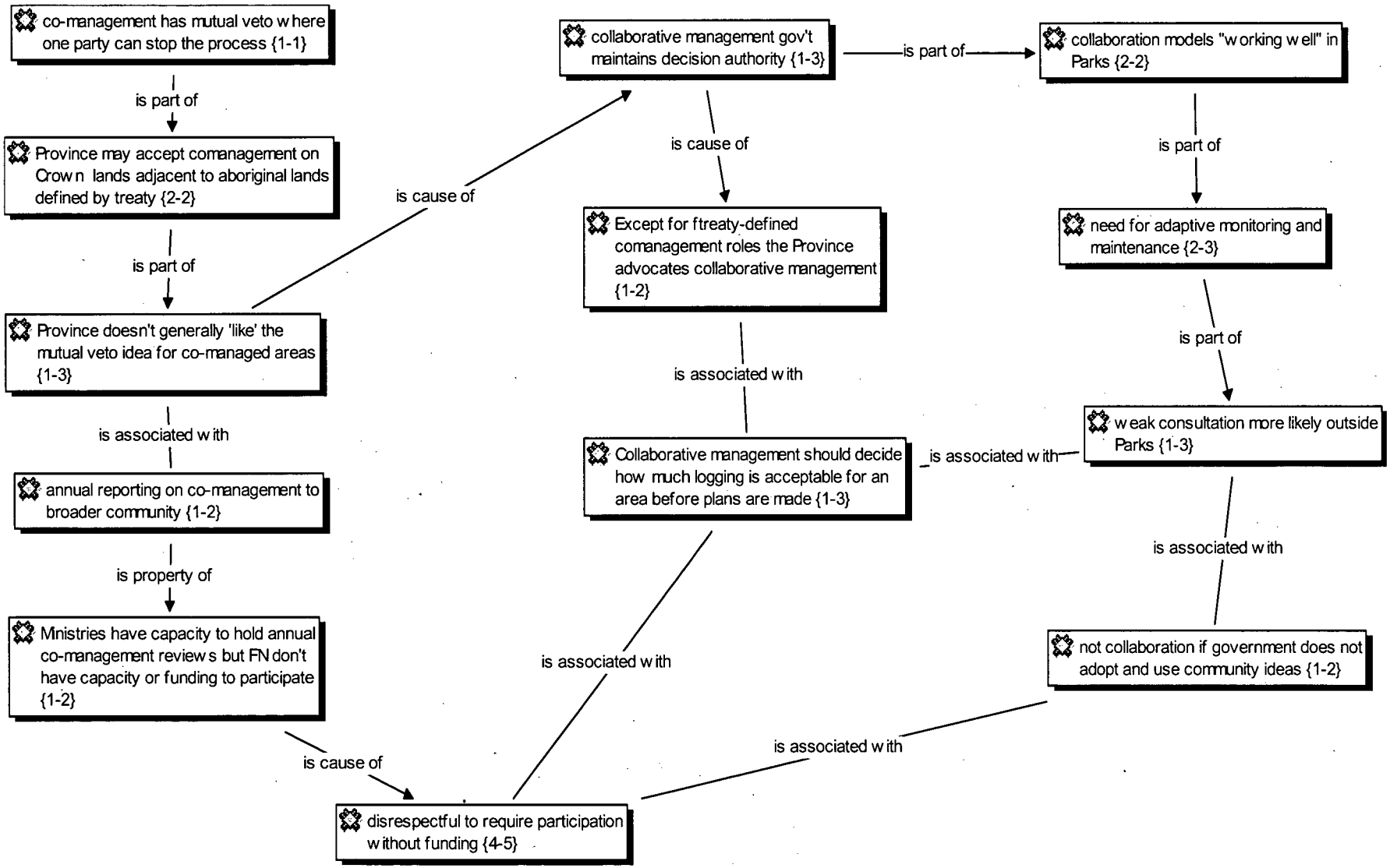
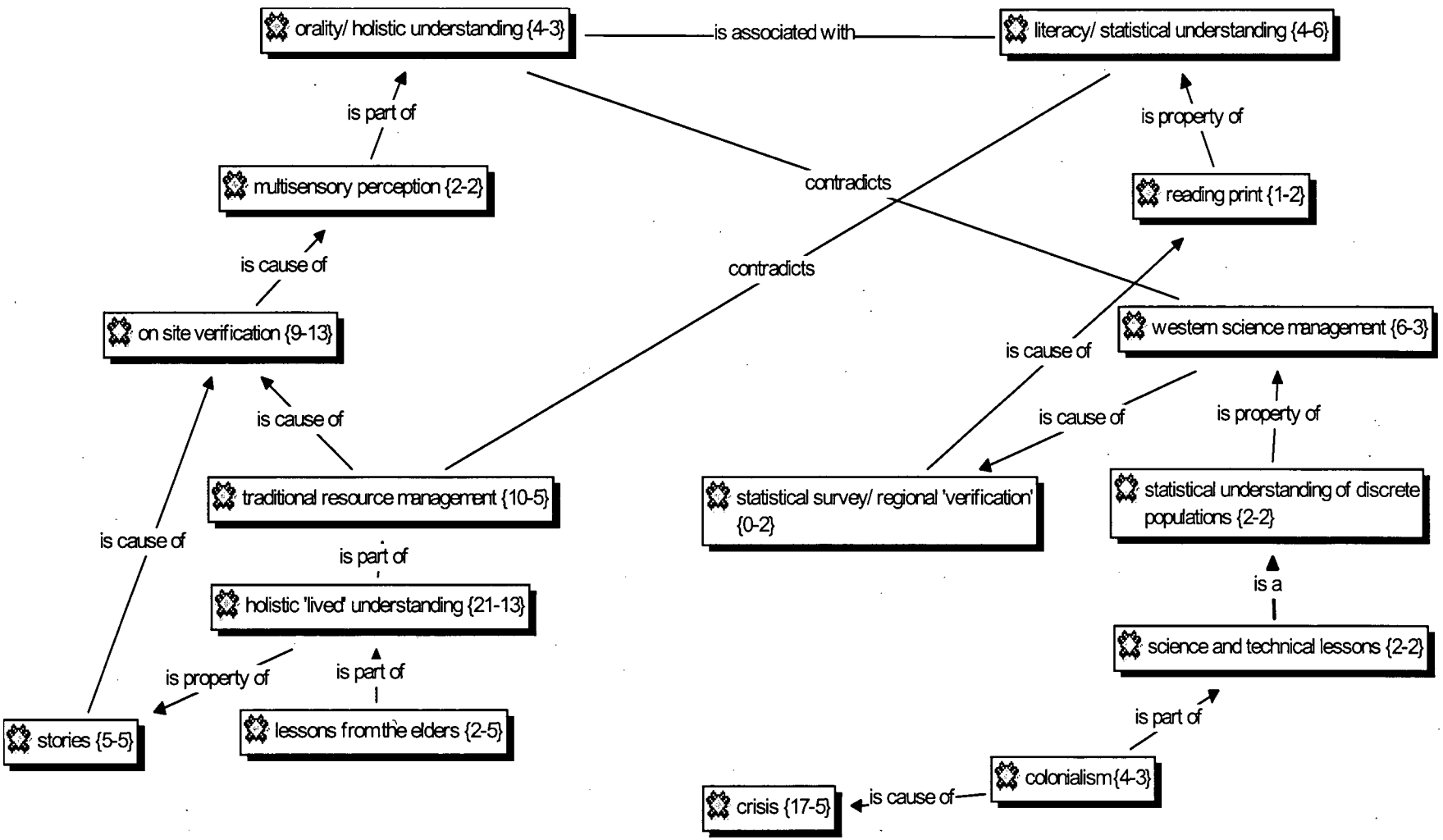


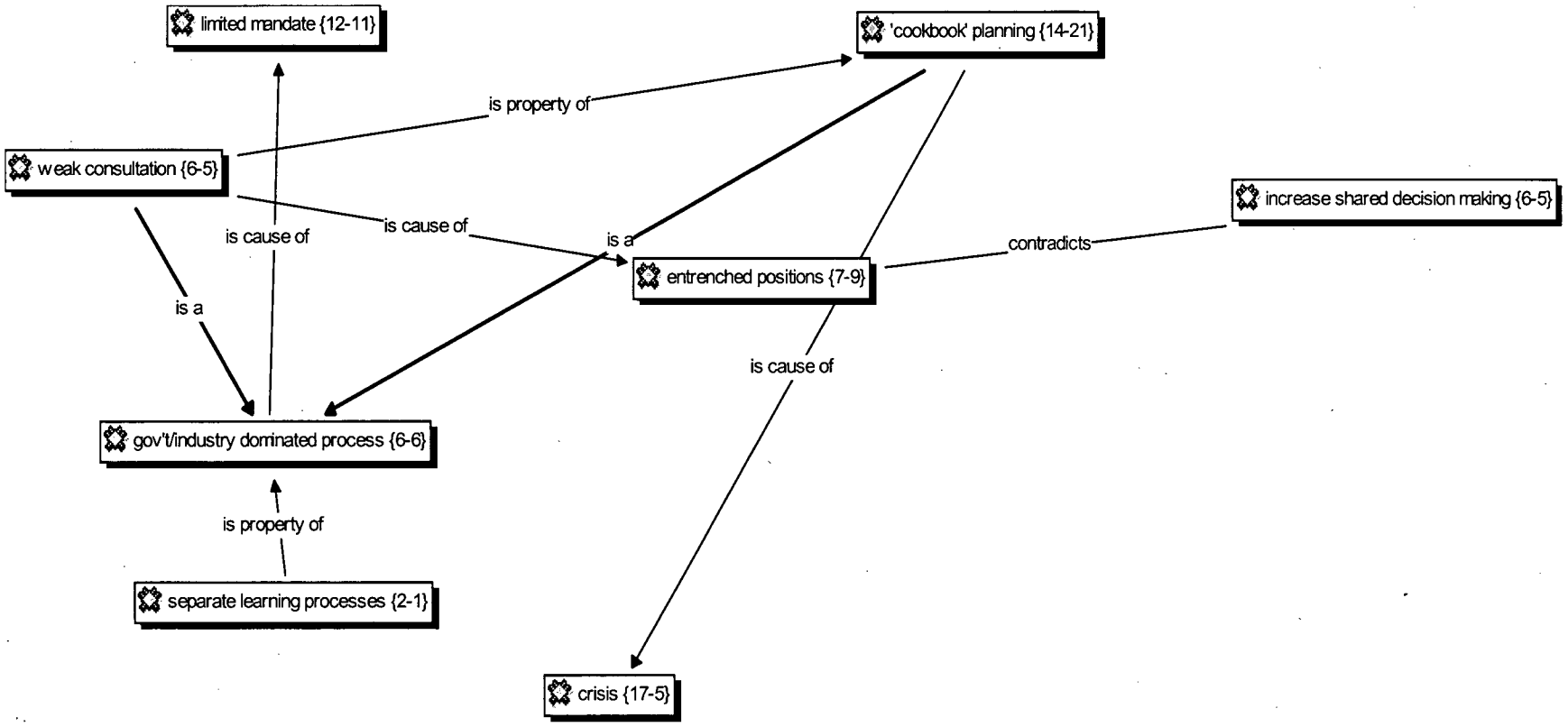
Co-managing is not Consultation



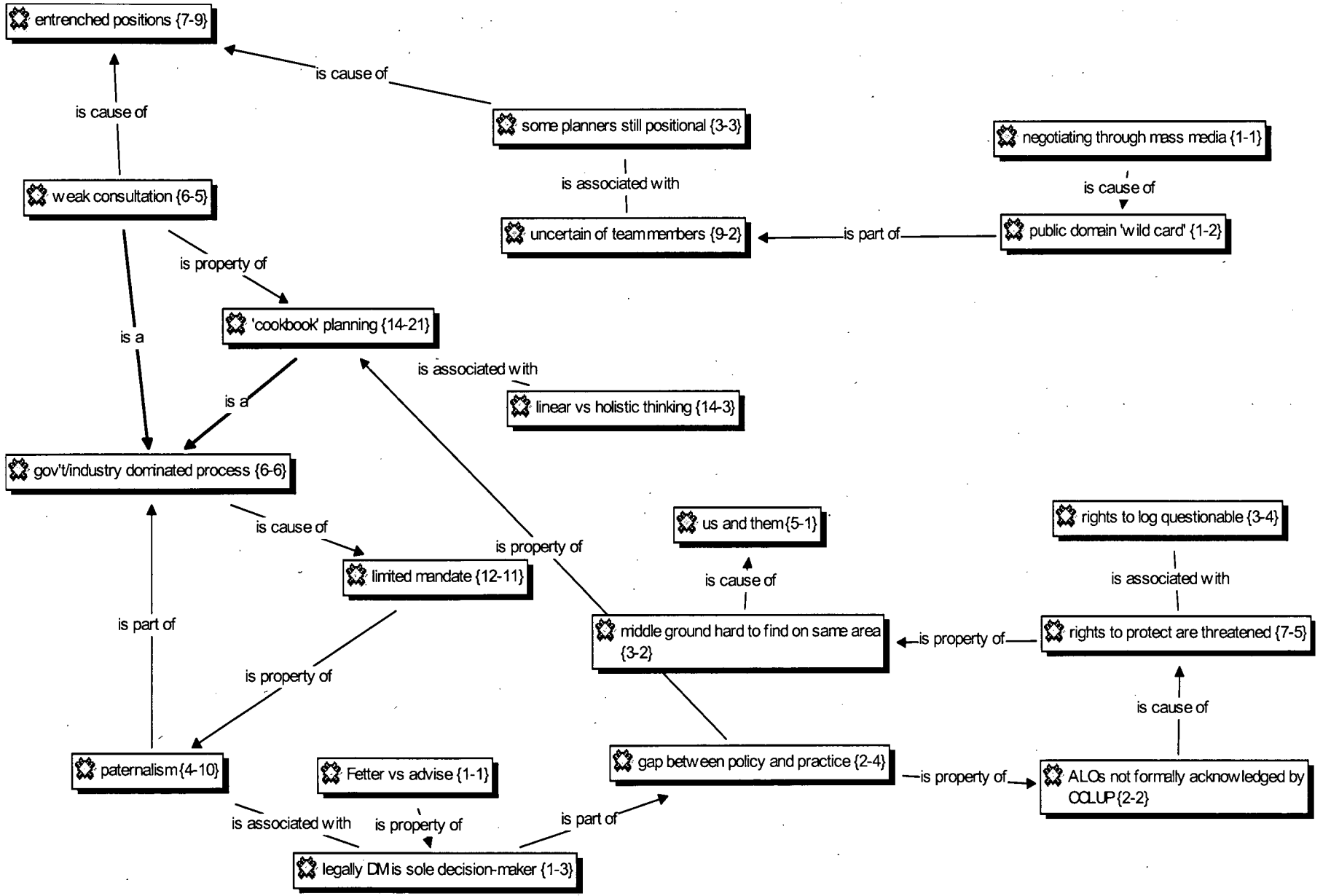
Co-managing 'Lived' vs Statistical Understanding



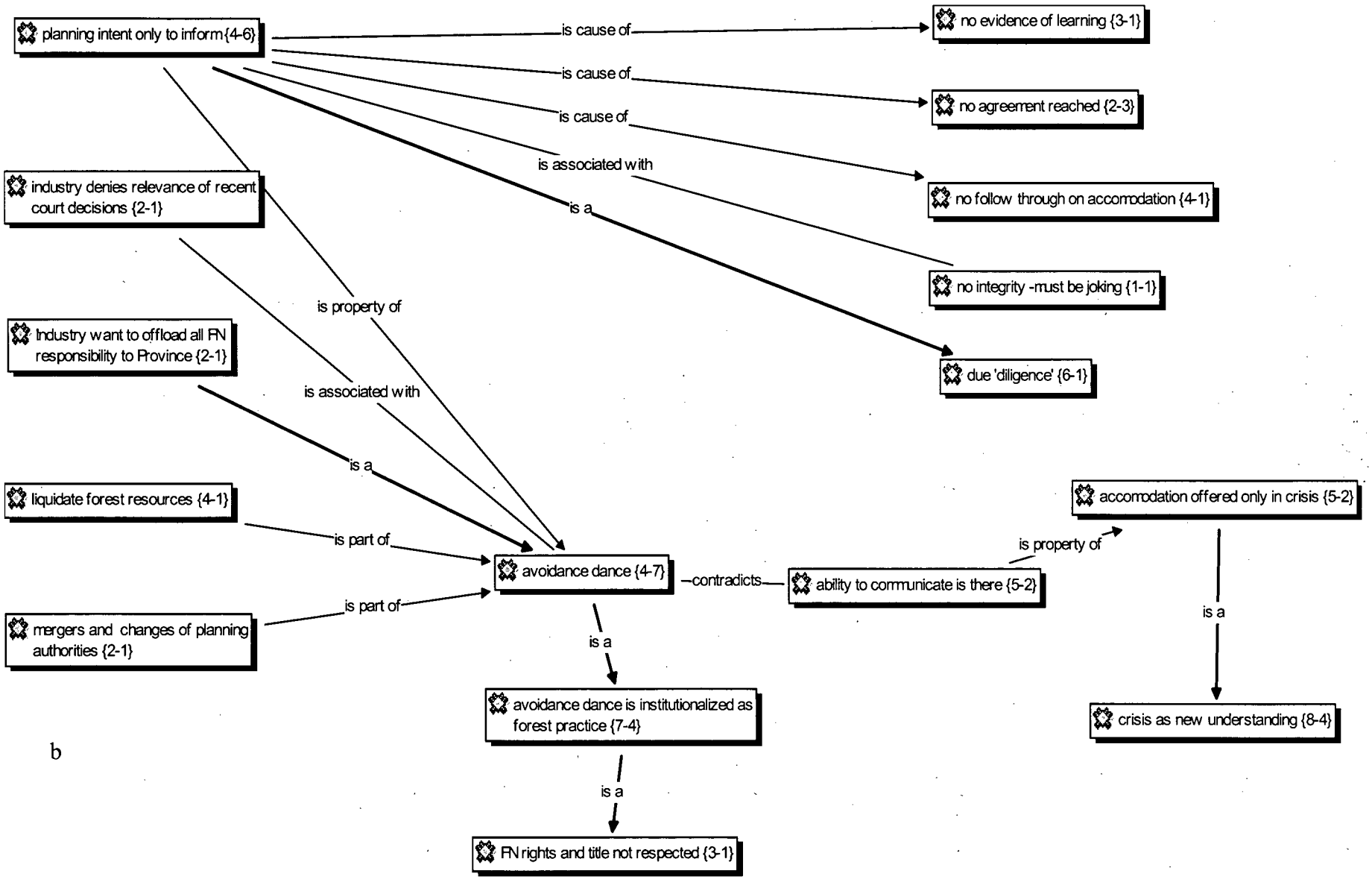
Spokin Crisis



Spokin Entrenched Positions



Spokin: Avoidance 'Dance'



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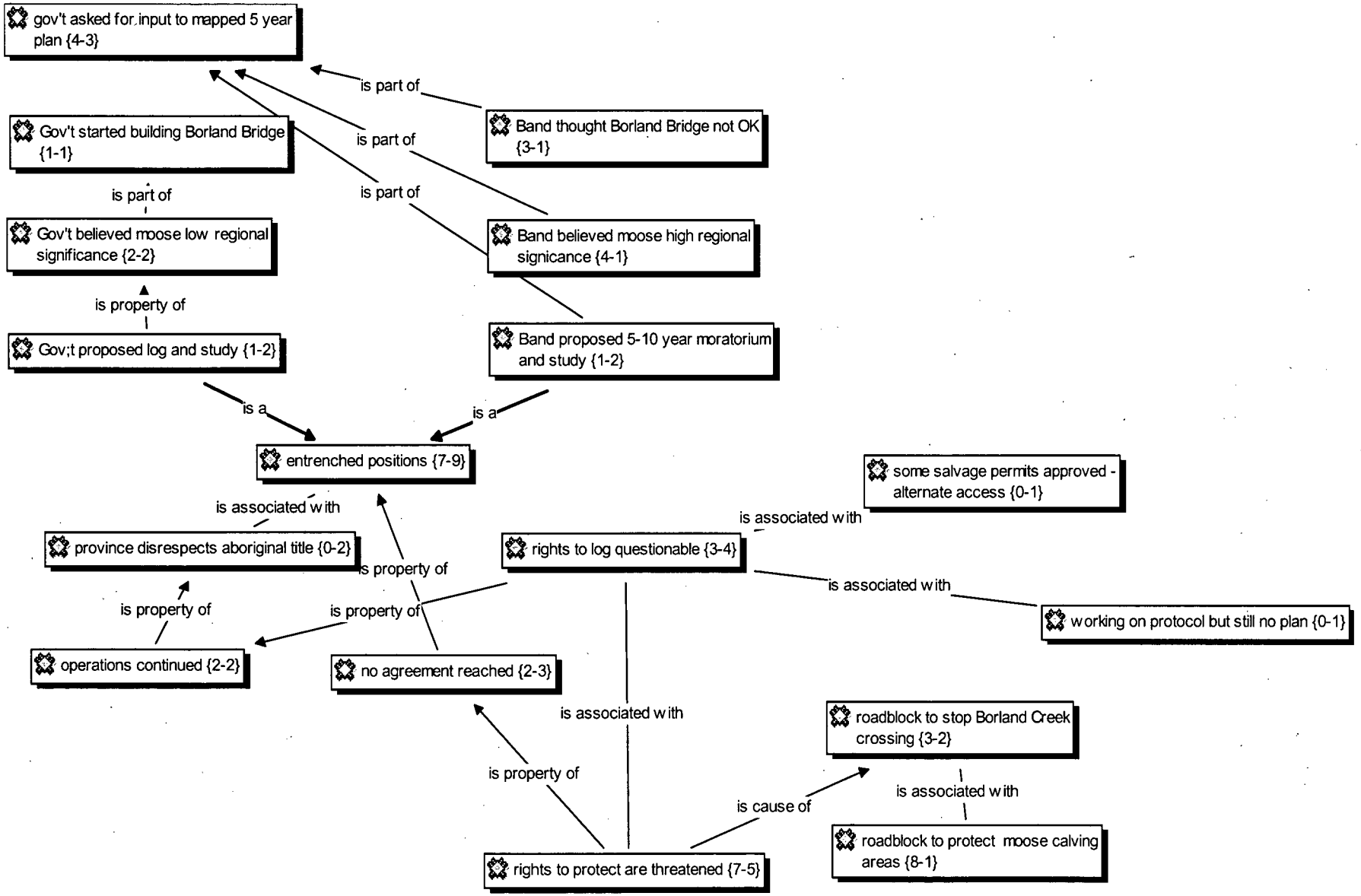
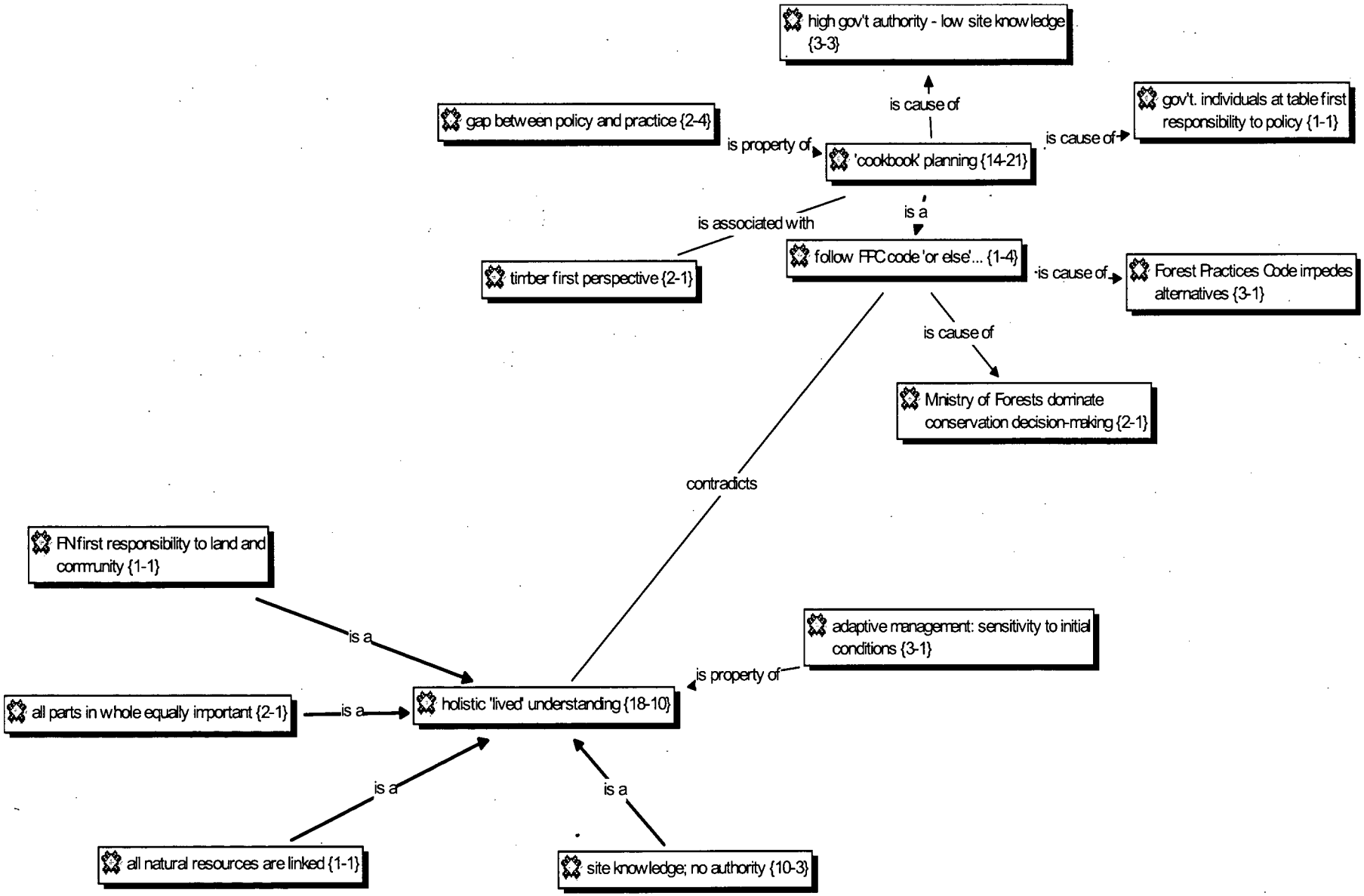
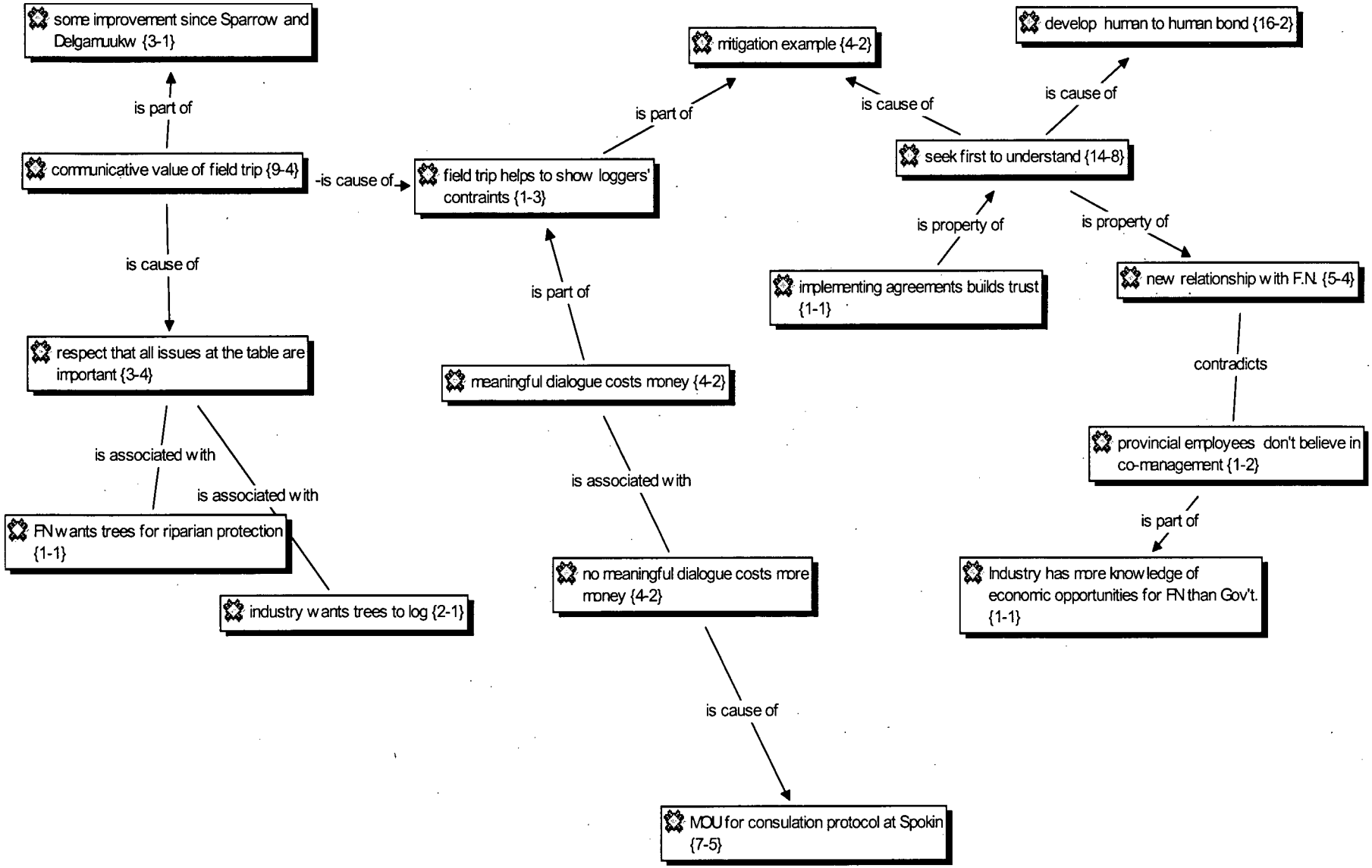
Spokin Management



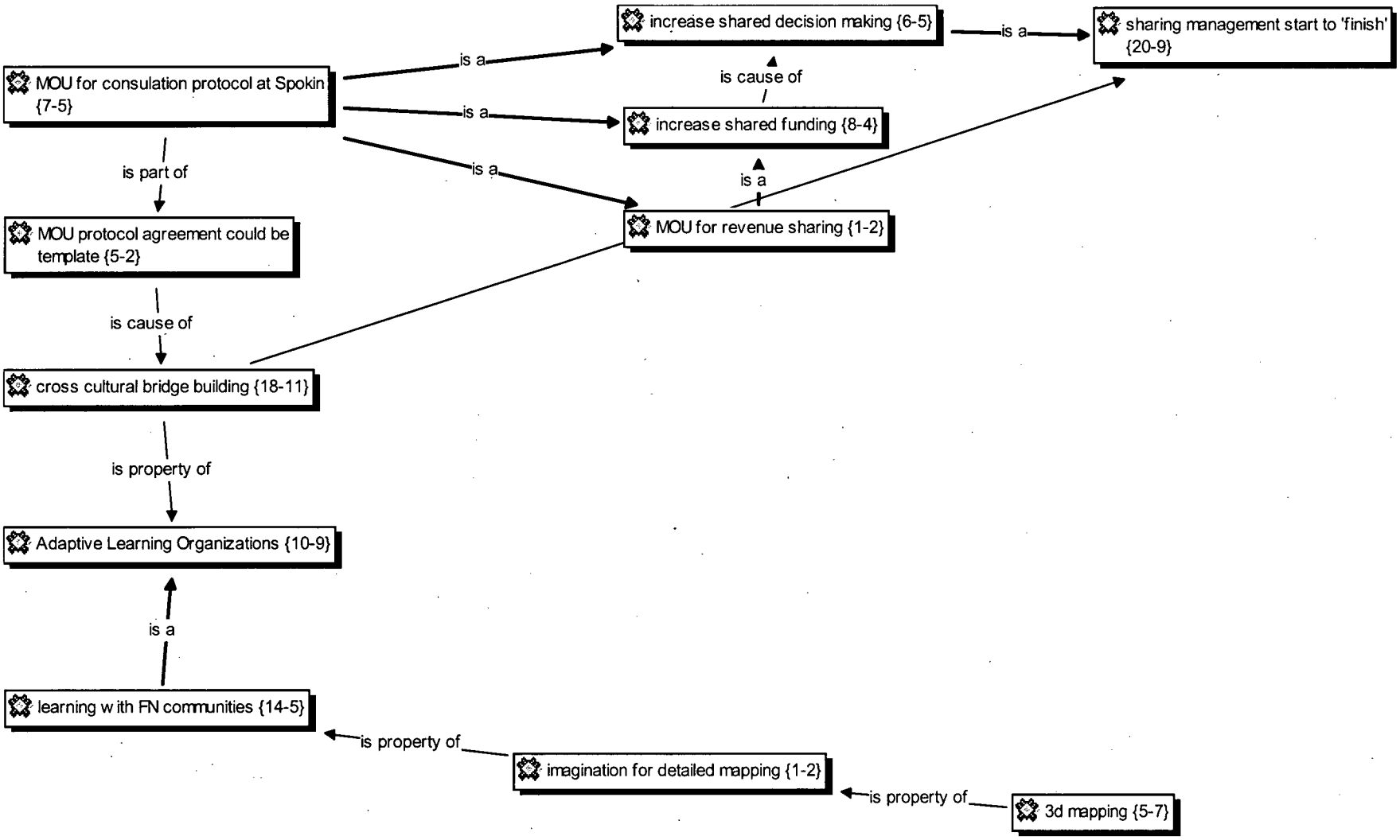
Spokin: FPC vs. Holistic Understanding



Spokin: Plan for Problem Based Learning



Spokin MOU


increase shared decision making {6-5}
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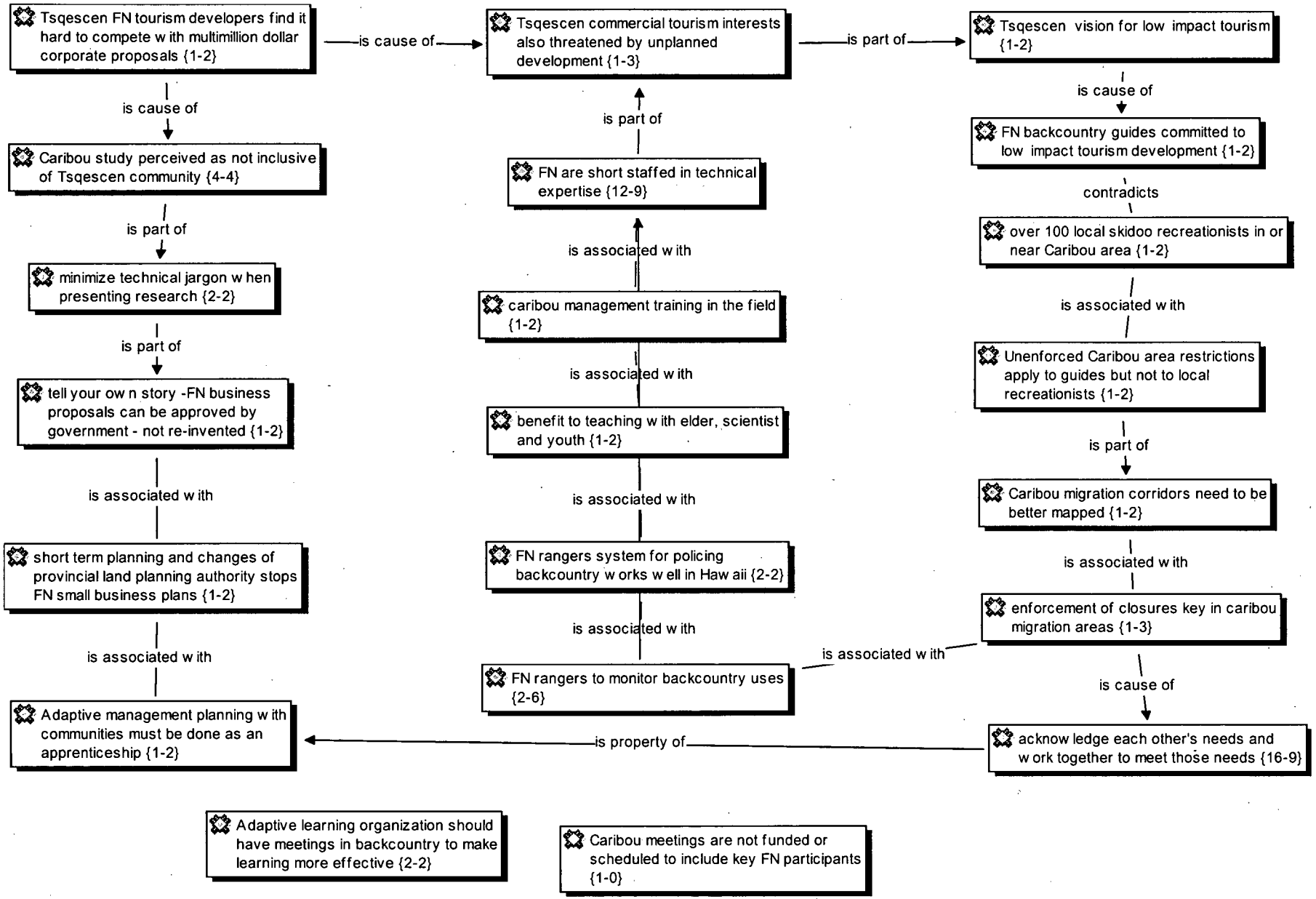
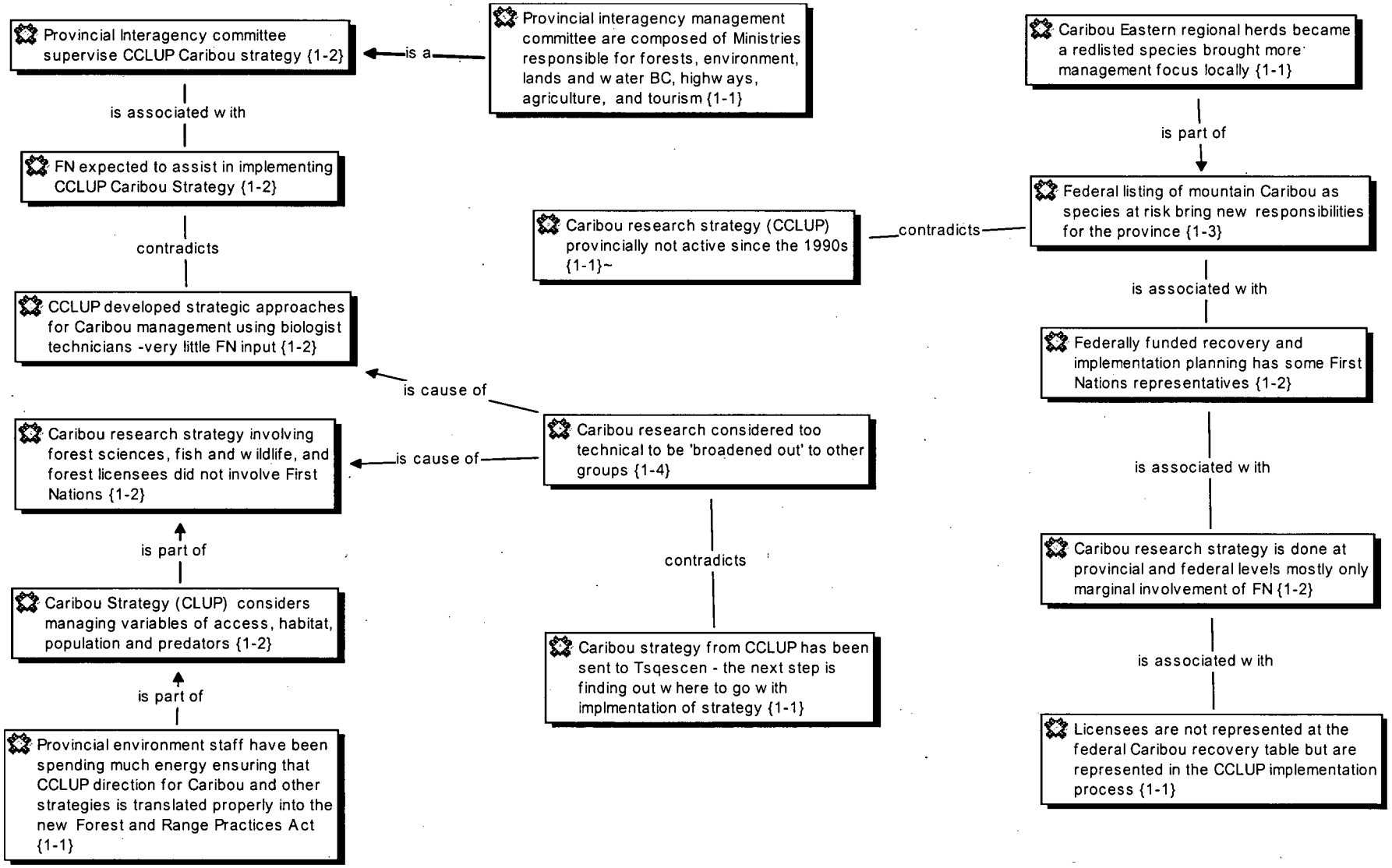
increase shared funding {8-4}
is part of
is a
is a
MOU for revenue sharing {1-2}
MOU protocol agreement could be template {5-2}
is cause of
cross cultural bridge building {18-11}
is property of
Adaptive Learning Organizations {10-9}
is a
learning with FN communities {14-5}
is property of
imagination for detailed mapping {1-2}
is property of
3d mapping {5-7}

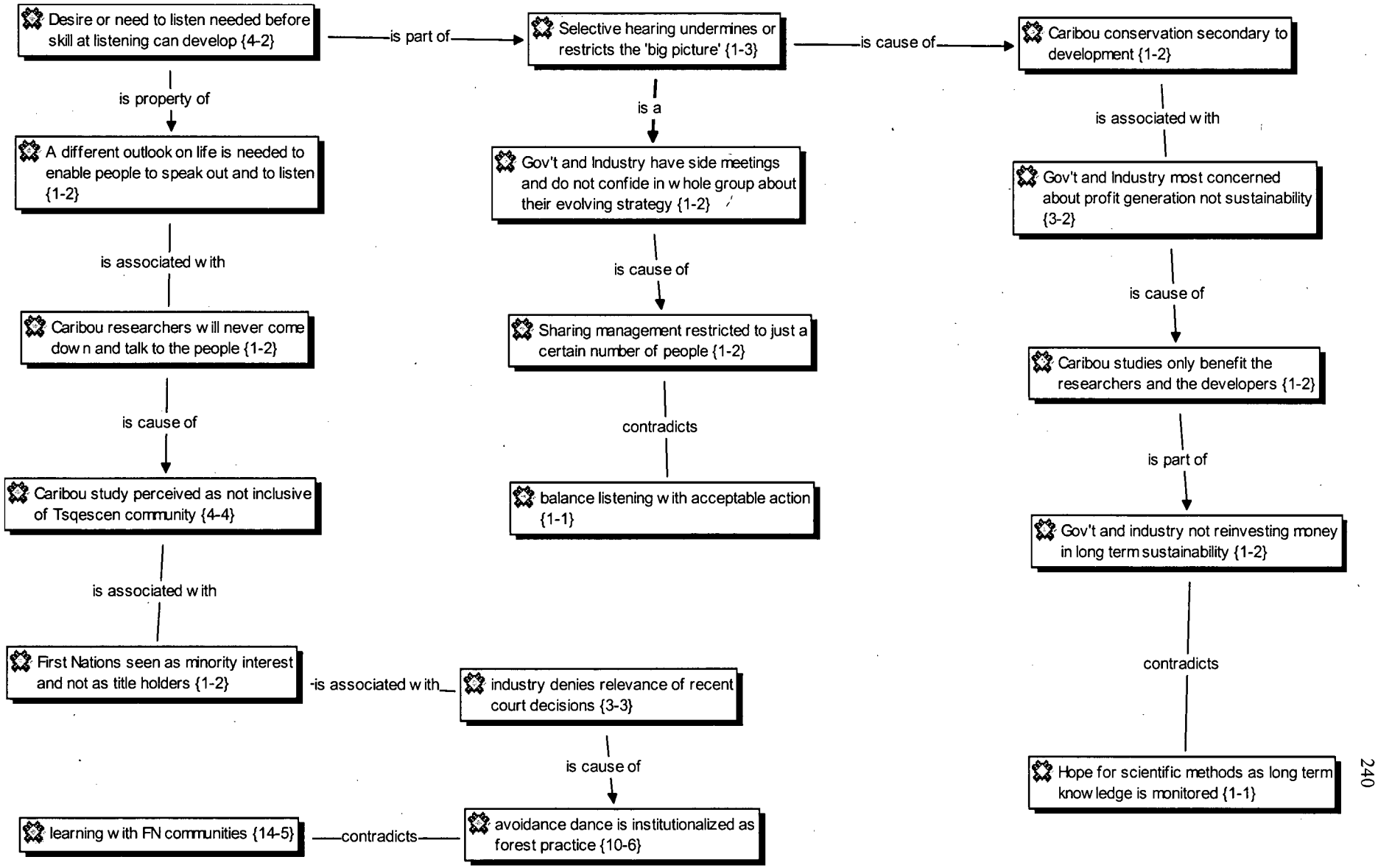
Caribou and Tsq'escen' Ecotourism Threatened



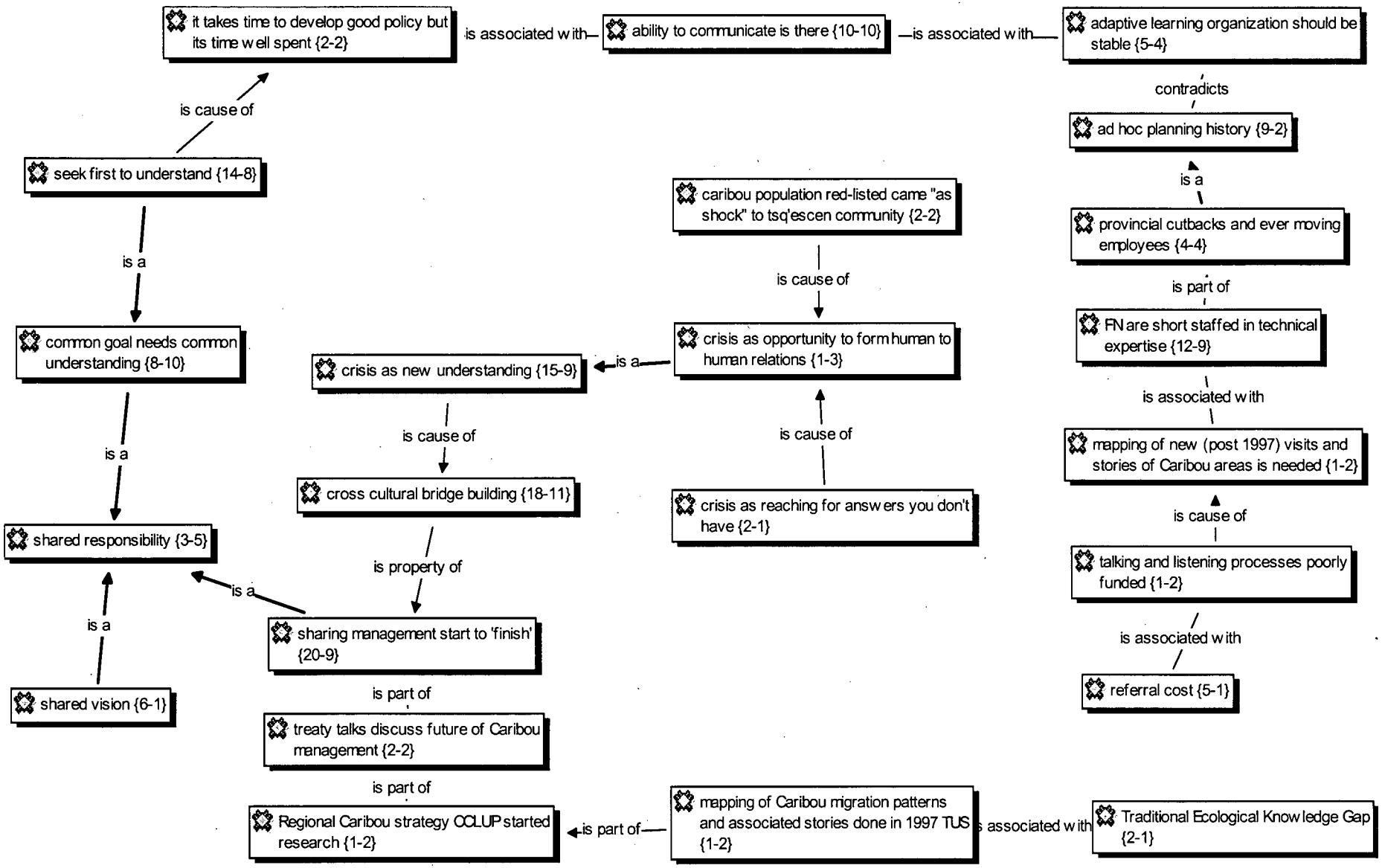
Caribou- CCLUP Strategy



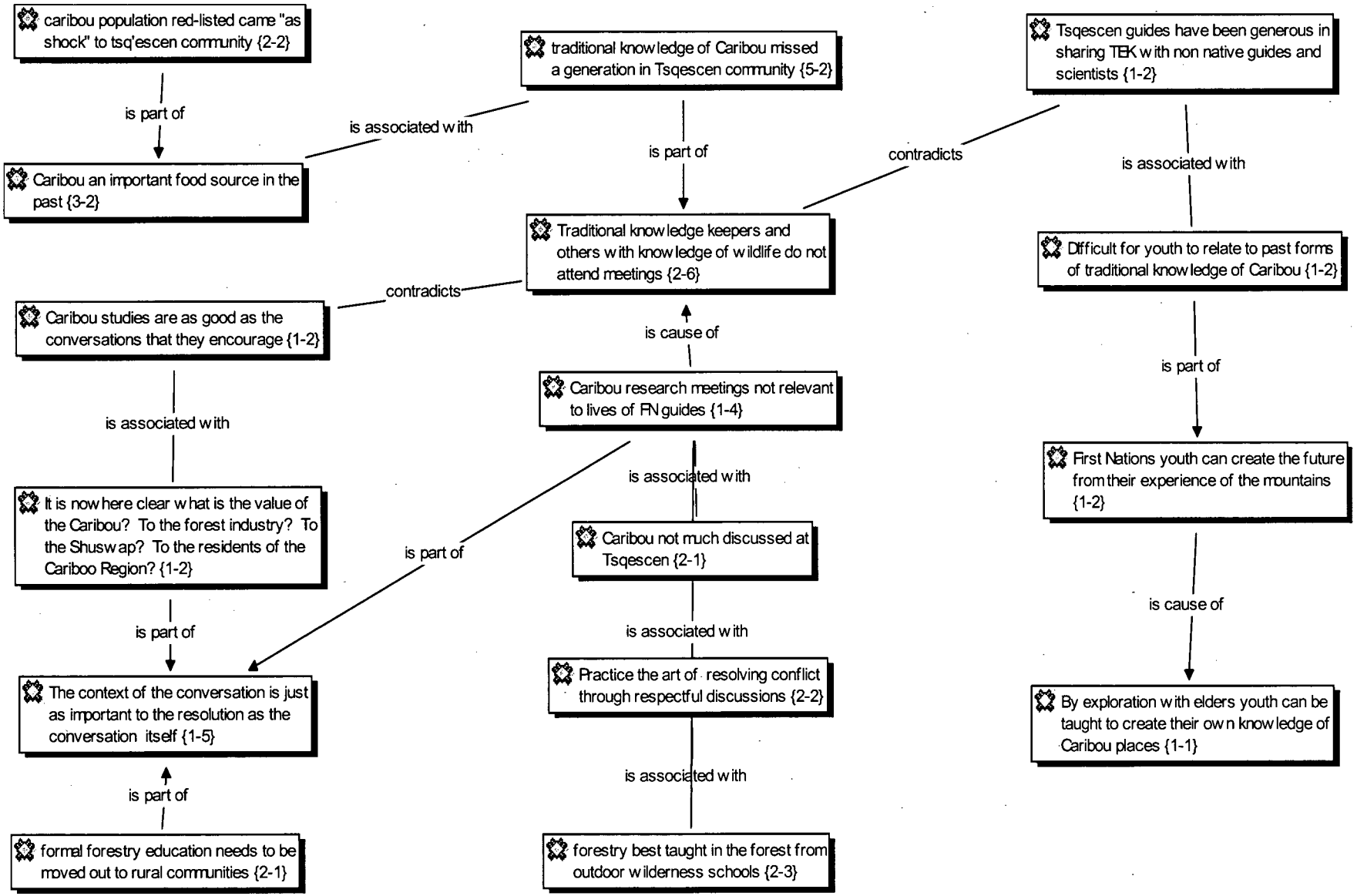
Caribou Management is Top Down



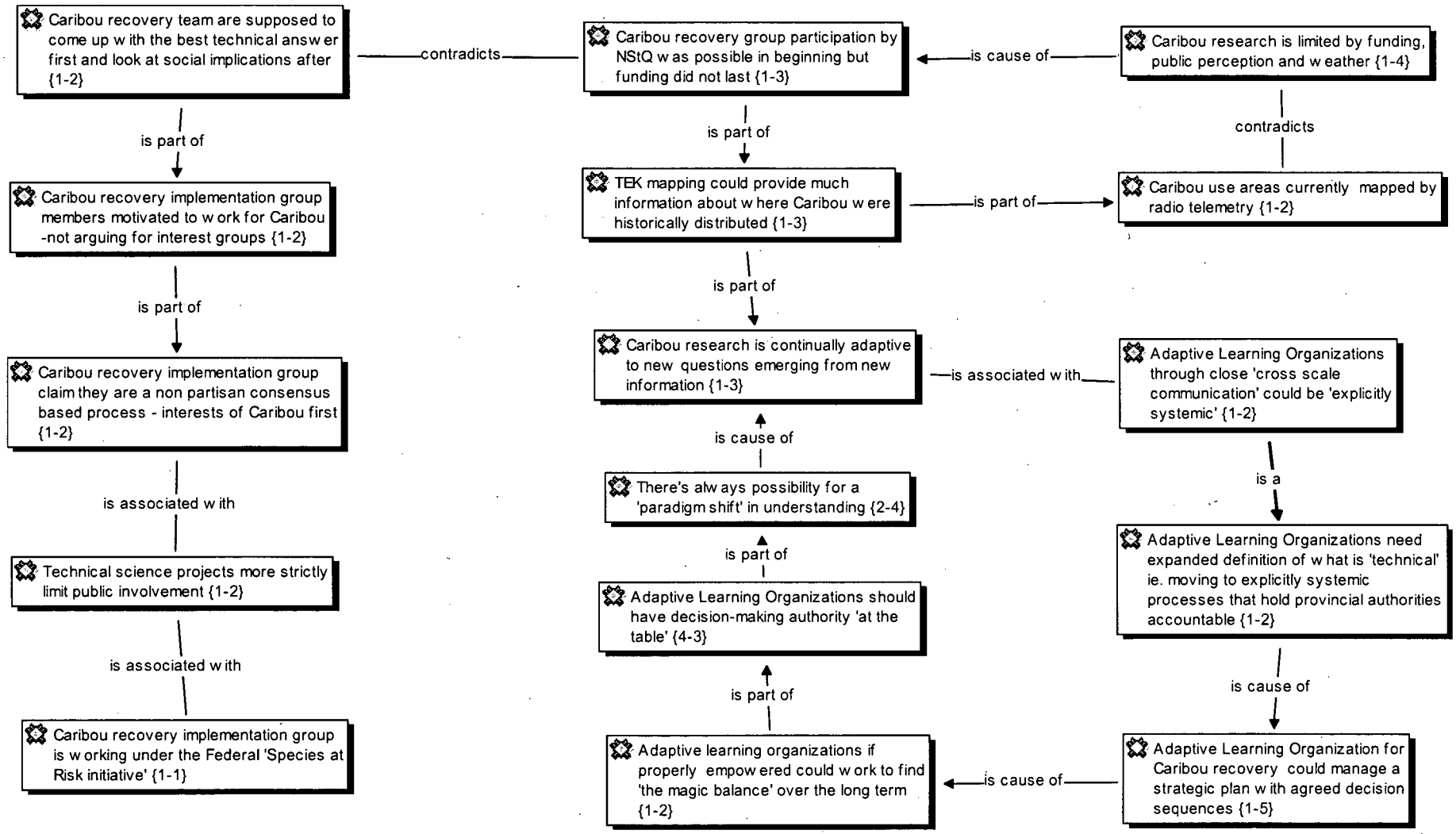
Caribou Process – Tsq'escen' Administration



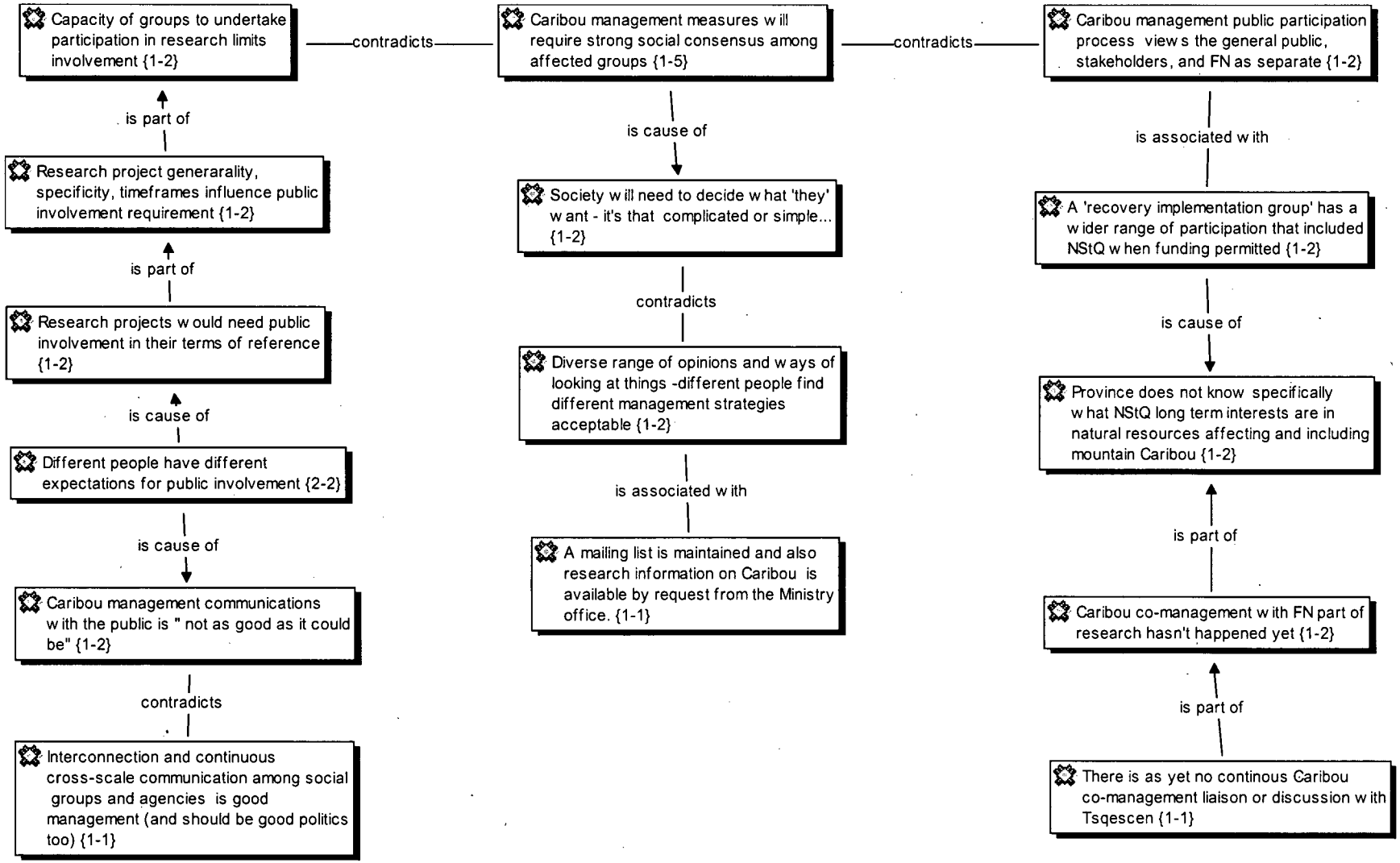
Caribou Process: Tsq'escen' involvement



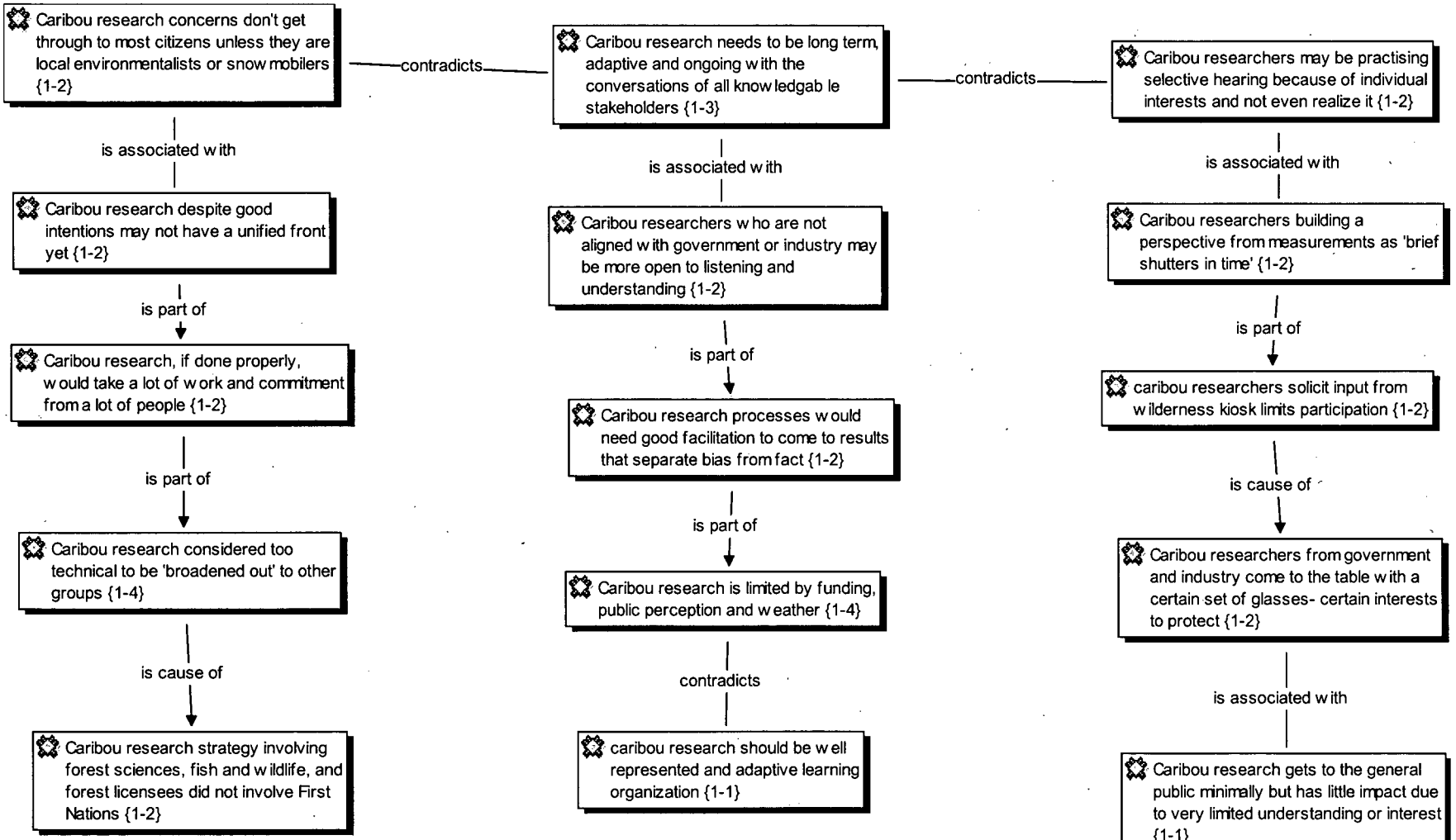
Caribou Recovery Implementation Group



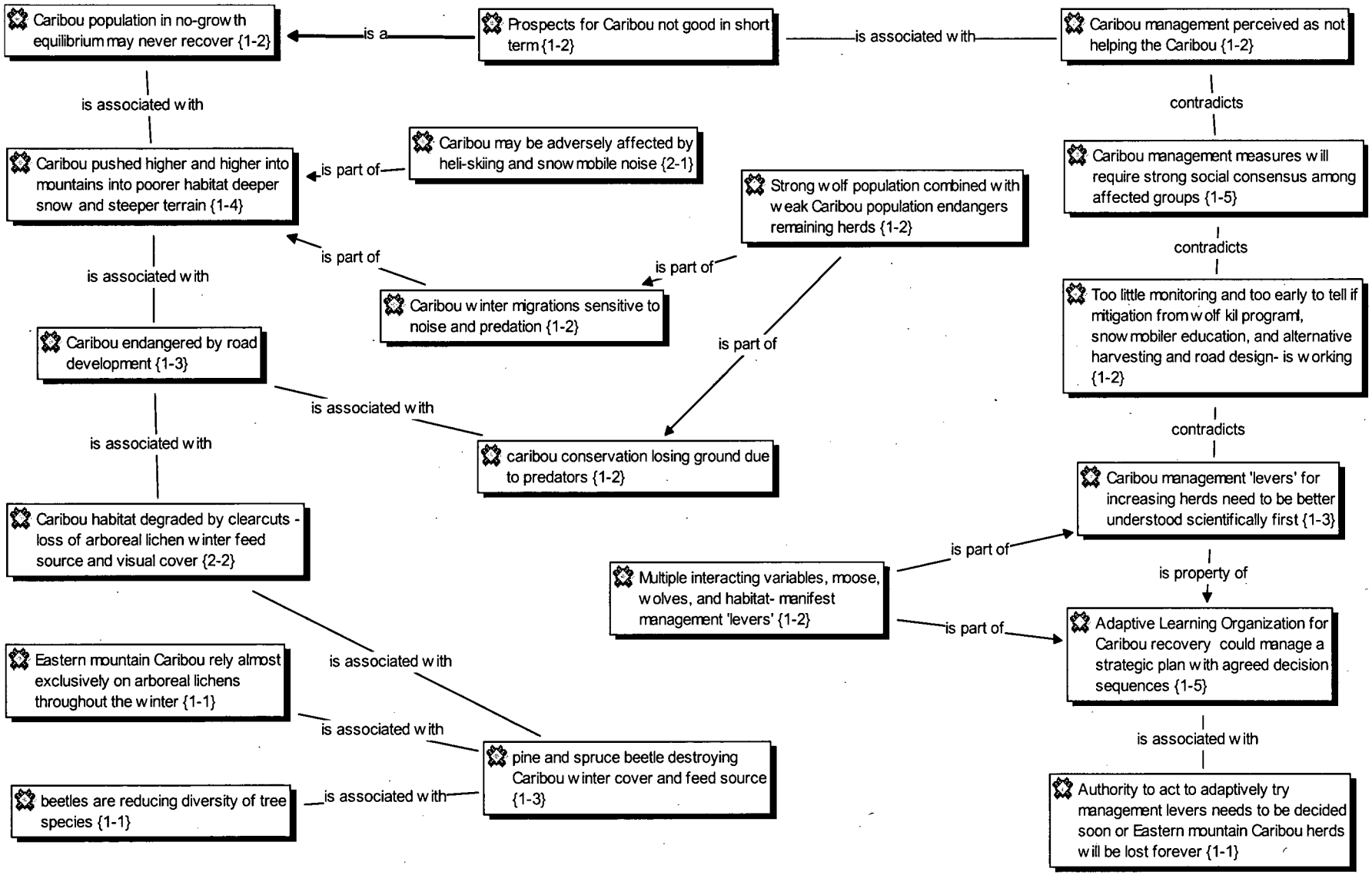
Caribou Public Involvement Process



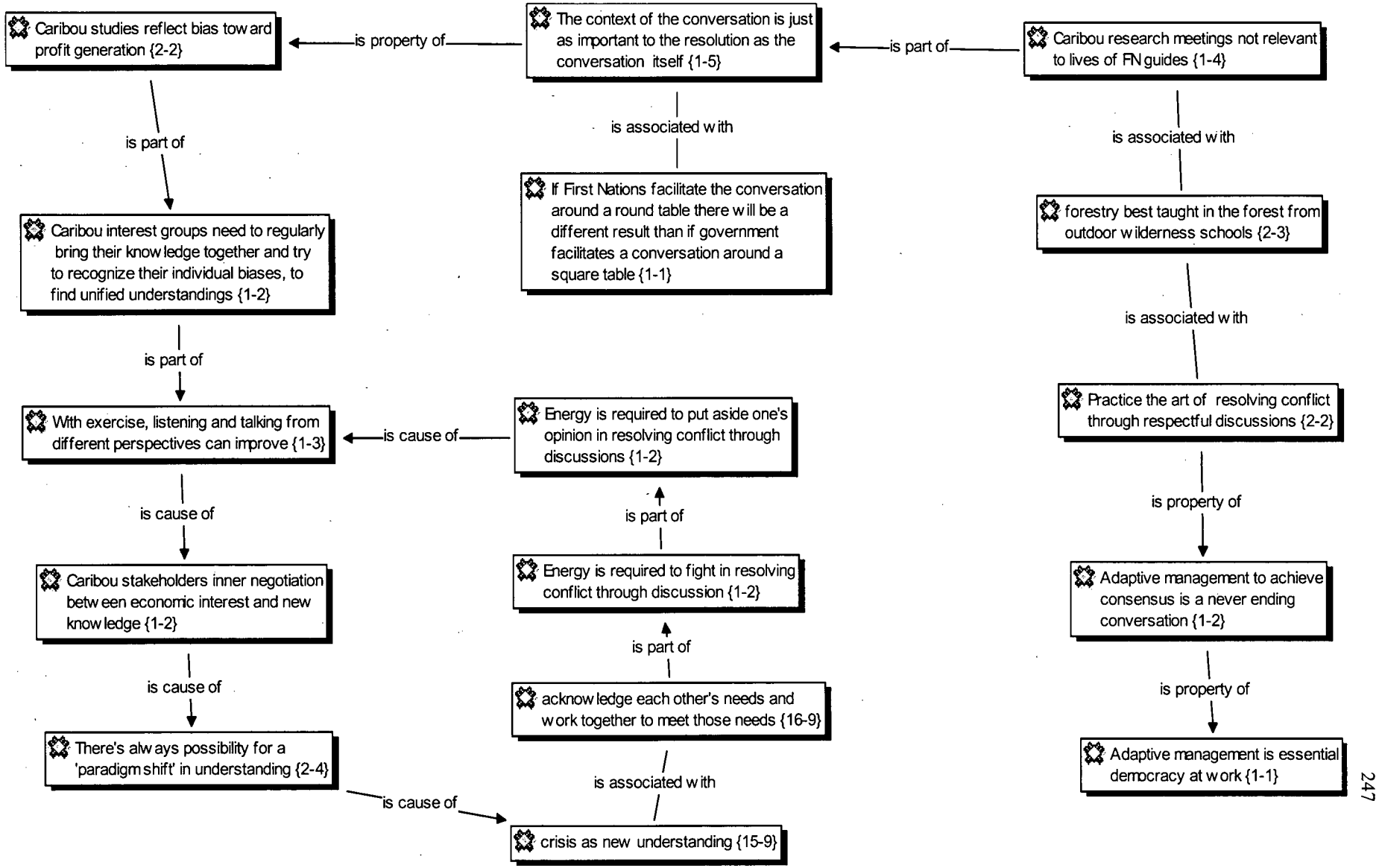
Caribou Regional Research Bias



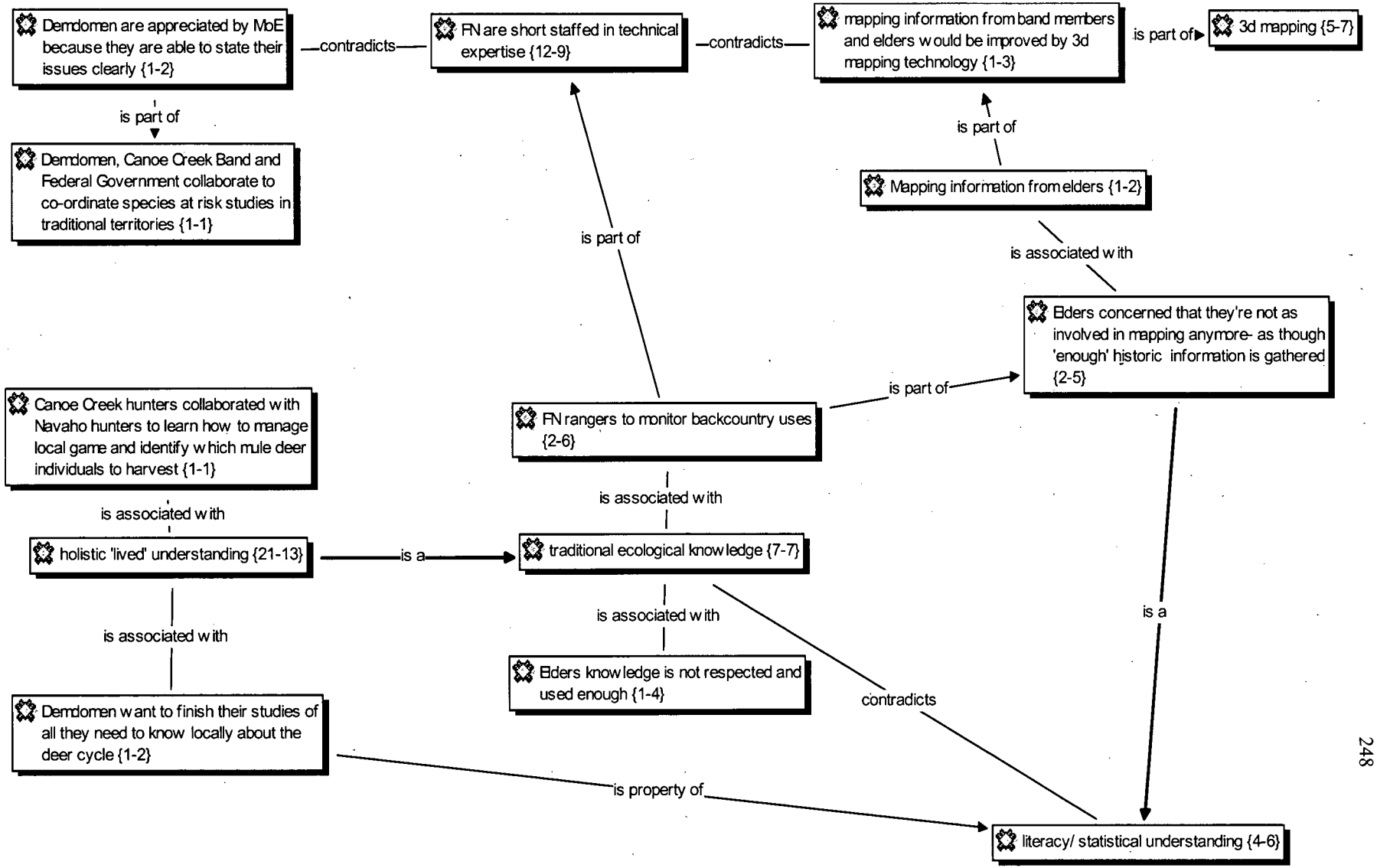
Caribou Threats



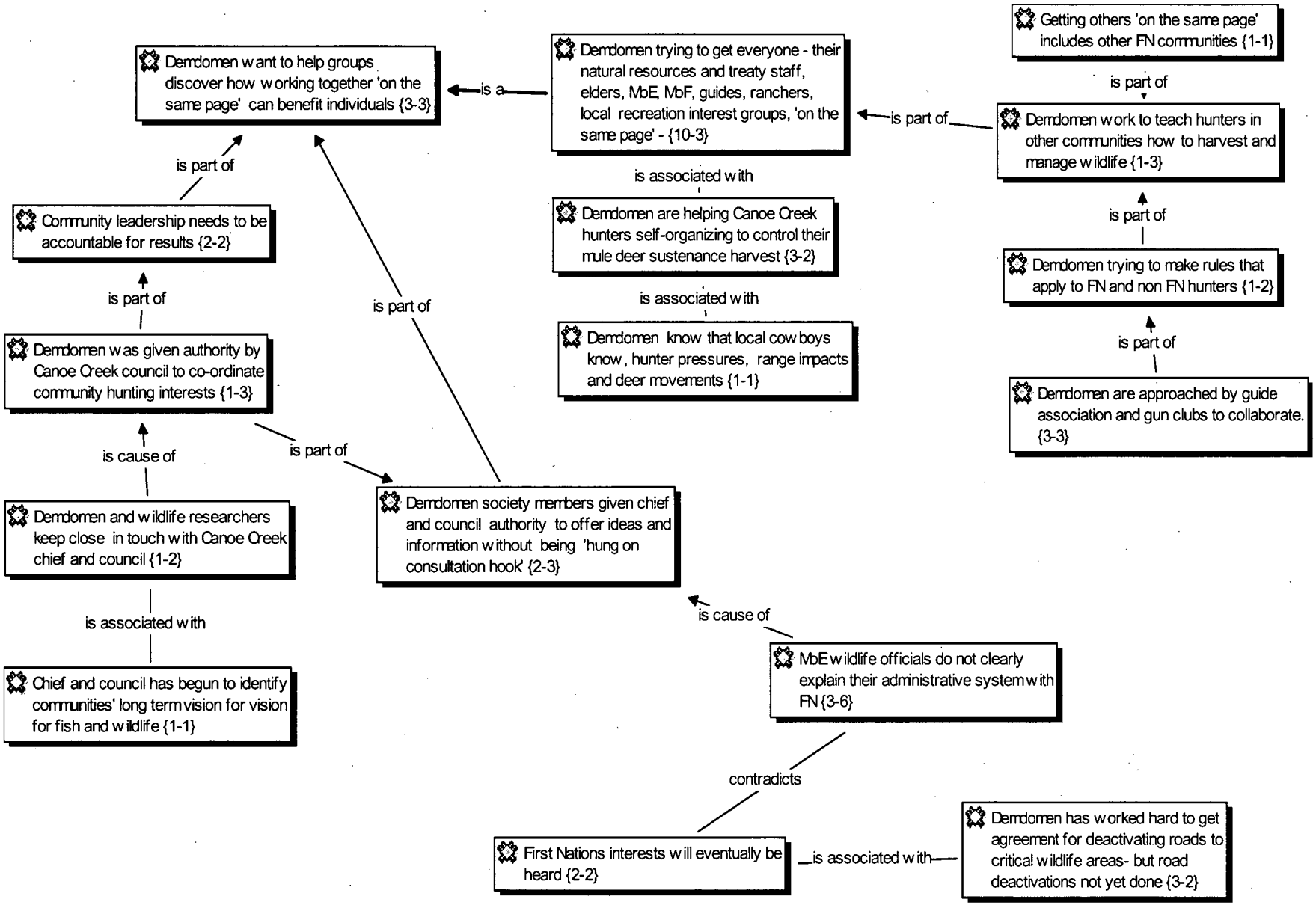
Caribou: Negotiating Local Knowledge



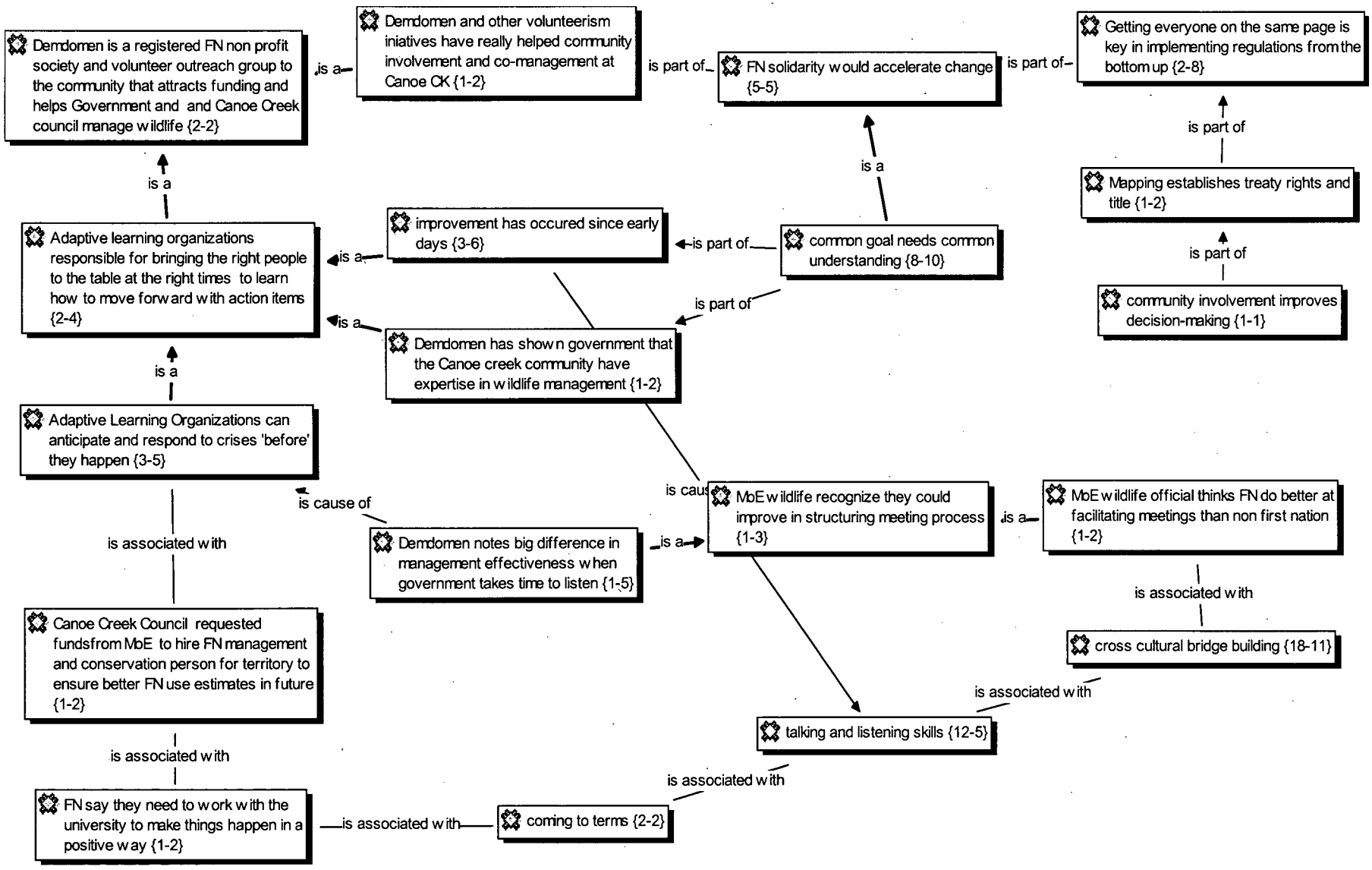
Demdomen as ALO catalyst (TEK)



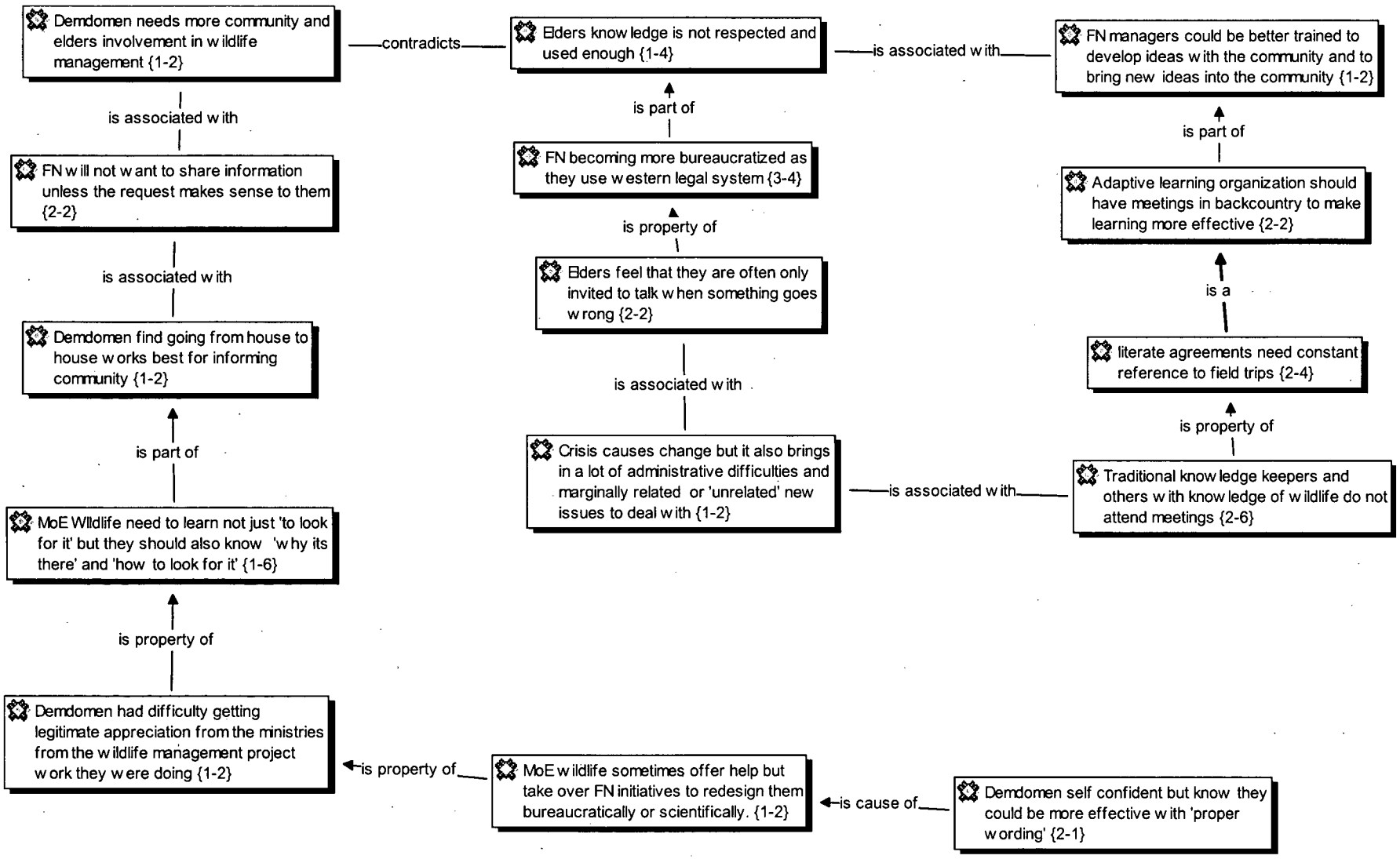
Demdomen as ALO catalyst (Knowing in Relation to Others)



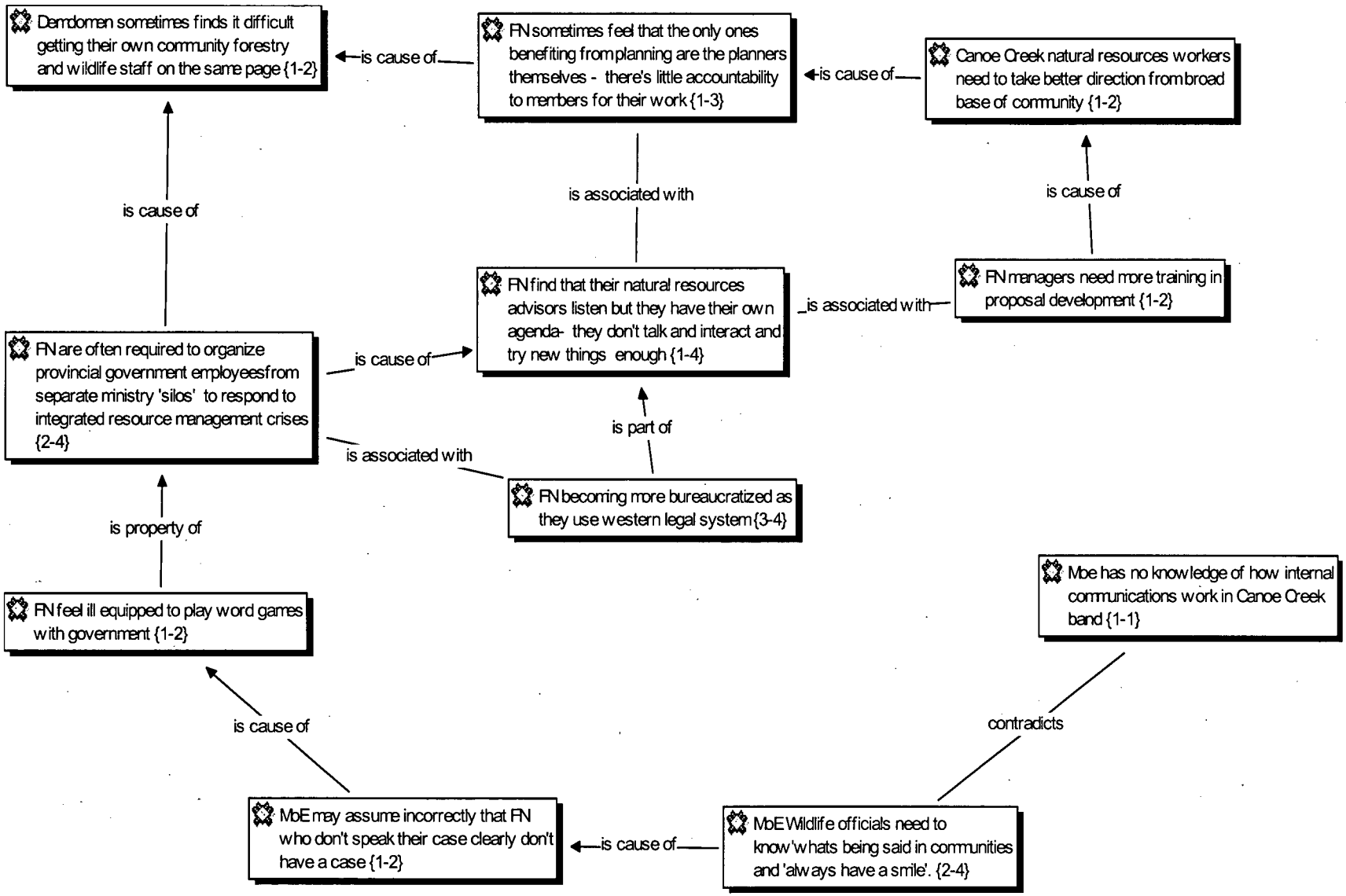
Demdomen as ALO catalyst (Demdomen)



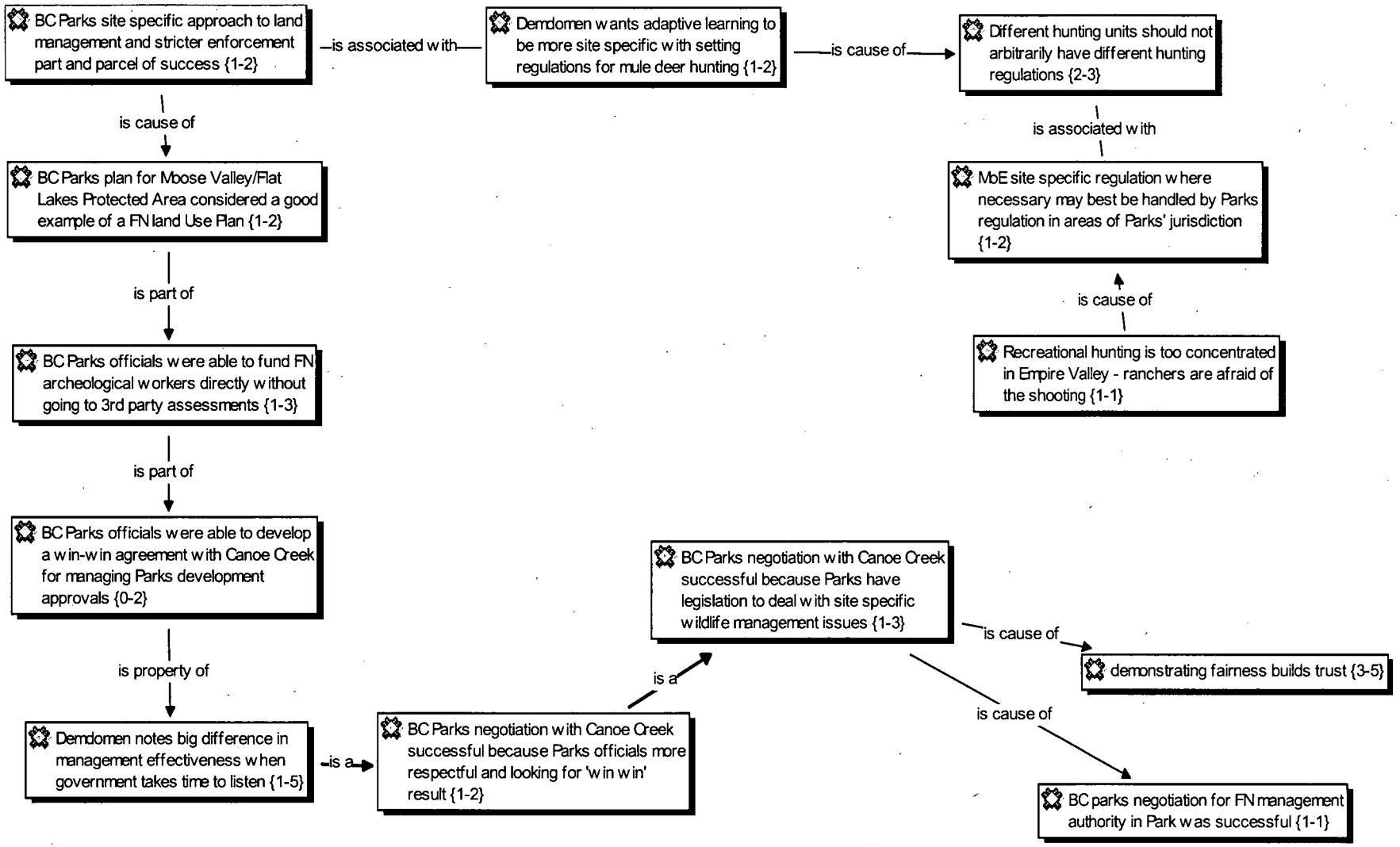
Demdomen as ALO catalyst (Community)



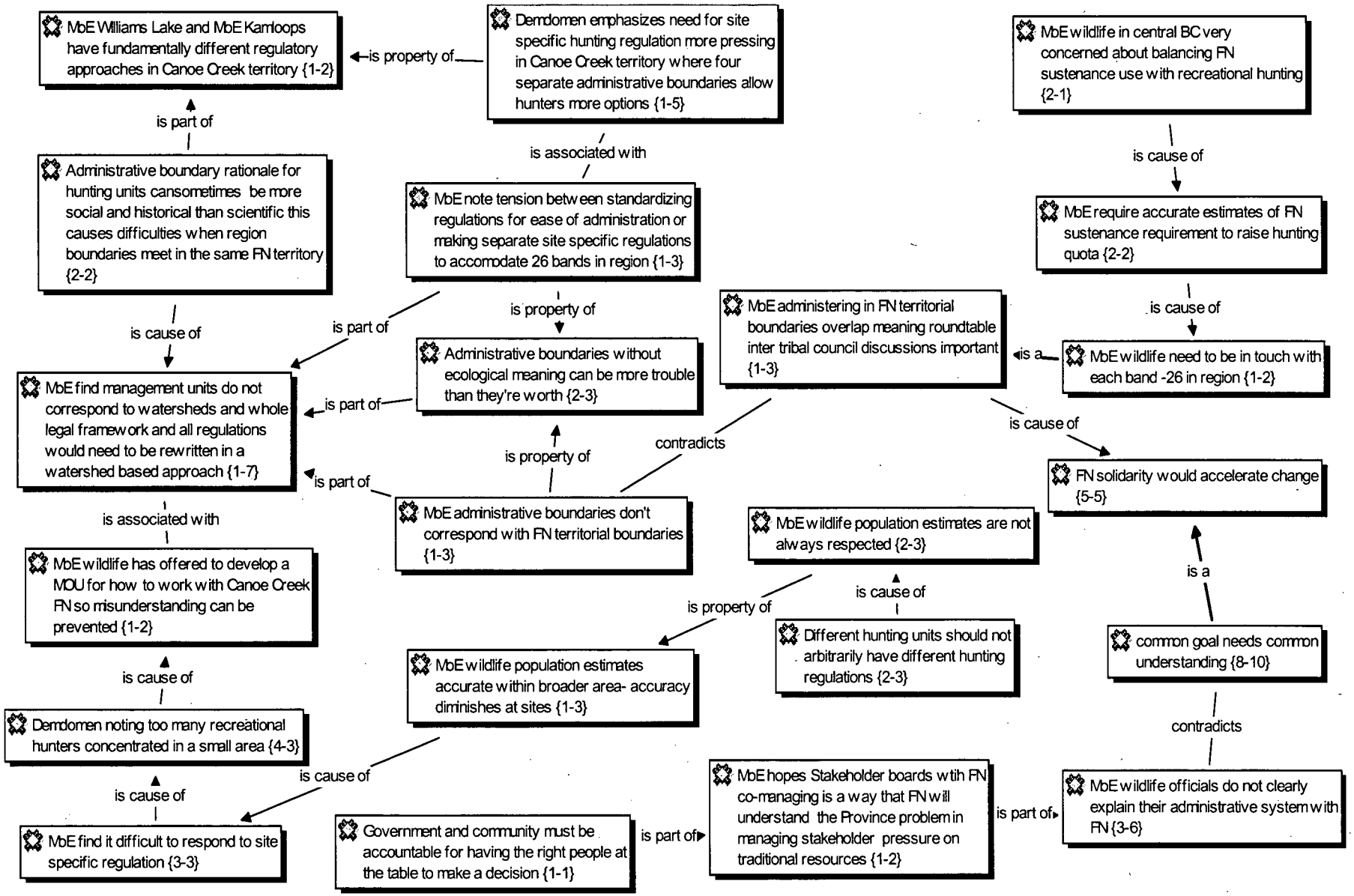
Demdomen as ALO catalyst (Planners)



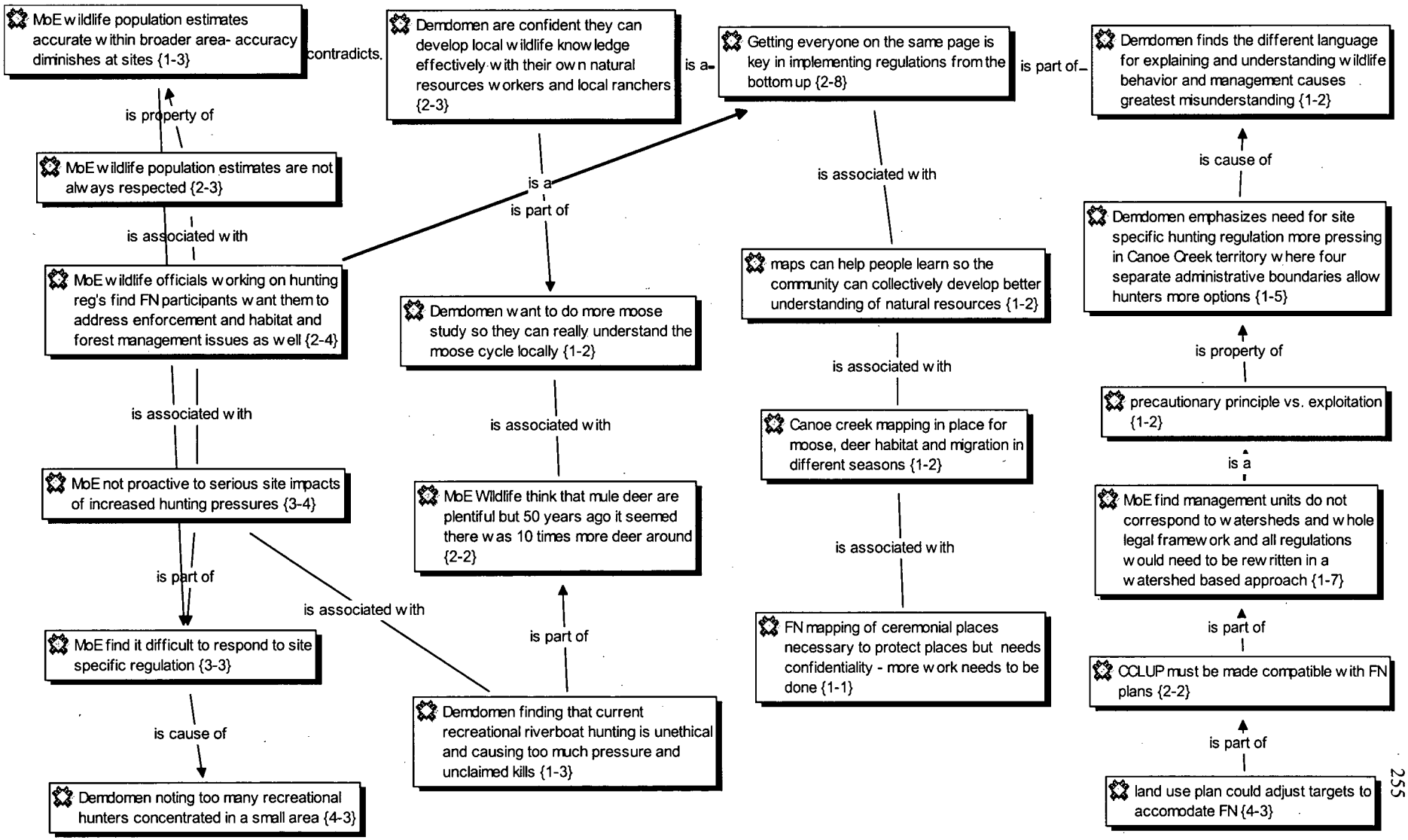
Demdomen-NStQ/BC Parks Management



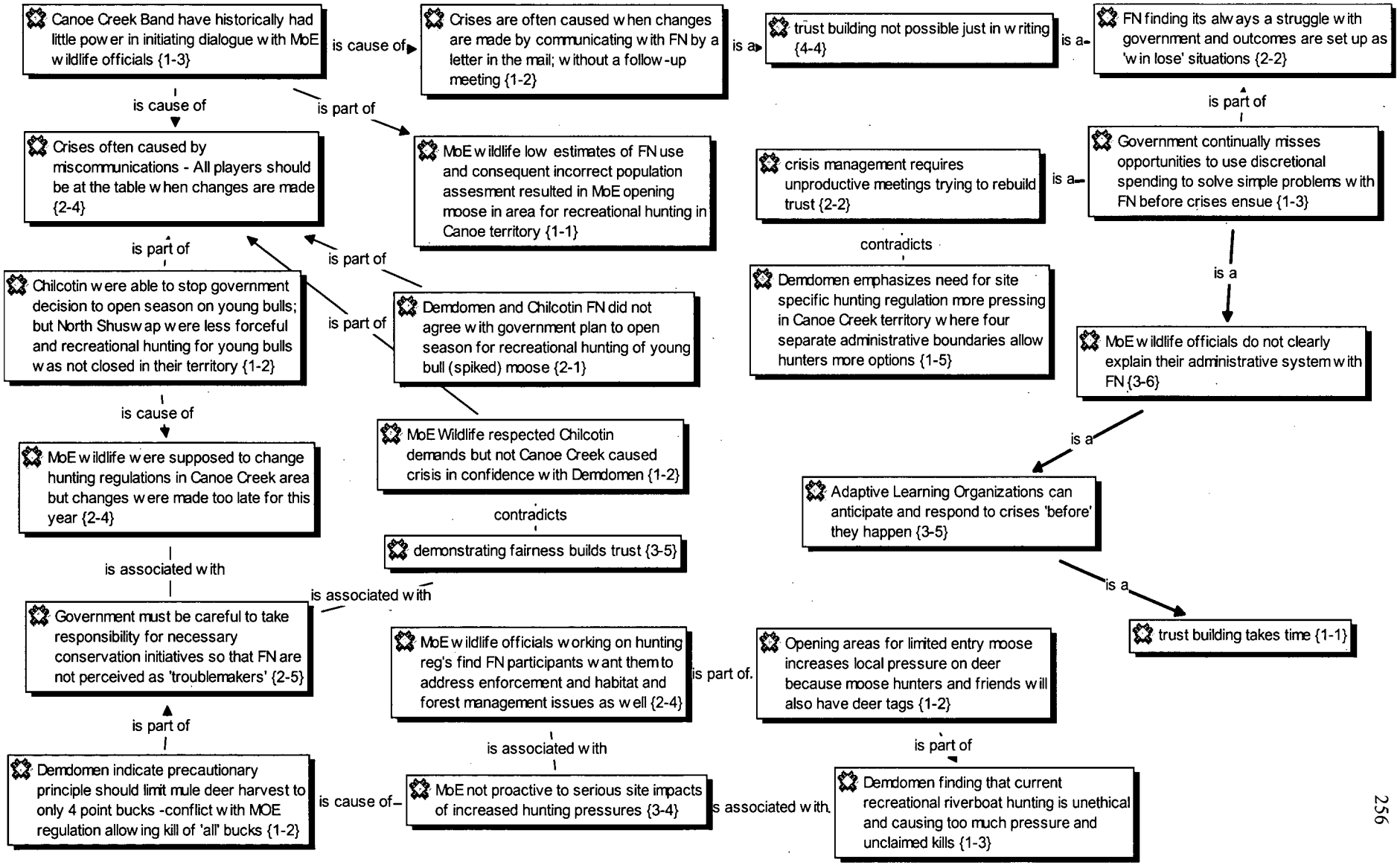
Demdomen-NStO/ MoE and wildlife administration



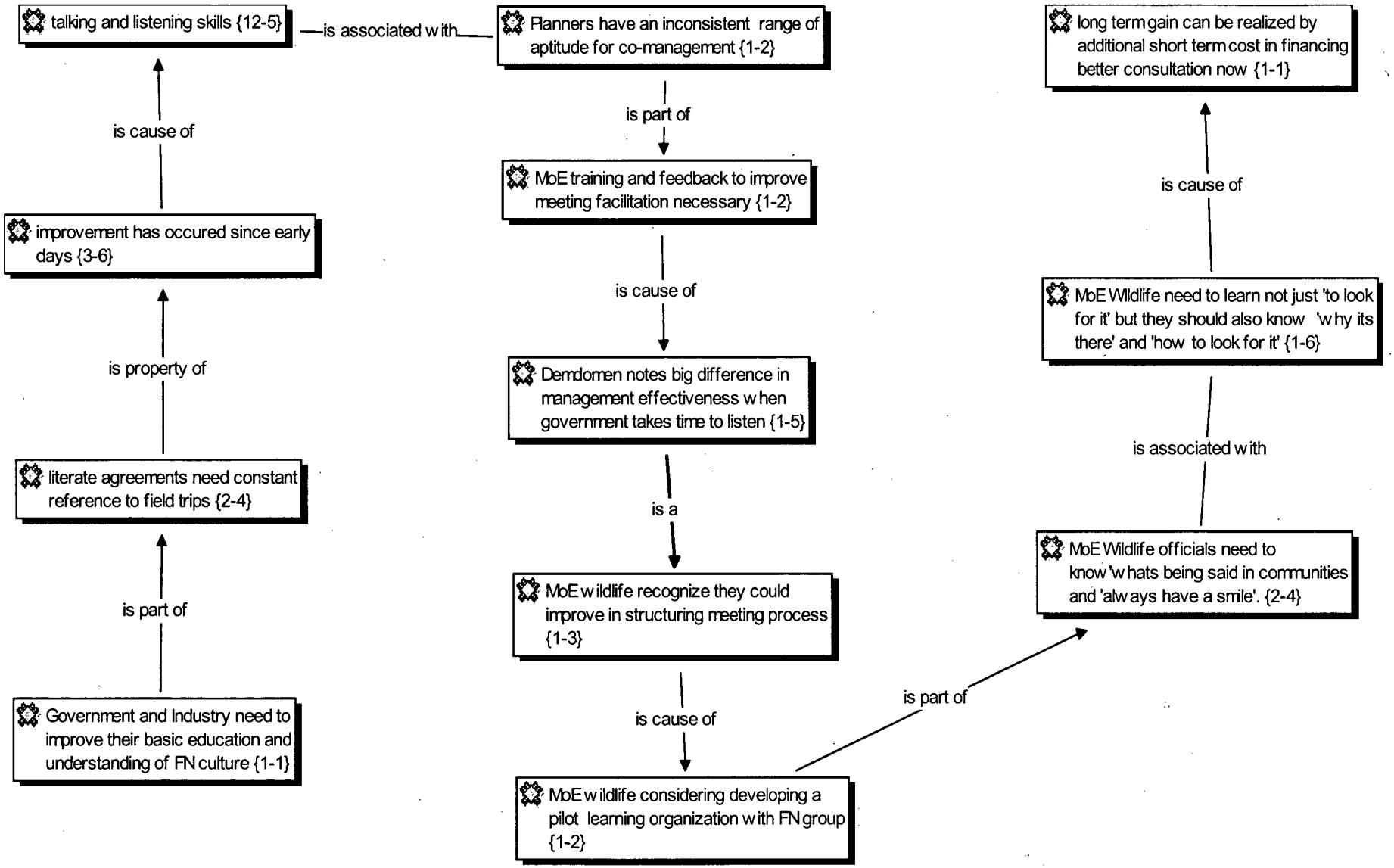
Demdomen-NStQ/ MoE Regional vs. Site Specific Regulation



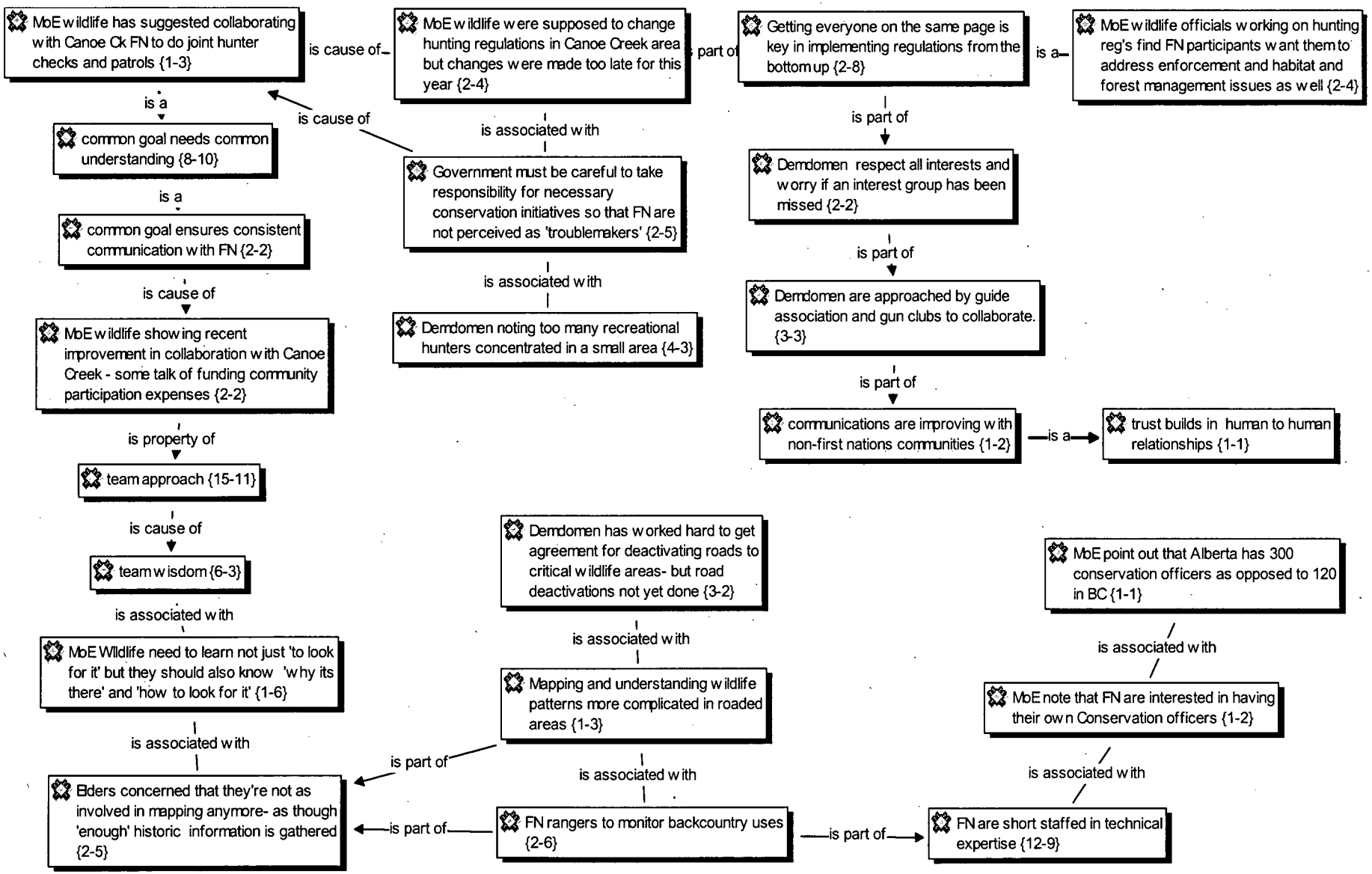
Demdomen-NStQ/MoE Wildlife Crisis



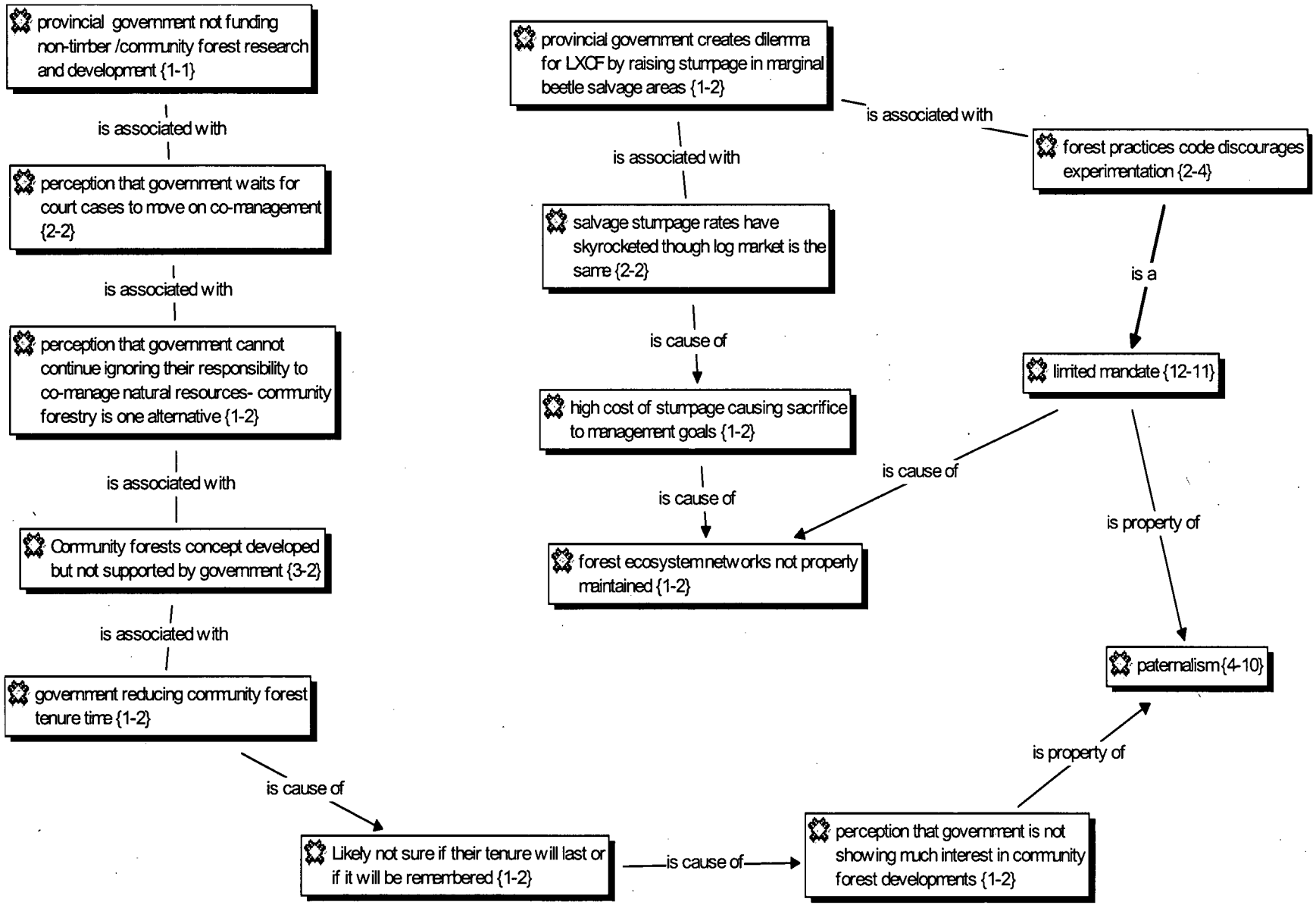
Demdomen-NStQ/MoE Wildlife Staff Education Challenge



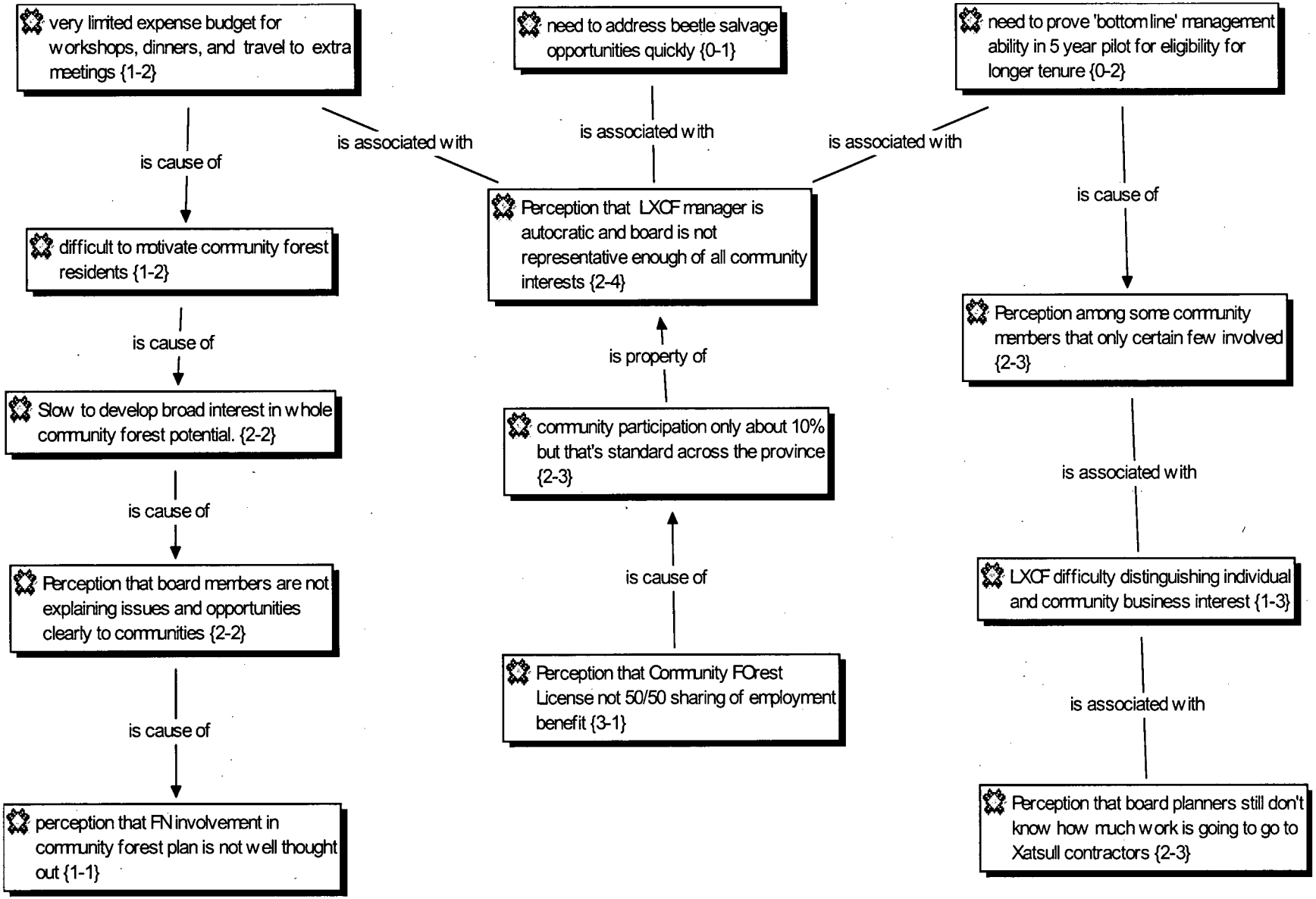
Demdomen-NStQ/MoE Joint Hunter Checks



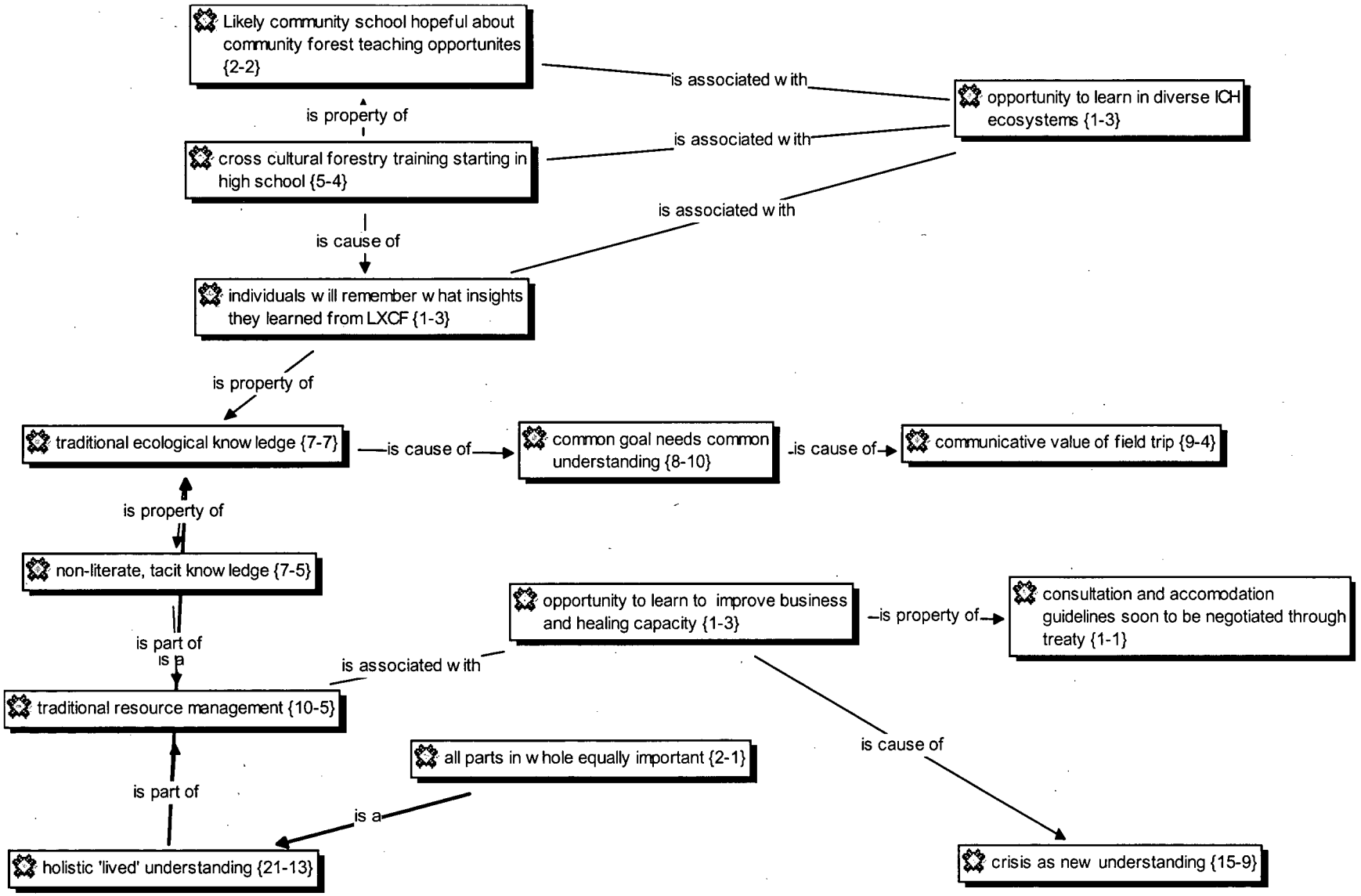
LXCF Process/ Areas for the Province to improve



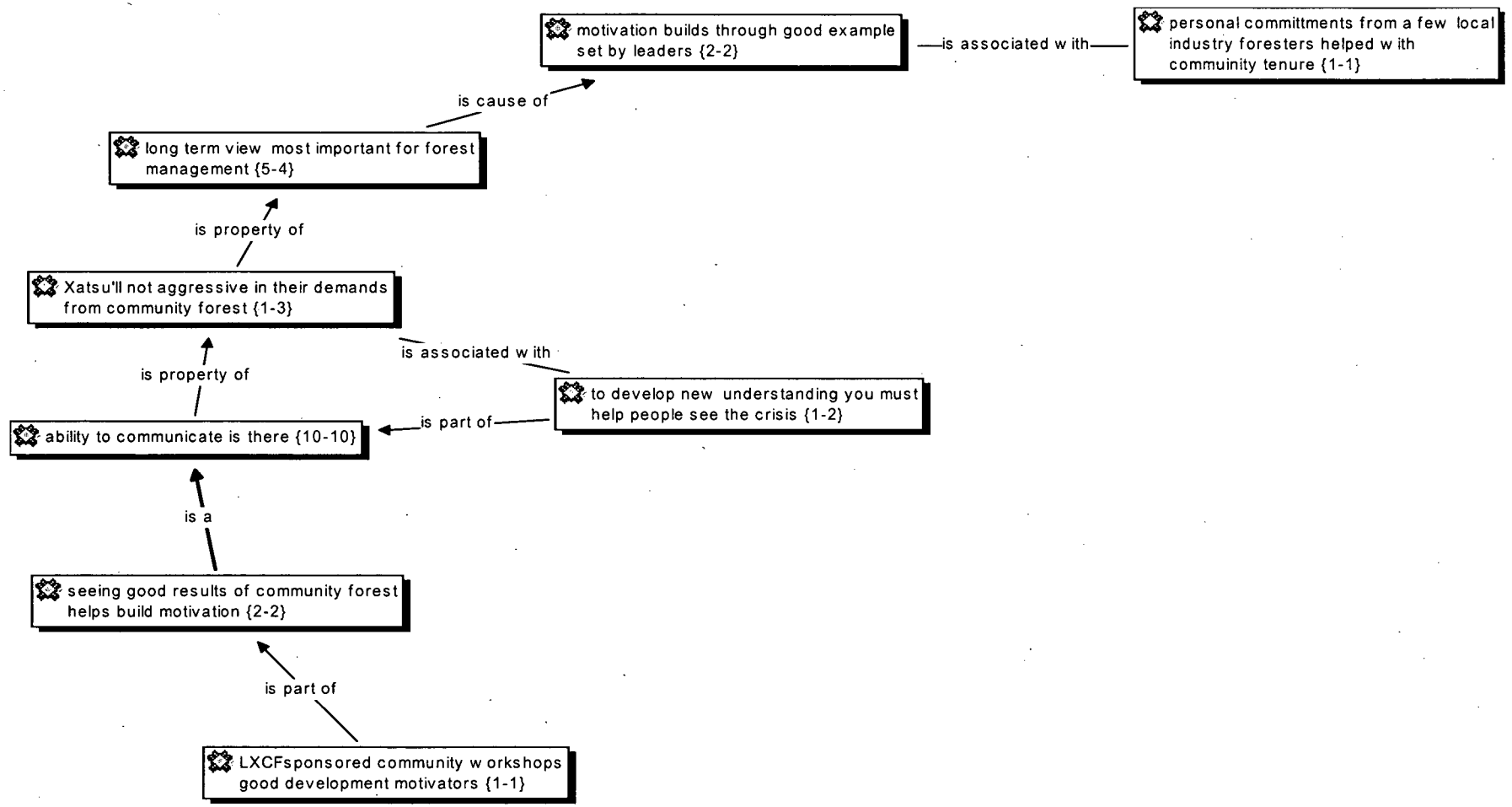
LXCF Process/ Areas where the LXCF Board can improve



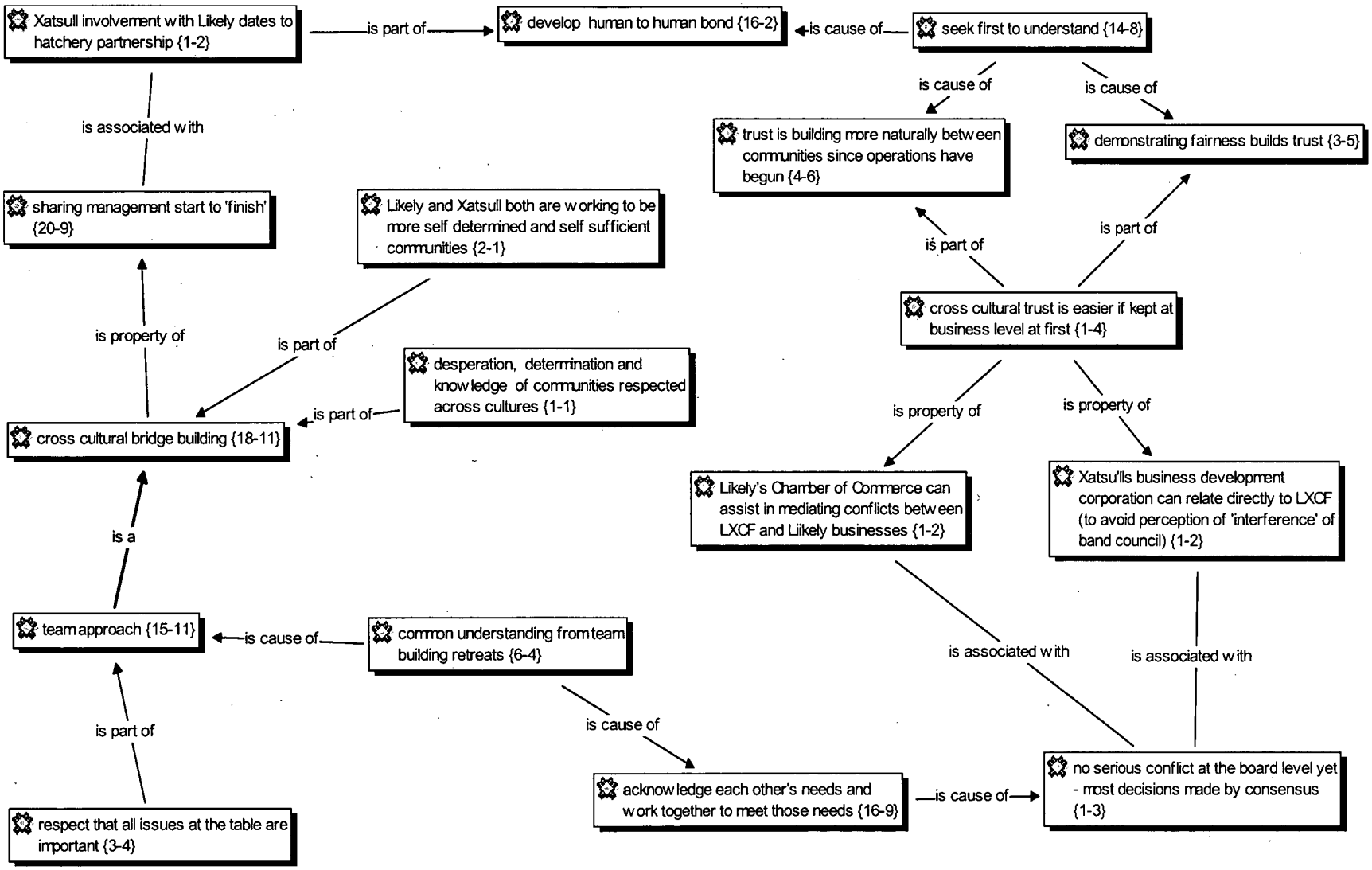
LXCF Process Strength: Teaching and Learning



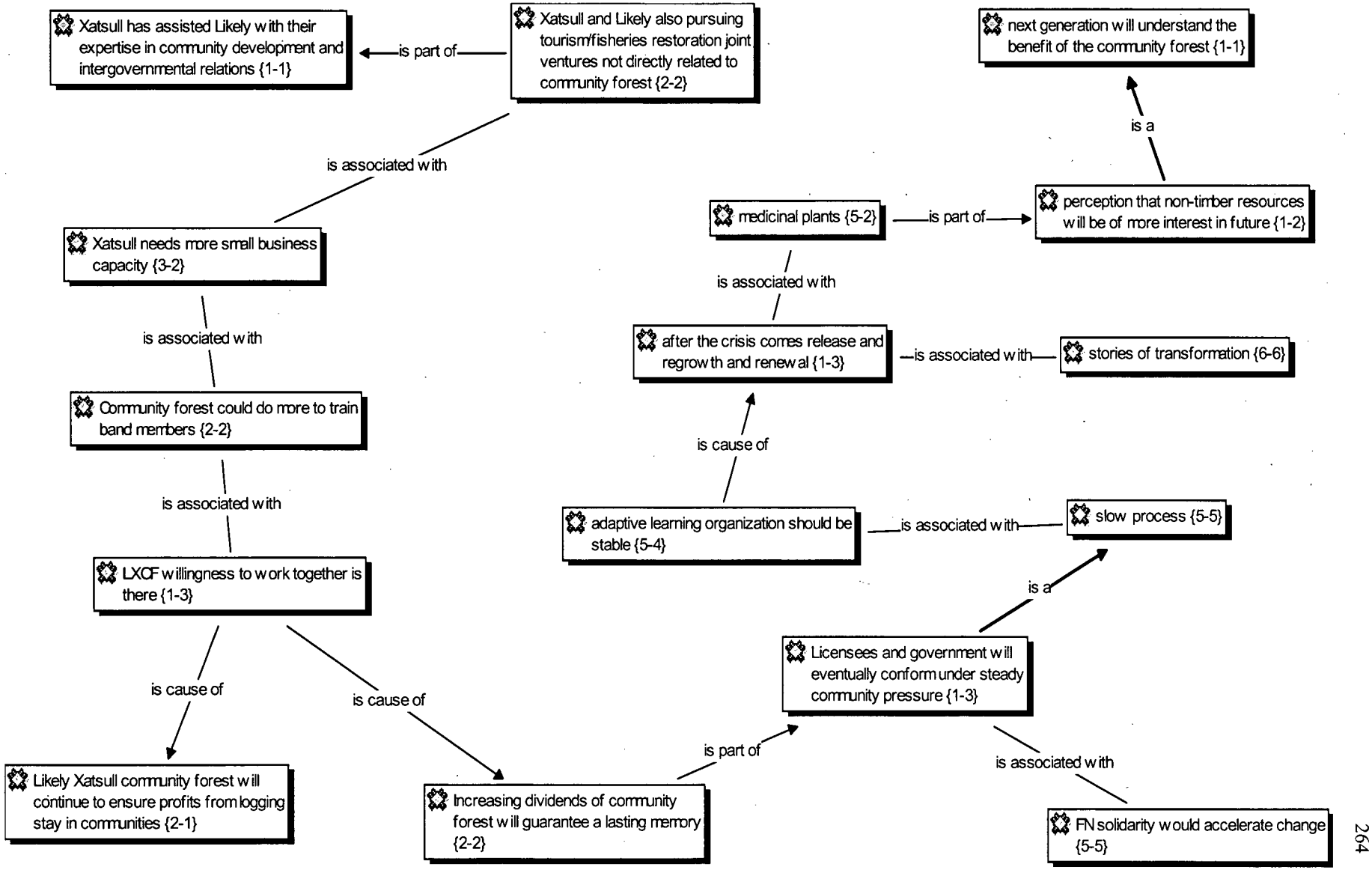
LXCF Process Strength: Motivation



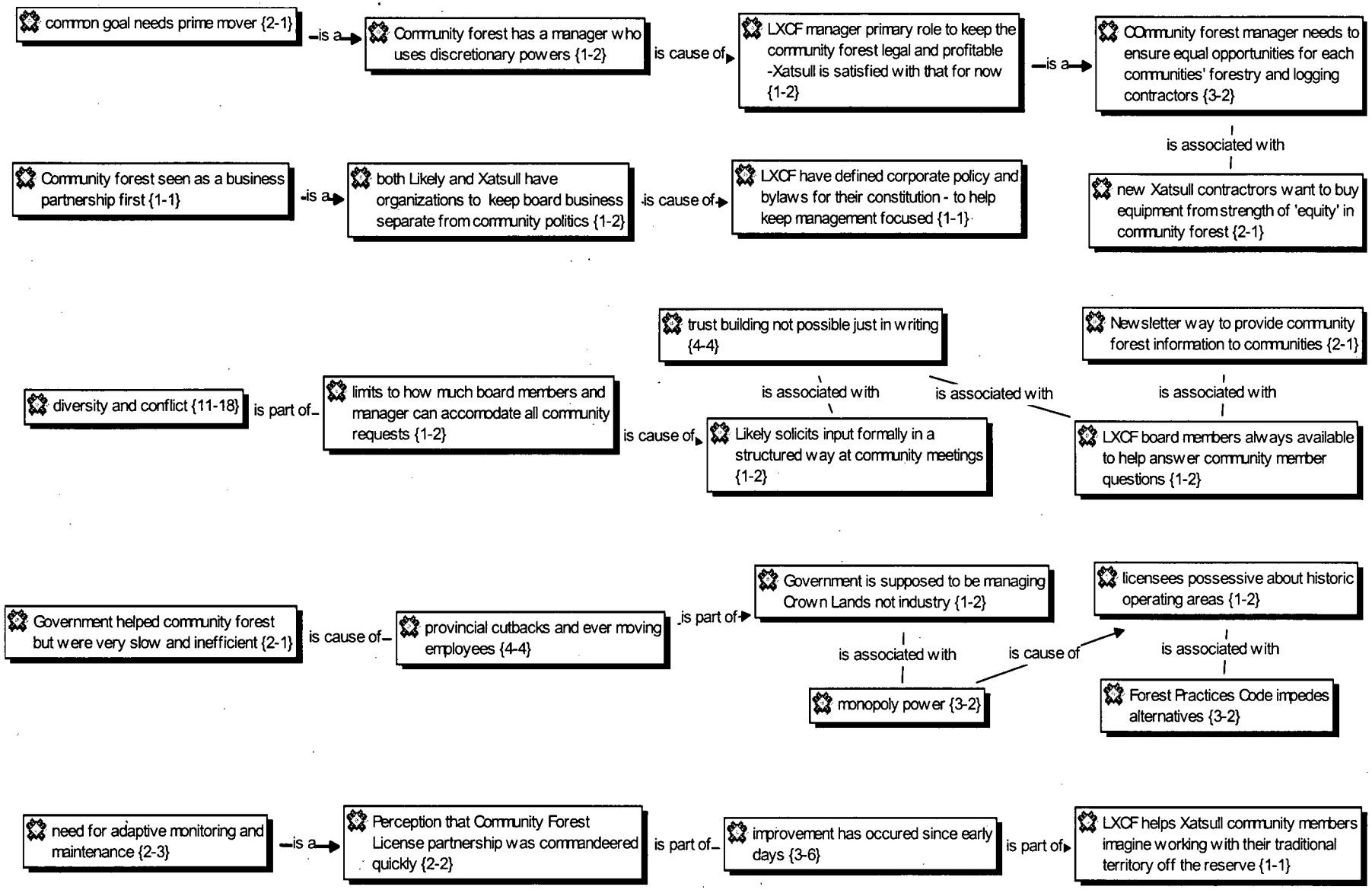
LXCF Process Strength: Trust-building



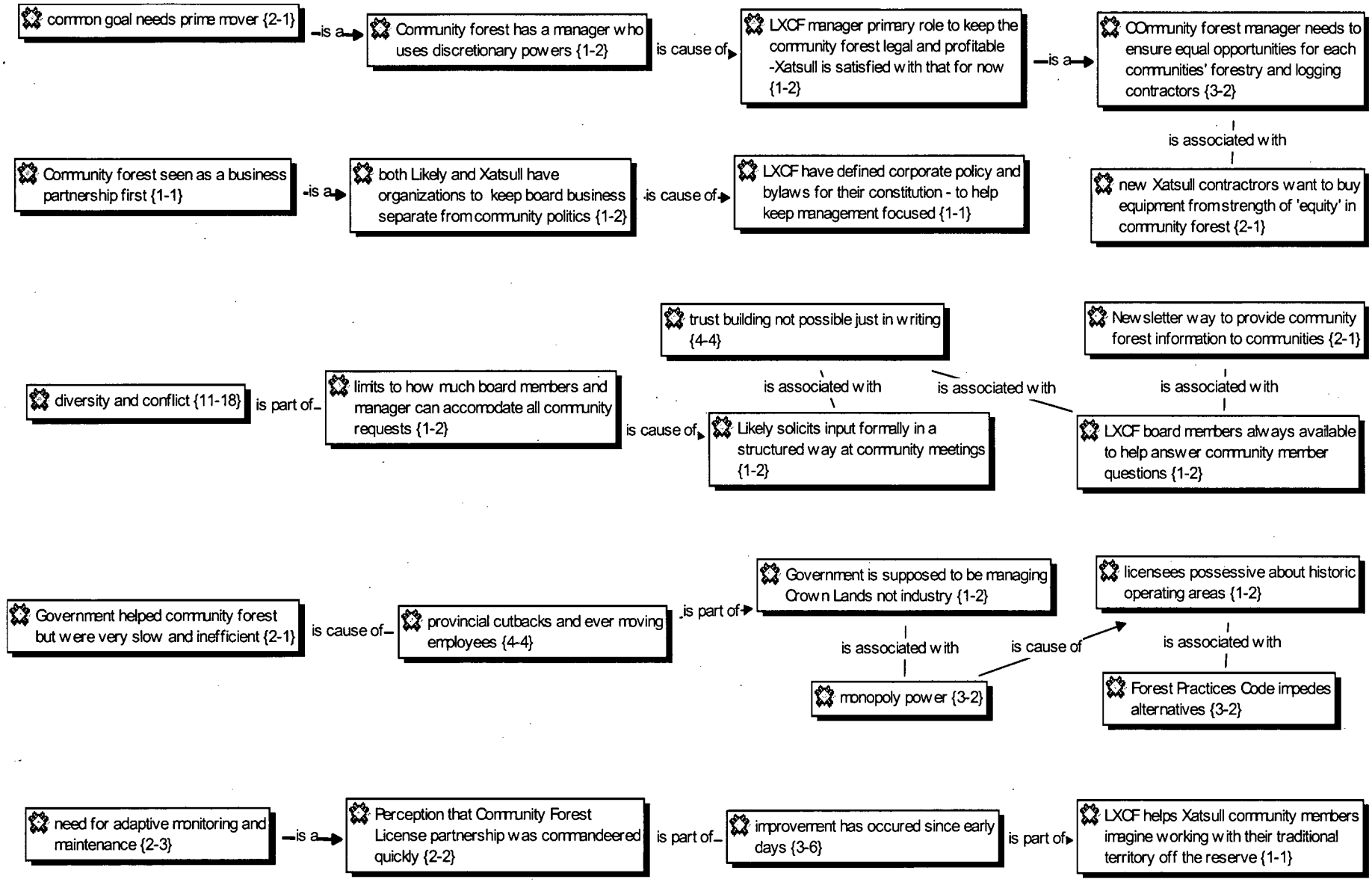
LXCF Process Tasks: Future



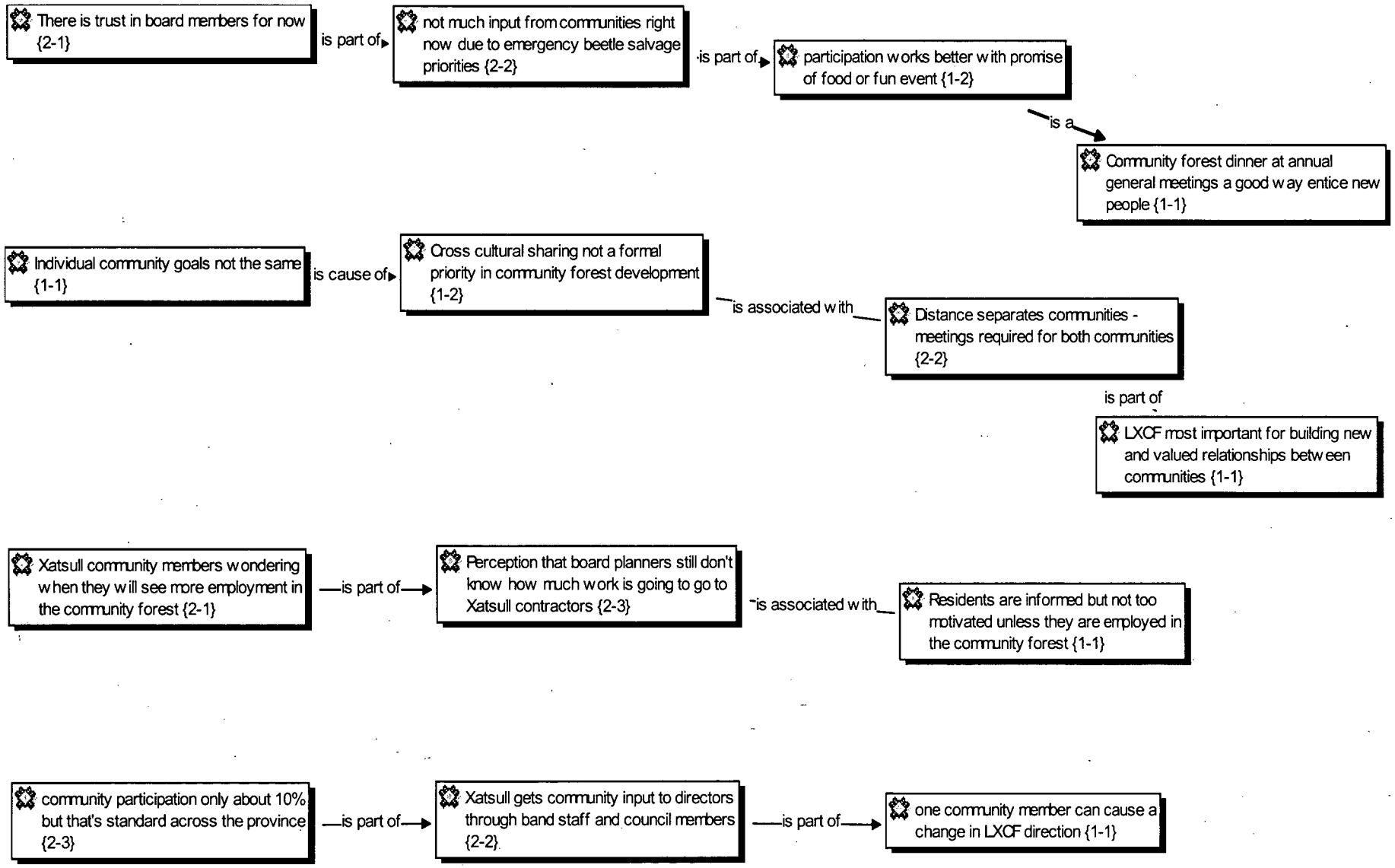
LXCF Process Tasks: Present



LXCF Operations: Business



LXCF Operations: Community



Project Research Design

HYPOTHESIS FOR AXIAL CODING: NStQ communities have traditional knowledge and information that can transform current approaches to forest management and thus improve co-management in their territories.

ASSUMPTIONS:

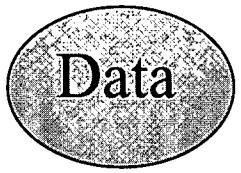
- transformation can put spoken discourse at the centre of planning.

- a 'new literacy' of the learning organization could be the 'fast track' to accomplish the transformation.

- the community would want to spend time and energy transforming formal forest management processes.

- the community has committed to long-term monitoring to ensure that changes are desired.

Note Pn = 50 theoretical codes



Data

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P3	—	P3
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12 Standards of Aboriginal Education (Hampton 1988)

Spirituality
Service
Diversity
Culture
Tradition
Respect
History
Relentlessness
Vitality
Conflict
Place
Transformation

Note dn = 933 substantive codes

5 Disciplines of Learning Organizations (Senge 1994)

Systems Thinking

Personal Mastery

Mental Models

Shared Visions

Team Learning

APPENDIX 3 Northern Secwepemc Area of Interest

Natural Resource and Land Management Interest (roughly in oval shape)

The Northern Secwepemc te Qelmucw represent four autonomous member First Nations. The four First Nations members are Tsq'escen'' (Canim Lake Band), Xats'ull.Cm'etem (Soda Ck./ Deep Ck Band), T'exelc (Williams Lake Band) and Stswecem'c/ Xgat'tem (Dog Ck/ Canoe Ck Band). The Alkali Lake Band (Esketemc) are a Secwepemc First Nation and are included in the Northern portion but are negotiating their treaty separately. The Northern Secwepemc First Nations' portion of the whole Secwepemc area of interest is about 5.6 million hectares in size. The map is not to scale and the boundaries only roughly indicate the Northern Secwepemc communities' traditional territories.

In their March 31st 2004 discussion paper entitled "NstQ Natural Resource and Land Management Interests Throughout Secwepemcul'ecw" the NstQ interests are outlined:

> "The Northern Secwepemc te Qelmucw are connected to our traditional territory, Secwepemcul'ecw. We view all of the resources, including the land, animals, plants, minerals, water and air as linked and of equal importance.
>
> Through treaty, the Northern Secwepemc te Qelmucw seek to continue and strengthen this connection to the land through a major role in natural resource and land management. *Without such a role, we cannot foresee reaching a treaty agreement.*
>
> The traditional role of the Northern Secwepemc te Qelmucw within Secwepemcul'ecw has been stewardship—actively protecting the resources for future generations of people, animals and plants. Our elders say, **"Ec k tslecekstemstpes re tmicwemp"** (*Take good care of your lands).* We continue to bear this responsibility.
>
> The NStQ are not prepared to bargain away our rights and responsibilities with respect to stewardship of the entire territory in exchange for treaty settlement lands. Our elders say, **"Wellenwi7kt ri7 me7 pellsqeqwlu`t ne tmicwkt"** (*We are the ones who will have the say regarding our land*).
>
> For several thousand years, Secwepemcul'ecw has sustained the Northern Secwepemc te Qelmucw and our culture. The NStQ expect Secwepemcul'ecw to continue to provide sustenance, as well as social, cultural and economic benefits to our communities.
>
> In summary, the two overarching interests of the NStQ in natural resource and land management can be summarized as:
> (1) Stewardship and protection, and
> (2) Social, cultural, economic and other benefits."[106]

The North Secwepemc te Qelmucw have been involved in the managing the local land and resources for thousands of years. In the past 200 years they have repeatedly requested to work with the government of BC and Canada to share resources fairly. They have been involved with the BC treaty process since 1993 and have developed a research organization since that time. For more than a decade the NstQ have been developing information to aid in planning their negotiation with BC and Canada:

> "We had to do at lot of research, and learn how to negotiate in this new process along the way. By 1997 we had agreed with Canada and BC on the topics of

[106] NstQ Treaty Society Comanagement Discussion Paper March 31, 2004 p1

negotiation and how we would negotiate. Court cases such as Delgamuukw had strengthened our position in treaty negotiations, and required the provincial government to consult with us over land and resource use, and to consider Aboriginal Title. This led to the beginnings of our Traditional Use Studies, where we developed maps and documents of our use, occupation and management of the land from the distant past to the present time.

The TUS work demonstrated our strong, lasting connection to the land, despite the challenges brought by Euro-Canadian settlement and the displacement we experienced, culturally and on the land. Since 1998, we have been working on an Agreement-In-Principle with Canada and BC. This document will clarify and define our rights to lands and resources, and self-government, within the region, the province and Canada.

Treaty rights, under the Canadian Constitution, will protect our rights to develop health, social development, education, and community justice systems that can respond to our specific needs and interests, to protect our language and culture, to manage and benefit from our own lands and resources, to participate in regional and provincial fish, wildlife, land, forestry and parks management, to function as an independent First Nations government, to develop relationships with all other levels of government, and to receive benefit from the use of our traditional lands and resources by others.

The NStQ view involvement as a government in natural resource and land management throughout Secwepemcul'ecw as a vital component of the treaty.

We look forward to working with B.C. and Canada in finding a mechanism which is effective in providing benefits for all the people of Secwepemcul'ecw, and protecting it for future generations.

Proposed Next Steps:

1. Parties to review existing co-management regimes;
2. NStQ to prepare "Principles Checklist";
3. BC to provide for NStQ involvement in Inter-agency Resource Management Committee and ad-hoc BCTNO committee on co-management.

APPENDIX 4:

The Research Questions:

The questions provided guidance for the interviews. One set of questions explored the theme of long-term co-management and the other set explored the theme of short-term co-management crises. Questioning was free-flowing drawing from both question sets when feasible. An interview priority was to structure dialogue as a conversation rather than as simply an interrogation based on question lists. In some cases, particularly with elders, substantive coding reflected new and rich categories of concept.
The practical problems of communication are acknowledged in the question set below that focuses on the co-management crises theme. These interview questions developing data on short term crises of co-management were based on the ideal "human-in ecosystem perspective" outlined in Davidson-Hunt and Berkes (2003). The question set for a long-term vision for co-management was developed primarily from a discussion paper on co-management by the NStQ (Appendix 3) and from readings from Ostrom (1990) and Pinkerton (1992).[107]

Questions focussing on Co-management Crises

The following questions helped to guide interviews with the natural resources workers from the four Northern Secwepemc communities. Participants were asked to describe properties of their high priority local co-management crisis:

i. In your experience of (the case study being discussed) how did the communities participate? Was widespread community participation welcomed and properly considered? What were the points of contact between the band government, tribal council, treaty team and with

[107] In the discussion paper in the Appendix the Secwepemc elders are clear in citing their continued sacred and ancestral responsibility to manage lands and resources in all their traditional territories to sustain all beings. One elder I interviewed was uncomfortable with the term "co-management" because it suggested two different paths of management. His point was that all must be managed holistically and that there cannot be two ways of managing when 'all is one'. Elinor Ostrom and Evelyn Pinkerton describe working models of co-management globally and knowledge of these models also helped guide the interview discussion about long term strategies for co-management.

government agencies, municipal and regional government, forest companies licensees schools colleges'? Did you notice during (the case study being discussed) whether there was any evidence of these groups growing to share new understandings (institution building)? When were these new understandings most likely to happen?

ii. Were the groups remaining separate in (the case study being discussed) or was there a sense of achieving a common goal? In the process do you think that participants knew enough of the same sense of the places, the animals and livelihoods being affected? Or was there a complete inability to communicate some things? Can you think of an example where there was an important movement of the group toward a new collective understanding?

iii. How well did the knowledge gained in (the case study being discussed) get through to the community overall? Were participants communicating the main ideas with the young people and with the elders? Did the main ideas of each meeting get communicated widely to people so that the broader community input could be well represented at the meetings? Do you think there will be a lasting memory of (the case study being discussed) in your community? What do you think will be remembered?

iv. Was there a good overall understanding of participants in (the case study being discussed) of the relationships between people involved in the process? For example, did participants make it clear who they were, who they represented, what their interests were, and how they thought they fit into the whole picture?

v. How much were people involved in mapping places (in the case study being discussed). Do you think there was not enough involvement in mapping, just right, or too much involvement in mapping?

vi. Do you think that the planners from government or companies (in the case study being discussed) emphasized good communications and an understanding of relationships between people- not enough, enough or too much?

vii. What do you think the planners from government or companies learned from (the case study being discussed) about talking and listening? Do you think that participants' talking and listening improved, stayed the same, or got worse during the process?

viii. What things triggered a significant change in the planning process?

ix. How can each of these communication skills for land planning best be taught and learned? How can they be continually improved?

x. Was there evidence of learning about NStQ interests in agencies (for example MoF MELP CRD) and among resource users? Was there a way for NStQ interests to be communicated at the table and also to higher-level government and company officials involved in the case study (cross scale learning)? Was there a way for the knowledge gained in this case study to inform and link upwards and downwards? For example, within the nested watersheds, was there any indication that new case study knowledge might apply to other places?

xi. How did the behavior of individual participants (in the case study being discussed) influence the outcome of the process? Do you think they represented their organizations well?

Questions focussing on long term co-management issues

The following questions were used to guide interviews that focussed on a strategic long-term conception for co-management:

xii. How do aboriginal communities participate in management of their forests?

xiii. How can the current level of comanagement be improved?

xiv. How much does a person's level of schooling affect their ability to participate in forest comanagement discussions?

xv. What types of forest comanagement issues are solved by conversation, local knowledge and public involvement?

xvi. Are printed words and maps useful in solving issues? Why, or why not?

xvii. What skills are important for management of forests by communities?

xviii. How can each of these skills best be taught and learned?

xix. How can forest management be continually improved?

xx. How can the respect and knowledge of continuous improvement in forest management be shared in the community?

xxi. How can this respect and knowledge be shared with representatives from agencies outside of the community?

As indicated earlier, the participant had control of the direction of the interview, however if there is a clear interest in short term communication crises during the interview then questions from the first set were emphasized. If a participant showed greater interest in the strategic level problem of co-management, then the second question set was emphasized. Always in every interview, the opportunity for participants to tell their story "the way they wanted it told" was respected. I found that the best baseline data was achieved from the most unlikely trains of thought. When people felt comfortable with the questioning process the most original and authentic information and insights were offered.

(Appendix 4 –cont'd)

The Advocacy/ Participatory Issue. How can a researcher legitimately speak for the NStQ?

1) The theoretical issue: How can I advocate for a community that as a whole does not seem to recognize me?

How can I advocate for a community if I am not sure that the community was completely in favour of the research project? The informal and formal permission for the research was given in the consent forms signed by the individuals interviewed. I also had consent and encouragement from treaty staff and natural resources workers to proceed with the research. But does that mean then that I then had permission from the whole community to observe co-managing process and to develop this research project? The effect of 150 years of social research done by researchers on the NStQ communities has produced little benefit to the NStQ. The communities have continued to suffer, and sometimes suffer even more because of research. How could I be sure that I was not simply carrying on in the same tradition as colonial researchers? The University of British Columbia ethics review committee for behavioural research only require that I received written and informed consent from individuals interviewed. There is no requirement by the UBC ethics committee that the community provide its formal consent to be researched. Written informed community consent is difficult to achieve prior to a study – since it is impossible to perceive what all the effects of a research project will be before it occurs. There are risks to the community when research is done- even when the researcher is well known in the communities. There would be enough complexity to justify another PhD just to sort out what these risks are.

Sometimes risks can be taken without complete knowledge, as long as respect and humility is shown and forgiveness asked when mistakes are made in the process of learning. I have lived and worked in the forests and lands of NStQ territories for nearly 20 years. I have made friends with elders and community workers. I was an employee of the Cariboo Tribal Council for 1 year and I have consulted on numerous projects with individuals from each of the NStQ communities. I met important individuals in the

community who reminded me that I do not have the community authority to do this research. That sobering fact is true. Perhaps the approval is emerging along with the grounded theory – but can I safely assume this? Although I have assurances from many influential individuals and organizations within the NStQ that this research is needed and valued, I have been unable to get a formal assurance from each of the communities involved in the case studies. I have discovered that this is not just a problem of developing consensus within band councils. I have been unsuccessful in my requests to try to work to this consensus. There is some concern in the communities that this research could be legally construed to be consultation between the Province and the NStQ and in some way prejudice negotiations in the treaty process.

I have learned from interviews with long-respected hunters and wildlife experts in the communities that they are faced with the same "consultation problem" when they present their observations or 'research findings' at meetings with Government. They must present a letter from their Band Council to co-management wildlife meetings to inform officials that their expert knowledge cannot be used in case this contribution prejudices treaty negotiations.[108] History shows that the NStQ leadership are not being overly cautious in this regard. Unfortunately there is a 'reasonable cause' for this formal legal intervention. Advocacy is difficult enough when one side is opposed to the message- but when both sides seem opposed it is very difficult. Although this problem is beyond the scope of this research, it is identified here. This would be a good area for future study and another grounded theory research project could provide useful results here. Recommendations to both the provincial government about their "without prejudice" clause in treaty negotiations along with recommendations to the University of British Columbia could be useful to other researchers and to First Nations communities. The Ethics Review Committee should develop an international research consent protocol that clearly respects the interests of First Nations when UBC researchers conduct research in their territories. Perhaps such a protocol could become a model and help future

[108] Phil Anderson, (pers.comm., hunter and research assistant, Canoe Creek). Of course the disclaimer letter is only a legal formality to indicate to provincial officials that the band is not happy to offer traditional knowledge at a high cost to the band and at no cost to the Province. The underlying reason why such a formal letter is necessary is a real stumbling block to building conviviality and to develop cross cultural adaptive learning organizations. If the government wants expert information and to work with first nations on an on-going basis they should have a proper protocol for this and also help finance the process.

researchers from other agencies develop agreements to do research at the community level. It would also help to ease the workload of indigenous community representatives who are continually asked for access to their communities apparently without regard for their necessary limitations in accommodating researchers.

2. The Substantive Issue: How will community advocacy help, even if the community does recognize me?

The substantive issue is the one that I sought to work on in the beginning of this research. That is, how are the Northern Secwepemc te Qelmucw continually resolving their co-management challenge? How is community advocacy and co-management participation with government going to result in acceptable co-management plans for the NStQ? By developing substantive information and categorizing and then finding out how categories are linked theoretically, we can discover specifically what works and what doesn't and why. Then we can be conceptually empowered to make specific recommendations. The research task in Glaser's words is "to fracture the story descriptively and then to put it back together conceptually". Conceptual empowerment for the NStQ and government to implement adaptive changes in their co-management communications should be the result of this research. When enough people understand an overall conception of the story, and when that conception is well grounded in data substantive participation and advocacy can occur.

Appendix 5

Research Ethics Approval

The University of British Columbia
Office of Research Services and Administration
Behavioural Research Ethics Board

Certificate of Approval

PRINCIPAL INVESTIGATOR	DEPARTMENT	NUMBER
Innes, J.L.	Forest Resources Mgt	B04-0631

INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT

CO-INVESTIGATORS:

Greskiw, Garth, Forest Resources Mgt

SPONSORING AGENCIES

TITLE:

Communication Styles for Sustainable Forest Management: Co-management Crises and Opportunities for Northern Secwepemc First Nations and the Province of British Columbia

APPROVAL RENEWED DATE	TERM (YEARS)	AMENDMENT:	AMENDMENT APPROVED:
SEP - 6 2005	1	September 2, 2005, Title	SEP - 6 2005

CERTIFICATION:

The protocol describing the above-named project has been reviewed by the Committee and the experimental procedures were found to be acceptable on ethical grounds for research involving human subjects..

Approval of the Behavioural Research Ethics Board by one of the following:
Dr. James Frankish, Chair,
Dr. Cay Holbrook, Associate Chair,
Dr. Susan Rowley, Associate Chair

This Certificate of Approval is valid for the above term provided there is no change in the experimental procedures

EPILOGUE:

In October 2004, I described the purpose of the study to the interviewees in the following words: "...the study is to find out how co-management can occur so that learning and continual adaptation to new knowledge (of forest management) is planned."[109] The obvious question now is "What have I learned from this whole learning process?" Based on this new knowledge what would I do differently in another study of cross-cultural communication involving First Nations? I have learned that planning is a socially and culturally constructed idea and First Nations have a different socially and culturally constructed idea of what 'planning is', or more sensibly, 'how planning must unfold'. Consequently, in future I suggest that projects such as this should be self-organizing from the First Nations groups to the University rather than from the University to the First Nations' groups. In this way the learning would be more integrated with the communities of interest and more self-directed by the participants. Since this work did not attract funding or overall NStQ endorsement I would have to conclude that it fails to 'practice what it preaches'.

Nevertheless I am still curious about how we will co-manage natural resources in British Columbia. I have tried to show that Traditional Ecological Knowledge not only presents a systemic way of conceptualizing planning but that it has as its essential vision the highest goal that planning can accomplish –healthy, sustainable communities and discursive democracy. Hopefully, by interacting and learning from the traditional knowledge of First Nations this potential can eventually be learned and shared among all communities.

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[109] "Consent to Participate in a Social Research Suvey (sic) letter is in Appendix 4.