ANCIENT VALUES, NEW TECHNOLOGY
Emerging Methods for Integrating Cultural Values in Forest Management

by

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Abstract

Although the planning techniques employed by foresters have grown increasingly sophisticated in recent years, the task of accommodating cultural values in resource management plans has become more, rather than less, problematic. This problem is particularly evident in resource management issues involving First Nation cultural values. In recent years, disputes over places such as Gustafsen Lake, Ipperwash, and Meares Island have found their way into the Canadian public’s consciousness. At the heart of these controversies, there have been complaints involving not only unceded territory, but also the greater issue of culturally significant lands.

Conflicts over culturally significant lands are so pervasive because resource management processes ignore cultural values often due to the fact that they are so difficult to incorporate within conventional modes of land management. This thesis reports on an initiative with the Cheam First Nation to explore their cultural perceptions of the land, and to identify the ways in which cultural uses of place are affected by resource management. In addition to documenting the land-based cultural values that involve identity in social groups, modes of material sustenance and spiritual activities, I have found that resource development activities contribute directly to the undermining of Native cultural values because they are so directly tied to the land and concepts of place. Moreover, I have made the unprecedented finding that effective cross-cultural communication between First Nations and resource managers can be impaired by placing land-use information in standard cartographic format. Three-dimensional visual models of the landscape are the most effective means of eliciting community reactions to management plans across several dimensions including cultural uses, aesthetics and spiritual values. In the concluding chapter, I have formulated a set of recommendations which posit that, if resource planning is to be functional in the realm of forest management and cultural preservation, then aboriginal communities that are affected by forestry decisions should possess an opportunity to participate in resource decision-making. However, to be effective, shared decision-making in forest management requires new and relatively untested tools for cross-cultural communication – e.g. a socio-cultural planning framework, landscape visualisation, etc. – that can facilitate the incorporation of cultural values into standard forest management methodologies.
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Chapter 1
Introduction & Overview

1. Cultural Narratives and Expressions of Sacredness

The creation stories of several cultures tell us where humanity comes from and why we are here. In the beginning, these stories say, there was water, and then there was sky and fire, there was Earth, and there was life. We humans crawled out of the womb of the planet, or were shaped out of clay and water, carved from twigs, compounded of seeds and ashes, or hatched from a celestial egg. One way or another, human beings were made from the sacred elements that compose the Earth. We are made from the Earth, we breathe it in with every breath we take, we drink from it and eat it, and we share the same spark that animates the whole planet. The stories of many traditional cultures tell us this, and so does the science of contemporary Western society.

According to creation narratives, human beings were made for a variety of purposes. We are commanded to be fruitful and multiply, like all other living things; to rejoice and give thanks to the Creator; to name and care for the wonders of creation, or simply give voice to them. Spider Woman in the Hopi story says to Sotuknang, the incarnate god:

As you have commanded me I have created these First People. They are fully and firmly formed; they are properly coloured; they have life; they have movement. But they cannot talk. That is the proper thing they lack. So I want you to give them speech. Also the wisdom and the power to reproduce, so that they may enjoy their life, and give thanks to the Creator (Sproul, 1979: 45).

Creation stories create, or recreate, the world that human beings live in, shape what we see and suggest the rules by which we should live. Unbelievably numerous and diverse, these tales of the beginning of everything are considered by the peoples that live by them the most sacred of all the stories, the origin of all the others (Swartz, 1996: 67). Stories help us to reconcile conflicts and contradictions and describe a coherent reality. They form a meaning that holds social groups together and express a set of beliefs; even in the scientific, skeptical world of Western culture, we live by myths so pervasive that they are believed to be reality.

In addition to telling humanity where we come from, creation stories also tell us that something went badly wrong, that we humans have been exiled from home (Swartz, 1996; Dudley, 1996). Many stories describe how we lost our place in the harmony of creation. Judeo-Christian narratives tell us that the first man and the first woman ate from the tree of knowledge of good and
evil, believing that it would make them godlike. The ancient Greeks tell how Prometheus stole the sacred fire that was reserved for the gods, and drew down punishment on men. Most belief systems include such stories, recounting how we disobeyed the gods, tricked them, and committed hubris. Acting differently from the rest of creation, separating ourselves from the divine will, humanity broke the harmony. We live in a world where things go wrong, where conflict and tragedy are common, where we are often lonely and confused, and our myths give us reason for this disorder.

However, what makes human beings so different from other creatures on Earth? Disobedience, quarrelsomeness, cruelty, greed—these are the faults that set humanity apart from the rest of nature. However, they may be the consequences of being conscious (Dudley, 1996: 76). Consciousness and its primary creation, culture, are the primary adaptive tools of the human species. Our large brain allows us to see patterns by discerning repetition, similarity and difference. From this we gain history and we gain foresight—we can plan. Because we can learn from experience, we can teach our children more than we knew when we were their age. We can adapt more rapidly than evolution will allow us, responding to threats by drawing on experience and deciding to alter the way we live.

But consciousness has its associated problems. Aware of time, people are aware of their origin and our fate, we know that eventually we will die. The awareness is always with us that the precious I, me, myself, the centre of each consciousness, will eventually disappear. As reflected in the transition of seasons, time in nature is cyclical or cumulative, whereas human time is linear. Because of this contradiction between the constant of renewal in nature and the finality of our own fate, we reach for something eternal, something absolute, the essence of self, the soul or spirit (Evernden, 1993: 54; Dudley, 1996; Suzuki, 1997). In the absence of water, air, energy, food, without other forms of life and other human beings, we die. However people are just as critically dependent on the idea of spirit. Without that we are truly destined to drown in time and change. Time and death threaten friends, family, and the joys and beauty of life, and we need spirit to heal that disconcerting knowledge.

“Spirit” is a powerful and mysterious word. It is the power of divine creation, moving over the waters, and it is divinity itself—the Great Spirit, the Holy Spirit. “Spirituality,” as many cultures
conceive it, is the apprehension of the sacred (Evernden, 1993: 5; Swartz, 1996). In a modern, post-industrial world, people in Western cultures tend to see matter and spirit as antithetical, but the stories of traditional cultures reveal a different understanding. They describe a world permeated by spirit, where matter and spirit are simply different aspects of a totality, and together they constitute "being." Most cultural traditions around the globe believe in and describe a power, which transcends human power, in life beyond death, which they characterize as spirit. Many of them describe an animated, inhabited, sacred world surrounding them, the natural world that constitutes reality (Bierwert, 1999: 69; Evernden, 1993; Kingsley, 1995; Swartz, 1996). These beliefs restore our sense of belonging, of being with, which is threatened by our dividing, conquering brain; they provide us with rules and rituals for restoring the harmony and reentering the world of which we are a part. The mythmaking of our mind, its ability to find coherence in chaos, to create meaning, may be our species' antidote to the risks of consciousness, a way of overcoming mortality.

2. Cultural Landscapes

Traditional cultures live in an animated landscape. Mountains, forests, rivers, lakes, winds and the sun all have their presiding deities, while each tree, stone and animal may have, or be, a spirit (Heaney, 1996: 23; Kingsley, 1995; Suzuki, 1997). Such world-views generally see all death, including that of humans, as simply one stage in the continuum of birth, life, death and rebirth that we see in nature. Human beings are included in the totality of creation, participating in various ways in the re-creative cycles of an animate Earth. Instead of being separated from the world because of our unique consciousness, humanity belongs to a conscious world in which everything interacts with everything else in a process of continual creation and sustenance. Contained within this world-view are the rituals that allow wrongs to be righted, spirits to be placated, and for the world to unfold as it ought. These rituals are the responsibility of the human part of creation, perhaps because we often trigger the disruptions.

The traditional world-view of aboriginal Australians is just one of innumerable examples of this kind of world-view (Birckhead, 1996; Kingsley, 1995). They live in an environment that is constantly created, partly through their own interactions with the land. The Ancestors sang the world into existence in the "Dream Time" and now, as ecologist David Kingsley describes, contemporary Aborigines "have the responsibility of perpetuating the sacred character of the land by re-creating it,
or remembering it," using the same songs handed down through the generations. An Aboriginal woman conceives a child when she passes a sacred part of the landscape and a spirit ancestor decides to enter her. The spirit grows to term and is born into the world as a human being. "That is, every human being is in some essential way a spirit of the land, a being who has an eternal, intimate connection with the land. He or she is an incarnate spirit of the land, living temporarily in human shape and form" (Kingsley, 1995: 63). To know that person's true identity, Aborigines have to discover from which sacred site the spirit ancestor originated:

A person is not simply the offspring of his or her physical parents. Each individual is primarily an incarnation of the land, a spirit being who belongs intimately and specifically to the local geography. Their beliefs concerning spirit impregnation are an unambiguous statement that human beings are rooted to the land and will become disoriented, suffer, and ultimately die if uprooted and transported outside the location of their birth (Kingsley, 1995: 34, emphasis added).

Similarly, the Coast Salish peoples of the Pacific Northwest live in a land that is full of spirit ancestors (Bierwert, 1999: 65; Suttles, 1987). A cultural anthropologist working with the Sto:lo people described her initial feelings of disbelief and confusion to an elder's personification of a prominent feature of the Sto:lo landscape. The ethnographer had inquired about spatial orientation in cultural practice, asking the elder if the mountains of the Fraser Valley were ever used as landmarks by Sto:lo ancestors. She explained that during her frequent travels through the valley she had noticed that the hooked peak of the highest mountain, Mount Cheam, looked dramatically different from one place to another. It occurred to her that the Sto:lo people may have used this particular feature on the landscape to spatially orient themselves. The elder's response, or rather her lack of acknowledgement, indicated that the anthropologist's idea was clearly that of a stranger to the Sto:lo landscape, someone who didn't know where she was:

She's a lady. Mount Cheam is a lady. And behind her are her children. That little one, it's the dog. That's what they say. The Indian name is Lhilheqey. That means like a lady. Lhilheqey – that's what they called her. The white people gave the name Mount Cheam. Cheam is from the Indian word. It means strawberries, wild strawberries, you know ... They grow on the island down there, right below the mountain. That's chee-am. The white people called it Mount Cheam (Bierwert, 1999: 63).

The English name for the mountain obscures the landmark's Native identity. Nevertheless, the mountain's significance is not forgotten by the Sto:lo people. Even with its English toponymy, Mount Cheam remains an important manifestation of Native identity (Bierwert, 1999: 63).
At first glance, it is easy for most of us to understand the personification of landscape features as imaginative renderings, a colourful play on words that builds on visual resemblances and fill them out with complex personalities and narratives. Most Euro-Canadians are familiar with landmark personifications, derived in large part from western literary traditions, such as the “old man in the mountain.” However, for most of us, the idea of a personified mountain seems to be an entirely unnatural concept. In fact, for those of us who have been reared within the Western scientific tradition it is often not clear where in the telling of these stories metaphor ends and personification begins, where personification is a figure of speech and where an actual figure in the world. For many anthropologists working within indigenous cultures, the challenge has often involved confronting the confines imposed by one’s own culture in order to be able to take seriously and, therefore, understand what other people say and know about their places.

3. Cultural Landscapes and the Potential for Misunderstanding

The basic lesson for Euro-Canadians should be clear. The lives of First Nation peoples are tied to the land upon which their tribal group exists or existed before contact (Deloria, 1973). The “story of the people” is based upon features across the landscape, which resonate with meaning and, in many instances, with life itself. First Nations typically exist as a full and complete people within the landscape of their oral traditions. Whether it is the Haudenosaunee (i.e. ‘Iroquois’) of eastern North America, or the Pueblos of the Southwest, each group relates to the specific and generalised landscape within each country as children upon Mother Earth (Tallbull, et al, 1996: 128; Martinez, 1998; Redmond, 1996; Storm, 1972). Tradition and spiritual practice are intimately tied to locations within each Nation’s home territory; a point which is not readily understood by most non-Natives who possess a relatively portable religion that can be practised anywhere on the Earth. It is precisely because living spirits or stories live within landscape features that the alteration or destruction of those features precludes use of the area for ceremony or teaching.

The potential for destruction and alteration of cultural landscapes is typically a function of misunderstanding. Without the teachings and cultural practices that fill out significance in aboriginal places, culturally significant settings in the First Nations landscape are susceptible to being misunderstood in three related and often very damaging ways. First, the narrative constructions of western literary traditions as well as those of popular culture threaten to provide substitute or
surrogate meanings for indigenous people to the extent that these would become exclusive interpretations, independent of what can be locally known (Redmond, 1996: 128). We can consider the possibility that there are figures in the landscape and that, if they were people, they could speak to those listening, making themselves known over time. We may or may not come to the conclusion that the mountains are people, but we may be better able to speak of their influence on the lives of the local culture. However, if we assume that the features and traditions that inhere in the landscape are only significant in terms of cultural construction, that they have no agency, then we will not hear them. If we fill them in light of our own cultural experience or through misappropriation from other cultural settings, we radically transform them.

The second difficulty centres on the relatively complicated definitions of exactly what First Nation people mean when they assert that the landscape has profound or ancient cultural significance. While public land managers are becoming increasingly aware of the culturally deep, land-based values, they are experiencing difficulty in fully understanding them and in designing and implementing actions to accommodate them (Nathan, 1993; Redmond, 1996; Stankey, 1992; 100; Willems-Braun, 1997). Herein lies the difficulty. While these values are extremely hard to define, legislation such as the Forest Practices Code mandates that all relevant values be explicitly incorporated into management planning (BCMOF, 1995b, 1999). Carrying out this and similar mandates is made all the more difficult when public land managers formulate planning decisions based on incorrect cultural premises which frequently lead to conflict and prolonged mistrust between public agencies and First Nation groups. One fundamental problem encountered when misunderstandings arise between Native and non-Native peoples is the assumption that in some way the world-views of both groups are essentially the same (Deloria, 1973; Martinez, 1998: 39). At the risk of gross oversimplification, the traditional First Nations world-view embraces the idea that all nature is sacred. Nature means everything dwelling on planet Earth – rocks, trees, humans, animals, birds, land, water – everything. In addition, everything has a right to live, and everything is animate. If, for some reason, the life of a creature must be taken, it is usually only taken after asking forgiveness (Halifax, 1979; Kehoe, 1981; Underhill, 1965). In general, the world-view of Euro-Canadians is that humans are superior creatures that alone have a God given “right to life.” All other
forms of life can be utilized for the benefit of humans without thought or ceremony. Landscapes that are called culturally significant or "sacred" by First Nations are viewed as wilderness, barren, or dead by non-Native land managers, and therefore as an exploitable resource (McCormack, 1998: 27).

A clear example of conflicting world-views occurred in 1992 during a meeting between a certain Plains First Nation and representatives of an agency of the U.S. government (Price, 1993). The First Nations tried to impress upon agency personnel, particularly the resource managers, that they needed to harvest live trees for upcoming ceremonies. They felt that their treaty rights were being violated once again because they were being compelled to obtain and pay for a permit to collect the live trees necessary for tipi lodge poles. In essence, these live poles were essential for the successful conduct of the ceremonies. From the land manager's perspective, however, the Natives could enter previously burned areas and collect as many lodge poles as they desired without need of a permit. However, nothing could be said by the Native Americans to convince the official that the lodge poles must unquestionably come from living trees. The manager's attitude continued to be that a lodge pole is a lodge pole. This misunderstanding was based almost entirely on a difference in world-views. For the non-Native resource manager, there was no valid or sensible difference between live or dead poles, especially if the poles were intended to be used merely as structural supports. In fact, the manager perceived significant advantages in utilising the dead trees in lieu of the live stems; less sap to get on oneself. From the perspective of the Natives, however, the tipi is a living and, therefore, sacred being whose presence is necessary for the proper conduct of the ceremony. The manager and her staff perceived this point as a minor issue and as such, for the First Nation participants, it was treated as a major insult.

Differing world-views is one level of misunderstanding between Native and non-Native peoples. However, the perception of Western land managers that they can intuit many of these ideas and world-view gaps provokes even greater misunderstandings (McCormack, 1998: 28; Redmond, 1996). This is due in part to the misconception that because some basic or superficial level of understanding is reached by the resource manager, that is all there is to understand. However, nothing could be further from the truth. The crucial point is that many Native peoples understand the depth and complexity of these world-views intuitively and from the oral traditions taught from early
childhood. For this reason, it is often extremely difficult for a First Nation person to explain fully the meaning of something. It frequently ends with an exasperated "But why can't you understand? I've just explained it!" In reality, they may have explained it as fully as possible, but only for another Native person because both are using the shorthand of understanding. They are dealing with the same world-view that begins their own understanding, a world-view which contains well understood, often tacit understandings; which rarely need to be articulated fully with other members of the same community. In other words, when there is a shared basis of apprehending the world between individuals of the same cultural group, there is no real need to explain one's value premises and assumptions. Putting these hidden assumptions into words can pose a serious challenge. It is exactly the same when someone of European heritage attempts to explain their picture of the world to a First Nations individual. Frequently the initial feeling on both sides is that an understanding has been reached only to discover in the future that next to nothing was actually understood (McCormack, 1998: 132).

4. Planning for Cultural Values: Research Objectives

In sum, if public land managers are to be responsive to the needs and values of indigenous cultures, they must work toward a fuller understanding of those needs and values. To gain that understanding, I have reviewed the relevant literature and asked several members of the Cheam First Nation to explain what these land-based cultural values mean to them. Having spent the last year working with the Cheam people, I have heard people say unequivocally, "this land is our home", "this land is sacred to our people", "this stream, this forest, this fish, this tree is essential to our way of life" (Cheam informants, personal communication). In the process a great deal has been learned, and it is with considerable enthusiasm that I share much of this knowledge, with the understanding that it is the result of a combination of personal experience coupled with a more formal type of ethnographic research that includes both qualitative and quantitative analysis. The philosophy that guided much of

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1 The Cheam people are one of several "Indian" bands that comprise a larger national entity known as the Sto:lo Nation. The Sto:lo have traditionally inhabited the lower stretches of the Fraser River from the Fraser Canyon above Yale to the Fraser River Delta, and are part of a larger ethno-linguistic group known as the Coast Salish. A geographic and cultural overview of the Sto:lo Nation is provided in Chapter 3 (Cultural and Historical Background). My rationale for working with the Cheam First Nation is provided in Chapter 4 (Research Design and Methodology I). In addition, pseudonyms or references to "informants" or "participants" are provided throughout the thesis to ensure the anonymity of the Cheam band members.
this research has been that most aspects of documenting and understanding cultural or spiritual values cannot be defined purely from a scientific standpoint. In essence, the crucial lesson that I have learned from the Cheam is that land-based cultural values are part of an interconnected whole and some aspects are therefore not reducible to quantification.

As a result of my efforts with the Cheam I have learned that this is an immensely abstract topic, one that reflects the moral and ethical aspects of land usage and the pervasive character of higher emotions, thoughts and feelings toward the land, nature and culture. At this level of abstraction, I am dealing with feelings, thoughts and values that are ethereal and intangible and, therefore, difficult to define and describe clearly. In addition, I have learned that true sensitisation to cultural values is made evident not in the questions that can be answered but in the questions that are asked and how we seek the answers. Thus, the basic research questions that guided this research consisted of – “What are land or land-based cultural values?” and “What do people mean by the assertion that land has profound cultural and spiritual significance to them and their communities?” The information that flowed from interviews and informal conversations in response to these questions was striking in terms of the diverse expressions of cultural attachment, and in the pervasive character of land-based culture within a First Nations community.

Flowing directly from these questions, the general objective of this research has been to explore cultural perceptions and definitions of the landscape as they are expressed by the Cheam people of the Sto:lo Nation. Many First Nations retain a “spatial conception” of the land in which places and their names, and all that these may symbolise, are accorded central importance. In essence, the past lies embedded in features of the Earth, in rivers and canyons, mountains and rocks which together animate the land with multiple layers of meaning that reach into their lives and shape the ways that First Nation people think (Deloria, 1973; Spencer, et al. 1977). Knowledge of place is therefore closely linked to knowledge of the self, to grasping one’s position in the greater scheme of things, including one’s own community, and to securing a confident sense of identity. That such a nexus between the land and its occupants exists is very clear from the ethnographic literature that documents the cultural expressions of place held by First Nations. The challenge in this context stems from the first objective of this thesis, which is:
1. To explore the cultural definitions of place as expressed by the people of Cheam.

With any sense of place the pivotal question here is not where it comes from, or even how it gets formed, but what, so to speak, is it made with? While describing a community's sense of place may prove troublesome and, ultimately, prone to misunderstanding as it crosses cultural boundaries, the elements that compose it can be selectively sampled and separately assessed. In its fullest manifestation, sense of place gives way to thoughts of membership and identity in social groups, of participation in activities that cut across the concerns of particular people to forge enduring social bonds, and close involvement with whole communities and their ancient rituals and spiritual traditions. Experienced in this way, as what Heaney (1980: 133) terms a "mode of communion with a total way of living," sense of place may gather to itself a potent spiritual or even religious force. Fuelled by expressions of inclusion, belonging and connectedness to the past, culturally significant places have the power to root individuals in the social and cultural soils from which they have sprung together, holding them there in the grip of a shared identity, a localised version of self.

For the First Nation communities that are working to preserve culturally important places, they are confronted with some formidable challenges. What remains of the cultural landscapes that are being used by aboriginal people in Canada and the United States is being threatened by resource development, extractive industries such as timber and mining, and by unbridled tourism and recreation use. Most of the culturally significant places that we hear about are situated on Crown lands, and thus the responsibility for these sites rests in the hands of public agencies and professional land managers, many of whom may not understand land-based cultural values or simply regard them as irrelevant to the technical or commercial interests of resource management (Cummings, 1998: 289; Hammond, 1996). Land-based cultural values often conflict with Western, non-aboriginal conceptions of the land which regard nature as a commodity, as a 'resource' that is devoid of culture and spiritual meaning, and for which we have designed laws to protect private ownership and exploitation (McCormack, 1998: 26). The second research objective is intended to address this conception of resource management as a technical and culturally neutral planning exercise, and demonstrate how activities such as forest management can affect or interfere with traditional conceptions and uses of the land:
2. To explore the connections between land management and culture and, in particular, to identify the ways in which cultural perceptions and uses of the land are affected by resource management activities.

In essence, land-based cultural values often spring from social or cultural structures that the typical resource manager, as a result of previous education, is often poorly prepared to comprehend. One technique that has been advanced in the landscape planning literature to develop sensitivity to unfamiliar cultural values is a simple "what if" (Ervin, 1992) exercise of the imagination, facilitated by a realistic model of the landscape under different land management scenarios. "What it might look like" analysis (Ervin, 1992; Duerden and Johnson, 1993) using realistic three-dimensional computer models has been employed to a very limited extent by resource managers with First Nations to assess the visual and cultural impacts of proposed management alternatives within a community's traditional territory (Duerden and Johnson, 1993). By presenting aboriginal communities with a range of landscape management scenarios in the form of realistic three-dimensional images, this technique is intended to depict the land as seen through the eyes of the affected community, to illustrate what a management proposal will look like on the ground, and help identify the culturally important sites and values that will be affected by the proposal. As Duerden and Johnson (1993) have found in their work with the Council of Yukon Indians, consulting with and developing an appreciation for the cultural perspectives of indigenous communities is essential to fair and inclusive land-use planning and, therefore, it is important that land-use information be presented in a form that the community can understand (Crerar, 1999; Duerden and Keller, 1992; Duerden, Kuhn and Black, 1996; Nantel, 1999).

Realistic, three-dimensional visual models of the landscape have been touted in the resource management literature as the best available means of eliciting community reactions to a management plan across several dimensions including aesthetic, cultural use and, potentially, spiritual values (Duerden and Johnson, 1993: 729; Crerar, 1999).

Despite the growing body of literature documenting the use of visualisation techniques in land-use planning and resource management, comparatively little has yet been done to assess the effectiveness of visual media – ranging from standard planimetric maps to three-dimensional simulations – to elicit responses from First Nation communities with unique and frequently misunderstood cultural perceptions of their landscape. The third objective of this thesis is an attempt
to begin filling this gap by systematically exploring the benefits and possible limitations of realistic 3D visualisation in eliciting cultural information relative to the standard two-dimensional maps that are typically employed by resource managers to consult with aboriginal communities. Ultimately, this research objective is intended to provide a case for the potential opportunities and limitations inherent in landscape visualisation as a consultation tool for resource managers in dialoguing with First Nation communities and understanding their unique land-based cultural values:

3. To explore the effectiveness of various data and landscape visualisation media as a means of eliciting land-based cultural values from the people of Cheam.

The final research objective stems from the concern that, once the forest manager has developed some basic understanding and appreciation for cultural concepts and uses of the land, that it is possible to accommodate the full range of interests and values in an effective decision-making process. Simon (1984) has criticised contemporary resource management for its preoccupation with technical and ecological analysis, and posits that the central question before resource managers is how to frame an approach to forest management that is both ecologically responsible (i.e. predicated on good science) and socially acceptable (i.e. commands the understanding and support of the community). Moreover, Simon and others (Martinez, 1996; Hammond and Judy, 1996; McCormack, 1998; Redmond, 1996; Tallbull, et al., 1996; Wolfe-Keddie, 1994, 1995) argue that the meanings attached to culturally significant or "special places" by First Nation communities may constitute the most significant attribute influencing decisions about acceptability. How esoteric cultural meanings are tapped and incorporated into resource management decisions represents a major challenge for most scientifically trained forest managers who have been educated to perceive the landscape within a relatively narrow spectrum of values – i.e. ecological, commercial, and/or recreational. Thus, the final objective of this thesis is slightly less abstract than the first three, and is intended to address some of the fundamental policy implications of cultural landscapes for BC forest management:

4. To discuss the implications of land-based cultural values for resource management in British Columbia and examine any barriers to the effective integration of cultural values in BC forest management.

One general caveat about the approach taken in this study deserves to be stated here. Given the highly abstract and complicated nature of land-based cultural values, it was felt that an
approach using visual media to elicit cultural information needed to be complemented by experiential and participatory modes of learning (Goulet, 1998: 28). In effect, a researcher needs to trust their own perceptions and observations and, with that objective in mind, get out of the laboratories and lecture theatres and observe community interactions with the land on a firsthand basis. As such, this research has also been informed to a considerable extent by interactions with the people of Cheam through extensive informal conversations and more formal meetings, and short-term residence on the Cheam reserve during the summer months of 1999. Experiential learning and planning takes considerable time, but without it, there is only the illusion of understanding culturally significant areas. Computer graphics and thick reports are useful, but distant. They are poor substitutes for being there, face-to-face with the real situation and the real people, learning to understand it and the people who care about it in all dimensions.

5. Organisation and Content of the Thesis

The body of this thesis is organised into the following sections including:

Chapter 2: A review of the literature that addresses ideas about nature and the human cultural and spiritual values that inhere in the landscape. The opening half of the chapter is intended to address the first objective of this thesis, which is to explore and develop some framework to understand the ways in which human societies establish a cultural relationship with their landscapes. These ideas will be explored from a variety of professional and academic viewpoints, and will draw largely upon examples from Sto:lo culture, other Native North American perspectives and, to a limited extent, from European cultures where relevant. The concepts addressed will include, but are not limited to anthropological definitions of culture, cultural perceptions of place, place as embedded knowledge, and work in nature as a place defining activity. Having explored how and why different cultures develop unique cultural relationships with their environment, the second half of the chapter will examine the various means through which traditional societies have expressed cultural interpretations of place using different visual media. The discussion will begin with a historical review of the use of cartography by different indigenous societies, and an exploration of recent landscape planning initiatives by First Nations and First Nation researchers using computerised mapping and/or landscape visualisation technologies.
Chapter 3: This chapter provides a relatively brief description of the historic and geographic context of the Cheam people. The basic objective of Chapter 3 is to provide the reader with a cultural and historic framework for the Cheam community in terms of the physical environment that they inhabit, the historic and political circumstances that have contributed to the present configuration of First Nation reserves in the Lower Mainland, and an exploration of the places that the Cheam and their Sto:lo neighbours continue to regard as culturally or spiritually significant. While this chapter is primarily descriptive in nature, it is also intended to provide a relatively substantial investigation of the history of European settlement in the Fraser Valley, and the consequences that are associated with changing land-uses for culturally significant places.

Chapter 4: This chapter describes the overall research strategy or methodology that was used in the thesis. A procedural account of the methods that were used for data collection and analysis is provided, accompanied by a theoretical rationale for each step taken. The chapter concludes with a description of the measures followed to ensure the validity and reliability of the findings, and how the ethical principles of social science research were followed.

Chapter 5: Beyond the interview questions and data collection protocols described in Chapter 4, this chapter is intended to document the use of visual imagery as the other key aspect of the data collection exercise. The first purpose of this chapter is to provide a brief conceptual background in the use of visual media (resource maps, landscape simulations, etc.) for planning practice and social science research. The second, more fundamental purpose is to provide a detailed account of the methods used to develop the visualisations and assumptions underlying the landscape management scenarios depicted in the simulations. In part, this is to ensure that nothing about the simulation planning process is hidden from scrutiny but, more importantly, to provide a theoretical justification for the techniques used, as well as an argument in support of the accuracy, credibility and clarity of the simulations.

Chapter 6: This chapter will describe the main study results, provide an analysis of interview transcripts and personal observations using insights gleaned from the literature review, observations from several “field visits” to the Cheam reserve, and conversations with key individuals within the community. The reflections of interview participants to a series of resource management scenarios
are presented along with evidence accumulated from a variety of sources (i.e. ethnographic accounts, archival records, newspaper articles, etc.) either to corroborate or shed additional light on observations drawn from the interview data.

Chapter 7: This chapter will conclude with a synthesis of the important insights that have been acquired throughout this research. Chapter 7 will begin by reintroducing the research questions and objectives that have guided this thesis, and present a number of the key findings that stem from the analysis presented in Chapter 6. The discussion will then provide a more "pragmatic" exploration of the implications of land-based cultural values for government agencies such as the B.C. Ministry of Forests, as well as examine possible barriers to the effective integration of cultural interests in forest management. The innovative experiments of a number of resource managers will be examined to provide some insight into how government agencies and First Nations can accommodate the more esoteric cultural interests of indigenous communities in resource management. The chapter will conclude with a consideration of the future of cultural resource management in British Columbia, as well as examine the research agenda and opportunities that result from this investigation.
Chapter 2
Literature Review

2.1 Introduction

While forest managers are becoming increasingly aware of land-based cultural values, they are experiencing some difficulty understanding them and in designing implementing actions to accommodate them. Herein lies the problem; while these values are extremely hard to define, legislation such as the Forest Practices Code mandates that all relevant cultural values be explicitly incorporated into management planning:

Aboriginal rights include fishing, hunting, gathering, trapping for food, the use of the land and resources for shelter, medicinal, spiritual and ceremonial purposes. Aboriginal rights must not be unjustifiably infringed upon by resource development activities of the Crown (BC Ministry of Forests, 1995, Forest Practices Code, Forest Development Plan Guidebook, s. 5)

Carrying out this and similar mandates is made all the more difficult because First Nations' cultural values and uses can conflict with the values underlying more typical or contemporary uses of crown forest lands (e.g. timber harvesting and, potentially, some forms of recreation). Working with Native and non-Native interests to sort out these competing values and turn conflict into a learning process that creates positive results is a daunting and largely uncharted management task. Nonetheless, if Crown lands are to be managed in the best interests of all, all values attendant to those lands – i.e. cultural, ecological and commercial – and their existence must be considered.

In sum, being responsive to the needs and values of a group that has historically been marginalised in resource management (Bobiwash, 1998) means that land managers must work to a fuller understanding of those needs and values. This chapter responds to that need by documenting the literature that addresses the land-based cultural values of the First Nations of North America, paying particular attention to the body of ethnographic research that relates to Sto:lo conceptions of place and environmental meaning. The attempt is to fill in some of the conceptual gaps that currently exist in the resource management literature between land as a place of commercial wealth and industry and land as a source of physical and spiritual sustenance, and a place in which to find expressions of cultural identity.

The objective of this chapter is to examine the cultural relationship of human beings with their landscape. The chapter is divided into four key sections: 2.2) the cultural significance of place, 2.3) place making and oral history, 2.4) landscape meaning through labour, and 2.5) place
images, mapping in indigenous cultures. The purpose of the first section is to explore anthropological definitions of culture and to investigate the ways in which place meaning is created through the cultural filters (i.e. values and norms) that a person or group brings to their environment. The remaining sections explore some of those cultural filters and examine the ways in which groups establish and communicate place meaning through their histories and graphic depictions of their environment.

2.2 The Cultural Significance of Place

2.2.1 Culture

For nearly a century, culture was primarily the preserve of anthropologists. Many readers have found their works to be fascinating reading and yet the application of their studies, which frequently took place in remote and exotic settings, seemed to have little direct bearing upon the problems of Western society. The writings of American anthropologist Edward T. Hall (1959, 1969, 1977, 1983) moved anthropology from the groves of academia to the boardrooms of multinational corporations. Hall revealed the hidden cultural dimensions that govern the way people conceptualise and organise their activities in space. Architects and interior designers found immediate applications for his theories in the design of modern offices, and corporations sent their executives to learn Hall's cultural theories of space and environment (which are discussed at some length in section 2.2.2) so that they could better deal with their increasingly international, multicultural clientele.

Planners and natural resource managers, for the most part, have failed to mine Hall's work. The disciplines of environmental planning and resource management have preferred to concern themselves with the more tangible and quantifiable effects of land-use plans and, therefore, have chosen to turn a blind eye to the "messy" social and cultural reality of their plans. Environmental perceptions and the cultural impacts of resource management proposals are seen to be simply a rather unfortunate element which cannot be ignored in the integrated or "comprehensive planning approach" (Simon, et al., 1984). Although it has not permeated the professional paradigms of planning and resource management, an active field of human/environment studies has developed in universities around the world. Knowledge drawn from a wide range of fields has been directed towards improving the understanding of people behaviour within natural settings in order to create healthier human environments (Simon, et al., 1984: 7; Steele, 1991). Despite considerable work in this field, no organising theory has emerged
which provides a synthesising structure for the information from the various environmental disciplines to be applied to planning and land management issues (Bechiel, 1977; Simon et al, 1984; Schauber, 2000).

Separated by half a generation and the longest undefended border in the world, the reasons Hall gave for non-anthropologists to be concerned with the "cultural dimension" of the environment remain valid for Canadian planners today:

Knowledge of the cultural dimension as a vast complex of communications on many levels would be virtually unnecessary if it were not for two things: our increasing involvements with peoples in all parts of the world, and the mixing of subcultures within our own country...

It is increasingly apparent that clashes between cultural systems are not restricted to international relations ... For, contrary to common belief, the many diverse groups that make up our country have proved to be surprisingly persistent in maintaining their separate identities. Superficially, these groups may all look alike and sound somewhat alike but beneath the surface there lies manifold unstated, unformulated differences in the structuring of time, space, materials, and relationships. It is these very things that, though they give significance to our lives, so often result in the distortion of meaning regardless of good intentions when people of different cultures interact (Hall, 1969: 5).

Culture is one of those popular, contemporary terms that is difficult to pin down and definition has evolved over the past century. It is therefore important to point out that the word 'culture' is used in this thesis in a much wider sense than in everyday speech. Typically, it simply conjures up the idea of refined manners and genteel ideas, fine art, music, literature and so on. In anthropology, these things are seen as no more than a specialised, if important, aspect of culture in general. All of the products of a particular way of life are included under this heading. However, culture refers not just to the material objects (tools, clothes, food, etc.) produced in any given society but also its system of beliefs and ideas, morals and customs.

Culture consists of the beliefs, behaviours, norms, attitudes, social arrangements, and forms of expression that form a describable pattern in the lives of members of a community (LeCompte and Schensul, 1999: 21).

By the mid twentieth century, "culture was conceived as learned, socially transmitted, symbolically based mechanism for survival, which like other phenomena in our universe, had order or pattern" (Gamst, 1954: 6). Today, as in other fields of academic inquiry, the ordering, patterning or system aspects are emphasised, "culture is a unit composed of interrelated parts which affect and are affected by one another" (Gamst, 1954: 6). The unique human ability to create symbols is seen as basic to the creation and perpetuation of culture.
Culture is not an individual trait. If what we observe is unique to an individual and is not repeated by others in similar settings, it is not culture. Although individuals can create cultural patterns by inventing them and communicating them with others, a cultural feature or element exists only when it is shared (Burrow, 1966; LeCompte and Schensul, 1999: 23; Lee and Newby, 1985). By definition, culture consists of group patterns of behaviour and belief that persist over time. Therefore, a group – or even a small subgroup – must adopt a behaviour or belief and practice it over time if it is to be defined as cultural rather than individual or personal. For example, during the 1980s, the insertion by a handful of adolescents of safety pins in their earlobes could be viewed as a personal form of mutilation until the use of safety pins and other hardware as jewellery became commonplace in the punk subcultures of Europe and North America.

Culture can also be treated as a mental phenomenon, that is, as consisting in what people know, believe, think, understand, feel, or mean about what they do. Goodenough's (1956) definition of culture as what we need to know to function as a member of a society is illustrated by the example of gifting in Native North American society. Many Native cultures practice gifting as a way of paying respect to spiritual healers and elders. The form of the gift varies from one culture to the next and may consist of tobacco, feathers, coins, shirts, or rifles; and is typically given in exchange for some service such as spiritual healing or story telling (Goulet, 1998: 88). The practice of gifting is so ingrained within some aboriginal cultures that failure to provide a gift is interpreted as a form of disrespect which may result in ostracism until the obligation has been fulfilled.

Culture can also be treated behaviourally in terms of what people actually do as opposed to what they say they do. Evelyn Jacob (1987) summarises the differences between these two approaches with the terms “patterns for behaviour” and “patterns of behaviour.” Patterns of behaviour represent behavioural variations or choices in the group; patterns for behaviour represent cultural expectations for behaviour. For example, ways of greeting people are strongly patterned by culture. Cultural patterns for behaviour dictate that in North American society, individuals meeting one another feel that they must extend their right hands to shake hands firmly in greeting. This pattern is so firmly ingrained as denoting cordiality that people feel compelled to apologise if their right hand is injured so that they must shake with their left hand, or not shake
hands at all. Children almost never shake hands, unless prompted by adults; and many immigrants, and Native North Americans do so uneasily because their own cultures either mandate different forms of greeting or, in fact, have mandates about not touching strangers.

Culture is not static, it is a constantly changing process, although change is slow since culture is essentially "dogmatic as to its contents and resentful of differences" (Kroeber and Kluckhohn, 1963). According to contemporary evolutionary thinking, cultural adaptation occurs in spurts as a response to changes in geographic environments or to the influences of neighbouring peoples, the introduction of new technologies, and so on. However, this process is usually one of slow change.

As life conditions change, traditional forms cease to provide a margin of satisfaction and are eliminated; new needs arise or are perceived, and new cultural adjustments are made to them (Murdock, 1940 from Kroeber and Kluckhohn, 1963: 168).

The imposition of change by outside agents can have destructive results (Shkilnyk, 1985). Cultural change is not, according to positivist anthropologists and sociologists, a linear development from primitive early religion, through metaphysics to science (Lee and Newby, 1985: 72). However, much of planning and design thought still suffers a conceptual hangover from positivist thinking which asserts that every culture outside of "Western civilisation" is more primitive or less highly developed (Beattie, 1966; Friedmann, 1989; Klohn and Olivares, 1975; Lang, 1990; Simon et al., 1984: 23) and "modernisation" must be the logical destination of all societies. Today, at least intellectually, most people acknowledge that the differences exhibited by non-western societies do not equate with being less highly developed. However, when confronted with actual cultural differences in a working situation there frequently is a strong tendency to try to coerce cultural conformity. In some instances, cultural differences are so basic that planners and land managers may not even be aware that differences can exist.

...fundamentals such as time concept, logical inference, or transcendental feelings ... are usually taken for granted (Klohn and Olivares, 1975: 105)

Lacking a theory that adequately explains the relationship between culture and environment, this thesis utilises a major theme approach. The major theme is that the relationship between people and their environment is transactional, that is, people bring values, attitudes and beliefs to their environment and it is through those cultural filters that a setting becomes imbued with place meaning (Steele, 1991: 9). In other words, the meaning of a place
can never really be described as simply a function of its physical attributes. Place experience must also take into consideration the attitudes, beliefs and expectations of those experiencing it.

For the purposes of the following discussion, I have focused on the human-environment literature that deals with cultural perceptions of the physical world. In particular, I have explored the literature which addresses how people identify themselves with places, call them home, and use them to find a sense of spiritual renewal, and provide a sense of security and identity for themselves and the group.

2.2.2 Cultural Uses and Perceptions of Space

Robert Ardrey (1966) provides a biological foundation for human as well as other animals' spatial behaviour. Ardrey viewed humanity's biological constitution as a driving force that is:

...essential to the existence of contemporary man ... I see it as a force shaping our lives in countless unexpected ways, threatening our existence only to the degree that we fail to understand it (Ardrey, 1966: 7).

Hall views culture as being "... bio-basic - rooted in biological activities and territoriality as a behaviour that preceded culture but later became elaborated by man into culture as we know it today" (1959: 44). "Space (or territoriality)", Hall says, "meshes very subtly with the rest of culture in many different ways" (1959: 51). Proxemics, as defined by Hall (1969), is the study of how people of different cultures arrange their world, and assign value to and measure the parts.

When representatives of different cultures unconsciously act according to their own cultural proxemic patterning, not only misunderstandings, but alienation can and do occur. Recognition that such wide differences exist among the proxemic patterns of various ethnic groups is a first step toward eliminating this kind of alienation (Hall, 1969: 2).

Different cultures perceive and organise their world according to different spatial patterns to the extent that:

...people from different cultures not only speak different languages but, what is possibly more important, inhabit different sensory worlds. Selective screening of sensory data admits some things while filtering out others, so that experience as it is perceived through one set of culturally patterned sensory screens is quite different from experience perceived through another (Hall, 1976: 2; emphasis added).

In effect, space perception is not only a matter of what can be perceived but what can be filtered out. People reared in different cultures learn as children, without ever knowing that they have done so, to screen out one type of information while paying close attention to another. Once set, these perceptual patterns apparently remain fairly stable throughout life (Hall, 1966: 102). As people travel abroad and examines the ways in which space is handled, surprising variations are
discovered, differences that we react to vigorously. Since none of us is taught to look at space as isolated from other associations, feelings cued by the handling of space are often attributed to something else. In growing up, people literally learn thousands of spatial cues, all of which have their own meaning in their own context. These cues release responses already established in much the same way as Pavlov's bells started his dogs salivating. The accuracy of spatial memory varies considerably from one person to the next. There are indications, however, that it is exceptionally persistent in all human beings.

For instance, whenever a North American moves overseas, he or she suffers from a condition known as "culture shock" (Burrow, 1966; Hall, 1959: 182). Culture shock is simply a removal or distortion of many of the familiar cues one encounters at home and the substitution for them of other cues which are unfamiliar. A good deal of what occurs in the organisation and use of space provides important leads as to the specific cues responsible for culture shock. For example, the Latin American house is often built around a patio that is next to the sidewalk but hidden from outsiders behind a wall. It is not easy to describe the degree to which small design differences such as these affect outsiders. Canadian and American visitors to Latin America often complain that they feel "left out" of the community, that they are "shut off." In the United States and Canada, however, propinquity is the basis of neighbourhood relationships. Being a neighbour endows you with certain rights and privileges, and also responsibilities. You can borrow things, including food and drink, but you must also take your neighbour to the hospital in an emergency. For these and other reasons, English North Americans try to pick their neighbourhood carefully, because they know they are going to be thrown into intimate contact with people. We do not understand why it is that when we live next to people abroad the sharing of adjacent space does not always conform to our own cultural pattern. In France, for instance, the relations between neighbours are apt to be cooler than in North America. Mere propinquity does not tie people together.

The whole point of this discussion is to underscore the notion that culture equips us with different value assumptions and expectations of the appropriate uses of space. In effect, human beings react to their environment according to the expectations and values which they inherit from their culture and bring to a setting. However, people are also active to the extent that they will purposefully seek or avoid certain locations that they believe to be dangerous or proscribed such
as deserts and sacred burial grounds. People also actively seek out places that they believe to be particularly desirable or auspicious such as Mount Olympus, Lourdes, and so on. What we bring to a setting and why we choose to seek or avoid particular places is often based on our understanding of the past and, in particular, the history of our culture (Basso, 1996; Kahn, 1999; Steele, 1991: 6). William Chapman (1979: 46) has written that, "the past is at its best when it takes us to places where we have been, that remind us of our connections to what happened here" (emphasis in original). Places such as Dunkirk, Wounded Knee and Gettysburg are much more than just geographic sites, they are imbued with symbolic power and, in some cases, have acquired an element of sacredness.

Places with cultural or sacred significance are often encountered in the landscape of the present as material objects, features and areas that make up the landscape of everyday life. Frequently, in our world of everyday current concerns and projects, historical places are not seen as reminders of the past. Instead, when they are seen at all, places are perceived in terms of their tangible, outward characteristics, as features, forms, colours, and textures. However, on occasion, we stumble across a familiar feature or landmark, and suddenly the landscape assumes an entirely different meaning. For example, Niels Bohr, the theoretical physicist of the early twentieth century, made the following remarks about Kronberg Castle in Bohr's native Denmark to the German mathematician Werner Heisenberg:

Isn't it strange how this castle changes as soon as one imagines that Hamlet lived here? As scientists we believe that a castle consists only of stones, and admire the way the architect put them together. The stone, the green roof with its patina, the wood carvings in the church, constitute the whole castle. None of this should be changed by the fact that Hamlet lived here, and yet it is changed completely. Suddenly the walls and ramparts speak a different language. The courtyard becomes an entire world, a dark corner reminds us of the darkness of the human soul, we hear Hamlet's "To be or not to be." ... everyone knows the questions Shakespeare had him ask, the human depths he was made to reveal, and so he too had to be found in a place on earth, here in Kronberg. And once we know that, Kronberg becomes quite a different castle for us (Bohr quoted in Basso, 1994: 5).

Thus, in an instant, the landscape of Denmark's past transforms and supplants the landscape of the present. That certain places prompt such transformations, evoking as they do entire worlds of cultural meaning is not, as Bohr observed, a small or uninteresting truth. Place making becomes a common response to typical human curiosities such as - What happened here? Who was involved? What was it like?
Long before the advent of literacy, places served humanity as durable symbols of distant people and events and as indispensable aids for remembering and imagining them. This convenient arrangement, ancient but not outmoded, is still with us today. In contemporary landscape settings, people continue to ask, "what happened here?" The answers that they provide should not be taken lightly, for what people make of their places is closely connected to the way people see themselves as members of a culture. Place making is not merely a way of constructing and narrating the past, a venerated means of doing human history, but it is also a way of constructing social traditions and in the process of forging social identities. Place making provides a sense of identity and a sense of security to individuals and groups. Places can serve as tangible symbols linking people to distant events, and when these symbols are shared, they link people to one another to forge a common identity (Bierwert, 1999: 68; Marshall, 1999; Mohs, 1987). In this manner, places provide a sense of security, a feeling that we have a home or have a home that we can go back to. It is when our landscapes acquire this level of symbolic power that they then assume a level of sacredness – places become a source of meaning and identity, and therefore constitute being (Steele, 1991: 8).

The cultural value of landscape is widely discerned but only loosely understood. Place making is a form of cultural activity and as such, as many anthropologists will attest, it can be grasped only in relation to the values and behaviours with which place making is accomplished. As a human value, sacredness is subjective and intangible, becoming objective and observable only through its tangible expression as apprehensible forms of culture – histories and traditions, human behaviour, and works of art (Boden, 1992; Finnegan, 1992; Kahn, 1999; Steele, 1991: 9). Beginning with the first of these cultural forms, the following discussion explores the oral history of the Sto:lo people and illustrates the way in which history invests a setting with meaning, and forges a link between people and environment. In part, this discussion is intended to illustrate how a cultural group uses its own sense of history to colour the landscape of the Fraser Valley with meaning. In the process of asking "what happened here?" the Sto:lo have not only crafted for themselves a sense of group identity and belonging to their landscape, but they have also transformed their environment into a repository of social and moral knowledge. In effect, the Fraser Valley is a sacred, living chronicle of the Sto:lo people through which they can not only find
a link with people and events of the past, but which also provides moral guidance for living in the present.

2.3 Place Making and Oral History: Sto:lo Conceptions of Place Meaning

2.3.1 Xa:ls and the Moral Landscape of the Fraser Valley

To First Nations people, the natural world is imprinted with memories from the ancient past, far off memories of events the power of which, having seemingly charged the landscape, are recalled by those with the ability to see. For instance, in the natural landscape of the Fraser Valley can be found impressive stone monoliths, massive boulders set upon the mountain tops or scattered near the high water mark of the river. Just as ancient stone monoliths of other cultures are associated with some of mankind’s earliest stories, similar rock monuments that record memories from the distant past also inhabit the world of the Sto:lo people.

In ancient times, before the advent of the written word, cultures often preserved their memories by attaching them to singular benchmarks found in their local environment (Basso, 1984; Bierwert, 1999; Marshall, 1999: 3; Mohs, 1987). A large pinnacle of rock might record the site of an important battle between old foes. A narrow canyon might recall the presence of a supernatural event. And several stone monuments, such as the prominent boulders that occupy the natural landscape, are often the very points where human lives had been touched and transformed by the spirits that created them. Just as First Nation people have inhabited their landscapes since ‘time immemorial,’ so to have the ancient signposts of their cultures which have lasted for millennia. Long before history books were ever created, the natural world was like a book in itself, which could be read and reread by successive generations. In oral-based cultures such as the Sto:lo people they can walk the landscape and literally watch history unfold (Bierwert, 1999; Marshall, 1999: 47; Mohs, 1987, 1992). Each and every stone marker tells a story, and with every story, a past is preserved and relived in the present.

For instance, in the Sto:lo creation story and in other teachings, Xa:ls the Transformer (pronounced with an aspirated H and ends like the English word “walls”) is an agent sent by the Creator to make changes in the human world (Boas, 1895; Carlson, 1999; Duff, 1952; Jenness, 1934, 1955; Marshall, 1999; Mohs, 1987; Suttles, 1987). Xa:ls only appears in the oral traditions of the Coast Salish people, and his purpose is very different from the tricksters (e.g. mink) and founding ancestors who are responsible for many of the changes in the Sto:lo landscape. In contrast to a trickster, Xa:ls is a deeply moral character with a singular purpose that comes from
the Creator (in Halkomelem, Chichelh Siya:m). Unlike the first ancestors of the Sto:lo people, Xa:Is leaves no descendants, only a landscape that is replete with moral lessons. In general, Xa:Is is described as someone possessing a deep concern for human welfare, who travelled the world generations prior to European contact with North America and judged its people according to a strict moral code, rewarding the good and punishing the wicked (Marshall, 1999; Suttles, 1987: 109). By transforming dangerous monsters, supernatural beings, and immoral people into rocks and animals, Xa:Is placed things in a new and more peaceable order for the Sto:lo peoples of the present age. In addition, he has bequeathed to succeeding generations a rich historical record that is inscribed in the landscape. In this way, the indigenous people of the Fraser Valley are able to ask “what happened here?” and, in so doing, find an ancient cultural heritage that affirms their identity as Sto:lo (literally translated as People of the River).

The full chronicle of Xa:Is’ travels makes its first appearance in the Western academic literature in the mid-1950s when a Sto:lo elder named Thalhecten and called Old Pierre recounted a story of Xa:Is that is perhaps the longest account to have been told in the Halkomelem language (Jenness, 1955). Old Pierre’s son translated his words into English for ethnographer Diamond Jenness, who transcribed the narrative and published it as “The Faith of a Coast Salish Indian.” The work is a lengthy account of Sto:lo origins, and Xa:Is’ journeys from Vancouver Island to the Fraser Canyon comprise nearly a third of the story. Old Pierre also provided extensive ethnographic documentation for Jenness, including place names, history, and a detailing of aboriginal cultural practices.

Old Pierre begins his story with a description of the setting. The place in which Old Pierre opens his story is the Fraser Valley, which he describes as a bountiful food bowl:

In earlier times this Fraser River resembled an enormous dish that stored up food for all mankind (Jenness, 1955: 10).

The world begins as a bountiful place and, with this established, Old Pierre begins the first half of the narrative by describing how two principal human beings, made directly by God, continue the work of creation. All the landmarks, birds and animals, and supernatural beings are created by these agents. The most elaborate work is done by the leader Swaniset, who was told to “finish the work” of giving form to the land and waterways, and to provide food for the people that inhabit the landscape. The second main part of Pierre’s story are the Xa:Is episodes, which begin as a sequel to Swaniset with some interesting shifts in perspective:
A rumour now reached the Indians on the Lower Fraser that three brothers, accompanied by twelve servants, were coming from the west to finish Swanset's [sic] work. Anxiously the Indians waited (Jenness, 1955: 34).

Old Pierre says that God created Xa:ls, and that he is a human being, but that he is also "a being of marvellous power ... who could transport [himself] wherever he wished by his mere thought" (Jenness, 1955: 35). Unlike Swaniset, the place of Xa:ls' origins is unknown and he moves through the landscape transforming it and the people that he encounters, with no enduring social connections. By the end of his travels, somewhere in the Fraser Canyon, Old Pierre states that Xa:ls:

...had sorted out the good from the bad and made the world a better home for man (Jenness, 1955: 34).

In order to understand the cultural meaning of the Sto:lo landscape, we must look more closely at the part of Old Pierre's teachings where Xa:ls transforms the landscape of the Fraser Valley. Xa:ls' moral transformation of the world comes through a simple sifting of character as he travels through the Sto:lo homeland. Often a character's own actions will provide the basis for the transformation. For instance, in Xa:ls' first encounter with people, he addresses a man and his wife who are sitting on a beach. According to Jenness, there is some hint that they are waiting for Xa:ls, but Old Pierre does not fully explain their purpose. Without any clear justification on his part, Xa:ls sweeps "his right hand upward, restoring their souls to the Lord Above and changing their bodies to stone" (Jenness, 1955: 19). It appears that the people have been condemned, but if they are recipients of Xa:ls' judgement, it is not clear from the narrative. According to Old Pierre, Xa:ls' purpose was to turn the old couple into a stone talisman

You shall help the people who come hereafter. If they speak fair words to you, you shall grant them fine weather (Jenness, 1955: 42).

In essence, Xa:ls' transfiguration of the couple is intended to be a reminder that prayer is the source of good things for people.

In Xa:ls' next encounter, he addresses a woman who is reputed for her intense greed, for never sharing her clams. When Xa:ls asks what she is doing:

she answered sharply, 'I am cooking clams for myself.' 'Then you shall dwell among the clam beds forever,' he decreed and, raising his right hand, he transformed her to stone (Jenness, 1955: 47).

The moral judgement that is cast is more transparent. According to Old Pierre, the stone that Xa:ls created is sacred to the Sto:lo because it is a tangible reminder of Xa:ls' passage through
the valley, and because the woman's flawed character had consigned her to permanent condemnation (Jenness, 1955: 47). Two transformer sites in Sto:lo territory – Th’exelis and Xa:ytem – are among the most noted and venerated transformer sites among contemporary Sto:lo people (Mohs, 1987: 91). Located in the Fraser Canyon near Yale, the principal feature at Th’exelis is a number of shallow grooves in a bedrock exposure 15 metres above the Fraser River. Altogether, there are 35 such grooves, the largest of which measures 20 centimetres in length. Both the Sto:lo and their Nlaka’pamux (Thompson) neighbours have legends associated with Th’exelis. According to Sto:lo teachings, Xa:ls arrived at the mouth of the canyon near the completion of his time on earth. Here he met a formidable opponent, Kwiyaxtel, a powerful medicine man from a village near the present day Spuzzum who questioned Xa:ls' power and authority and challenged him to a duel. In the course of their duel, Xa:ls sat at Th’exelis (literally “gritting his teeth”) and Kwiyaxtel on the opposite side of the river at Xelhalh (meaning "injured person"). In the battle that followed, each attempted to transform the other by various means. By gritting his teeth, Xa:ls proceeded to scratch the rock upon which he was sitting with his thumbnail and with each scratch he weakened his opponent. Ultimately, Kwiyaxtel was defeated and transformed into stone by Xa:ls. The permanence of such stories confirm the importance of Th’exelis to contemporary Sto:lo belief systems. In effect, Th’exelis is where Xa:ls left his mark on earth so that future generations would remember his passing. Th’exelis is an affirmation of Sto:lo spirituality and figurative representation in the landscape prior to the arrival of Europeans. A Sto:lo informant to anthropologist Gordon Mohs affirmed the importance of Th’exelis in establishing continuity with the past:

When my grandfather used to go up there fishing he'd take me over there and when I turned 13 — I think this was another training that young people go through — if you want to be strong, you sit there at 13. So I sat there and put my feet where his [Xa:ls] was. Mind you, it makes you quiver to sit there. 'Cause maybe the powers are there of Christ [Xa:ls] himself... (Sto:lo informant in Mohs, 1992: 195)

Perhaps the most widely recognisable transformer site in the Fraser Valley is a large boulder located near Mission and known by the Sto:lo people as Xa:ytem (Figure 2.1, following page). The following is the teaching related to the site as related by Sto:lo elder Bertha Peters:

A person from Chilliwack Landing told me this story: The Great Spirit [Xa:ls] travelled the land, sort of like Jesus, and he taught these three siya:m [elders] how to write their language. And they were supposed to teach everyone how to write their language but they didn't. So they were heaped into a pile and turned to stone. Because they were supposed to teach the language to everyone, and
because they didn't, people from all different lands will come and take all the knowledge from the people. Because they wouldn't learn to write they lost that knowledge (Bertha Peters in Carlson, 1997:187)

There is nothing forgiving about Xa:ls. People with flawed characters are punished with a gesture and words that transform them. The people he changes become gifts to those who are left including, in some cases, animals as food for future human generations. He suggests a continued presence, even though he will not be there in his person. As a benefactor, he is remote, providing both bountiful resources and a landscape that is rich in moral lessons. In effect, the connections between these remote figures of the past and the present are secured by these stories. By adding references to immediate and tangible landmarks, people like Old Pierre and contemporary Sto:lo make places stand out more vibrantly, shifting the persons transformed by Xa:ls from landmarks to living people once again.

Figure 2.1: Xa:ytem Rock, Mission, BC

Photograph by author.

2.3.2 Inscribed Meanings: Possible Implications

Xa:ls was a scribe, and the landscape of the Fraser Valley was the archive of his work. In Halkomelem, Xa:ls is named for his inscriptions upon the landscape. The root word xal refers to inscription in its broadest meaning (Marshall, 1999: 47). The name Xa:ls translates as "his mark," the trace of his presence, his record. The Halkomelem word is used to describe not only the graphic inscriptions and visual designs of indigenous cultures, but all kinds of graphic artefacts, including visual images and writing. The landmarks that Xa:ls created are therefore marks made in this world, marks that were created in the same sense as any other graphic inscription and
intended for the same purpose, to communicate. Xa:ls' stories are therefore embedded or inscribed in the land, referring to and from it.

A problem that I will explore in greater depth in Chapters 3 and 6 is that, as with any other inscription, Xa:ls' archive can be damaged and destroyed, thereby compromising the ability of the Sto:lo people to read his work. As modern development continues to spread out over the landscape, the natural world is further transformed into a massive network of roads, bridges, railways, towns, clearcuts, and endless suburban housing, all of which have, and continue to have, a most destructive effect on these signposts of the natural world. To destroy the ancient markers of the Sto:lo world is to essentially destroy the history of a rich and lasting culture. Contemporary Western society has systematically reduced and preserved the memories of its culture within the pages of leather bound volumes that have remained on library shelves to avoid inconveniencing the rapid pace of "progress." For the Sto:lo people though, their book remains in the very places that they have occupied and used for millennia. This ancient book, however, has been lent to a careless reader who has, at time, damaged it beyond the point of repair. To inadvertently damage or obliterate these ancient markers is to erase the past and deny one of the oldest cultures in the Pacific Northwest its cultural heritage.

2.4 Place Meaning through Labour

The act of reading cultural meaning from the landscape described in the preceding section implies a relatively detached and passive relationship to the natural world. We come to a place or feature on the landscape, gaze upon it, and reflect on what may have happened within that setting or who may have passed through there. We may recall a story or teaching which resonates with who we are as individuals or as a society thereby giving the setting a sense of meaning, place and, in some instances, sacredness. However, sometimes we find meaning through what we actively do in the landscape and from the ways in which we work with our environment. My objective in this section is to explore the connections that exist between people and place through the activity of work. There are several possible land-based activities that serve as a basis from which expressions of place meaning may arise including recreation, worship and ceremony, artistic expression, and so on. However, I have chosen labour as the focus of my discussion because it is perhaps the most visible and documented aspect of the relationship that First Nation cultures retain with the land (Booth and Jacobs, 1990; Cronon, 1994; Martinez, 1998; Pinkham, 1996; White, 1996: 175; Willems-Braun, 1996). My argument will be that a connection
with the land through work creates knowledge, and that the transmission of such knowledge within families and across generations sustains important social networks. In effect, the productive use of the land through work becomes a cultural activity, and becomes the basis for assertions that the landscape possesses meaning because it is “part of us” (Darryl [Cheam informant], personal communication).

2.4.1 Work as a Place Making Activity

There is no avoiding the question of work and nature. Most people spend their lives engaged in some form of productive work activity, and centuries of human labour have left deep, indelible marks on the landscape. In both the old world and the new, herders, farmers, hunters and labourers have deeply influenced the natural world, such that virtually no place is without evidence of its alteration by human labour. Work that has changed the land has simultaneously produced much of what we know about our landscape (White, 1996: 171). Humans have come to know nature by digging in the earth, planting seeds, and harvesting fruits and plants. We have come to know distance and the various forms of landscape because of the physical energy that we expend moving through space. Our ancestors have tugged, pulled, carried, and walked, or they have harnessed the energy of animals, water, and wind to perform tasks for them. In essence, working with the land achieves a full bodily knowledge of the natural world (White, 1996: 172).

Our urbanised society lacks an adequate understanding of this work. However, examples of human knowledge of nature gained through labour are readily apparent if we look. For millennia humans have known animals largely through their work. Work gave the people who trained and worked with animals a particular knowledge of them. Albert Drinkwater, a retired B.C. logger explains:

There is something about a horse that isn’t an engine you know. A horse won’t work for everybody the same. He’ll work for one man and he’ll pretend to pull for the other one. The horses themselves became ... part of the man that drove them (Dietrich, 1992: 39).

This is a knowledge that we possess because we have bodies with which to work. Through our bodies and our senses we encounter not ideas of the world but other bodies. We confront the intractable reality of the world itself. To know a horse through work is to know that for all the
general knowledge of horses you may have, what also matters is the knowledge of this particular animal at this particular time.

John Berger through his essays in Pig Earth, presents examples of "peasant knowledge" where in rural communities "working is a way of preserving knowledge" (1979: 11). For instance, Jacobo Romero was a farmer in the Sangre de Cristo Mountains of New Mexico. Along with the Rio de las Trampas, a small river that is nothing more than a stream, he is the central figure in William deBuys and Alex Harris’s work River of Traps (1985). Romero knew his landscape though his work. Like Berger’s peasants, “inexhaustibly committed to wrestling life from the earth,” he had become so wedded to a particular place that to move him would have been to change who and what he was (deBuys and Harris, 1985: 23). He worked his land along the river, and his work yielded both physical sustenance and a body of knowledge that could be passed on to his children, grandchildren, and so on. How one works, how one yields a hoe, handles a horse, or sets a fishing net creates both a bodily knowledge and a social knowledge, part of what Pierre Bourdieu calls habitus (1977: 78). Such knowledge is connected with physical, bodily experience, but it is not solely or even directly connected with physical experience. Working can also communicate a history of past work, of past trials and successes, which is turned into bodily practice until it seems like second nature. Often referred to as traditional knowledge, this habitus or bodily knowledge is unconsciously observed, imitated, adopted and passed on in a given community. Our labour and the productive uses to which we put the land both create and reinforce these cultural connections.

Thus, people who work and live from the land possess a reciprocal relationship with their environment to the extent that they bring their labour and the accumulated knowledge of how to work the land in order to derive a material or subsistence livelihood from it (Berger, 1979; deBuys and Harris, 1985; Steele, 1991: 7; White, 1996). Moreover, the knowledge that is received from ancestors of past trials and successes, and which is in turn granted to the children who will inherit the land, forges deep and permanent social bonds within land-based societies (White, 1996: 181). That the land is the source of such material and social abundance means that, for people like Jacobo Romero, his land is much more than an accumulation of physical resources, it is a place of profound personal and social meaning. In essence it is a place that provides for him and sustains his family, and it is the milieu in which children acquire the accumulated wisdom of their
parents and ancestors. As inhabitants of the land, Romero and his family are inhabited by it as well. This reciprocal or transactive relationship in which people invest themselves in their environment, while incorporating the meaning that they derive from it into their existence, is a crucial foundation upon which traditional land-based societies express their cultural interest in the land and natural resources.

The practice of river fishing by the Sto:lo people is one example of work in nature as a form of cultural practice that cultivates sociality among community and family and, in turn, unites people and place (Bierwert, 1999: 48; Carlson, 1999; Crey, 1997; Suttles, 1987). Fishing in Sto:lo communities is a labour intensive, family-based enterprise, that involves intense periods of work interspersed throughout long stretches of attention to the details needed for those moments of work - e.g. hauling nets alternates with cutting fish during a fishing opening, mending nets, tuning outboard motors, and setting nets in the river. On the reserve, women tend to the gear that is needed for camp, and men hang nets in their backyards and work with their sons to mend tears. However, in spite of its laborious and sometimes mundane qualities, working on the river makes visible the social and cultural fabric of family relationships through their co-operative practice (Bierwert, 1999; Carlson, 1999; Crey, 1997: 67; Mohs, 1987, Suttles, 1987). For example, when

![Figure 2.2a: Sto:lo River Fishing – Setting a Gill Net](image-url)

Photograph by author.
the first salmon run of the season comes upriver, when they are filling nets in large numbers, they
typically do so for everyone in the community and there is a joyfulness and feeling of celebration
that is very tangible. The feeling of celebration that comes with the first run of salmon reinforces
the social bonds of the community through the ritual of the First Salmon Ceremony. The material
purpose of this ritual is to share and distribute the wealth of the first catch throughout the
community (Carlson, 1999: 5). Spiritually, the ritual of giving thanks for the catch and returning
the bones of the fish to the river are intended to ensure an abundant harvest for future seasons.
However, the annual ceremony is also intended to re-emphasise the communal nature of the
resource in the sense that the river’s bounty is intended for the use of the entire community, and
should not be coveted by any single person or family (Carlson, 1999: 5).

Through the height of the fishing season in mid to late summer, there is a continuum of
effort and energy associated with shared work. Men usually pick the nets (Figure 2.2a, preceding
page) and women clean and process the fish for home consumption (Figure 2.2b), as well as
maintain the fish camp and cook for everyone assembled there as well. Some women fish on

Figure 2.2b: Sto:lo River Fishing – Cleaning the Catch

their own or actively fish with their spouses or their children. Children view the time and work as
play at the edge of activity, watching for their time to join in. Fishing these same sites can deepen
the bond between parents and children as effort and knowledge is shared, as well as
orchestrating a deeper sense of continuity with the past (Carlson, 1999; Crey, 1997). The depth of skill that is transmitted between generations is reflected in part by the diversity of fishing sites along the Fraser River. There are hundreds of fishing sites up and down the Fraser River from the delta and into the canyon, along the banks of the river. Each site has been inventoried by the Sto:lo Nation which maintains a map of the fishing sites in use, and records details of most sites, including ownership, physical features and some history of use (Mohs, 1987). Ownership and use of the sites is hereditary as locations along the Fraser River are marked for the exclusive use of particular families, who may have fished from the same location over several generations.

Separately, each site requires a highly specialised working knowledge (Bierwert, 1999; Mohs, 1987: 7). The sites vary in their productivity and, by extension, in how intensively they are tended. Although virtually each site along the river is fished using a set net, each location requires specialised handling and produces more or fewer fish depending on river conditions - e.g. water temperature, river height, the size and nature of the given salmon run. Setting a net at different angles to the shore can produce different results, and the yield reflects the knowledge a fisherman has of the site (Mohs, 1987: 8). For instance, within the fast and turbulent section of the River through the canyon, there are bays that contain relatively calm back eddies whose edges are good places to set nets. Below the canyon, the river’s ragged edge produces miniature bays and inlets carved out by fast water. Still farther downstream where the river turns westward, some spurs of the bank are built into sandspits as the water slows, and these produce riffles that both hide the net from the fish and draw the salmon into sheltered areas.

This knowledge is shaped by the salmon swimming the river in a particular way, the shape of the river’s course, and by the Sto:lo peoples’ accumulation of past trials and successes of fishing the river over several generations. Given the permanence of family ownership over fishing sites along the Fraser, the knowledge of how to work each location to its fullest potential is both cultivated and transmitted within families. Fathers instructing sons not only strengthens family bonds but, in some instances, connects people to a particular place through the understanding that the knowledge of how to fish the site transcends generations of occupation and use (Crey, 1987; Mohs, 1987: 56). Thus, the Sto:lo fishery reflects the notion that connection with the environment through work reinforces knowledge and strengthens community and family bonds when the activity and fruits of the activity are shared (White, 1996: 183). The physical
settings or places in which these activities and convivial experiences occur become in themselves culturally meaningful because they are alive with memories, knowledge and history, both personal ones and the narratives of parents and ancestors. In addition, traditional fishing sites become a place where people reaffirm their ties with family and community (Bierwert, 1999: 49). For some Sto:lo families, the good feelings that result from the social experience of working fishing sites with friends and relatives is often the primary reason for being there.

The argument presented here is not intended to romanticise traditional forms of work. However, the urbanised culture of Western society gives little credence to the ways in which First Nations have used the landscape through their labour over the past millennia, and for the ways in which aboriginal people experience their environment and bequeath that knowledge to succeeding generations. That inheritance provides an individual, family, community with a sense of connectedness to one another and to their past; a connectedness and sense of community that is rooted in place.

2.4.2 Synthesis of Ideas: Place Making as a Transactional Experience

The belief in a living, sacred nature is not simply an intellectual concept for Native cultures. For many, perception of the landscape is important in determining perception of self and community. Vine Deloria, Jr. (1973) argues that Native peoples hold a perception of reality that is bound up in spatial references, references which refer to a physical place. In Deloria’s view, a spatial reference is important in establishing positive relationships with the natural world. Owing to its basis in a particular land or place, a spatial orientation requires an intimate and respectful relationship with the land:

The vast majority of Indian tribal religions have a centre at a particular place, be it river, mountain, plateau, valley, or other natural feature. Many of the smaller non-universal religions also depend on a number of holy places for the practice of their religious activities. In part, the affirmation of the existence of holy places confirms tribal peoples’ rootedness, which Western man is particularly without (Deloria, Jr., 173: 53).

The major theme of this chapter has been that the act of place making, or finding rootedness in place, is a transactional activity. In effect, how we perceive a setting is often a function of the values, behaviours and expectations that we bring to the setting. In section 2.3, I explored how people bring a sense of history to their environment, and how an awareness of “what happened here?” can transform a seemingly banal geographic setting into a place that is replete with meaning and character. The meaning of a seemingly innocuous medieval building
transforms in an instant upon the realisation that an ancient structure had once been the home of Hamlet. Upon that realisation, the landscape of Bohr's native Denmark comes alive with history and a profound sense of belonging and cultural identity. Similarly, the Sto:lo people have coloured the landscape of the Fraser Valley with history and cultural meaning. The legacy of Xa:ls to the Sto:lo people resides in his transformation of the world into a more peaceful order by judging people according to a strict moral code. By transforming immoral people into features of the landscape, Xa:ls has given to succeeding generations a historical and moral legacy that is literally inscribed in the land.

As Deloria asserts, many Native nations embrace "spatial conceptions of history" in which places and their names, and all that these may symbolise, are accorded central importance (1973: 54). For Sto:lo men and women, the past lies embedded in features of the earth – in canyons, rocks, lakes and mountains – which together give the landscape multiple layers of meaning that reach into their lives and influence the ways they think. When people identify themselves with places that carry such potent symbolic power, these places become markers of home; symbolic markers that link members of a society to one another to forge a common sense of identity or community. Thus, human beings are able to cultivate a sense of connectedness or relationship with particular places because, as shared cultural and historic symbols, they have the power to bring people together. N. Scott Momaday suggests that the human impulse to find identity and community from place has been with us for a very long time:

> From the time the Indian first set foot upon this continent, he centred his life in the natural world. He is deeply invested in the earth, committed to it both in his consciousness and in his instinct. The sense of place is paramount. Only in reference to the earth can he persist in his identity (Momaday, 1994:1).

Most people are able to grasp with relative ease the concept that physical settings with deep historic and symbolic meaning (e.g. Agincourt, Bosworth Field, Bunker Hill) often resonate within our personal and collective psyches as important and meaningful places. In a similar manner, the activities or behaviours that we bring into a setting are capable of forging connections with place that are equally as profound. Work in nature establishes a full bodily knowledge of the environment. When labour becomes a co-operative undertaking and, in particular, when work yields both knowledge and a material abundance that can be given to others, critical social bonds are created that sometimes transcend generations. As the example of Sto:lo river fishing posits, some cultures imprint their traditional knowledge and personal memories to particular settings to
the same extent that they embed stories and legends within specific features of the landscape. Thus, resource use areas acquire a special meaning in the human mind because they are focal points for modes of work that are capable of sustaining important social connections in the present, as well as allowing us to feel connected with the people of our past. Thus, the essential point to the discussions in 2.3 and 2.4 is that the human-environment transaction involves a bringing of our sense of history or our labour to a setting, and a taking from that setting some sense of cultural identity and community.

The idea that people can establish connections or relationships with place is based on what Di Chiro refers to as a "unity of difference" (1996: 318). This idea presupposes that human beings can establish reciprocal relationships with other groups, other species and even the natural environment itself through everyday experiences with family and work. The idea of relationship or community with the land is central to Native expressions of "we are the land" and conceptions of other living creatures as "relatives" (Booth and Jacobs, 1990: 33-4):

We are the land. To the best of my understanding, that is the fundamental idea embedded in Native American life ... The land is not really the place (separate from ourselves) where we act out the drama of our isolated destinies. It is not a means of survival, a setting for our affairs, a resource on which we draw in order to keep our own art functioning. It is not the ever present "Other" which supplies a sense of "I." It is rather a part of our being, dynamic, significant, real. It is ourself, in as real a sense as our notions of "ego," "libido," or social network, in a sense more real than any conceptualisation or abstraction about the nature of the human being can ever be (Brown in Booth and Jacobs, 1990: 34).

These fields look after us by helping our corn to grow. Our children eat it and become strong. We eat it and continue to live. Our corn draws life from this earth and we drawn life from our com. This earth is part of us! (Basso, 1994: 21)

The world in which the Sto:lo dwell (and many other Native peoples for that matter) can be said to live within them because Sto:lo history and tradition is based in the land and, to the extent that the land provides physical sustenance and social cohesion, their lives are inseparably intertwined with the land. In a very real sense, the land is their life. Thus, whether it is harvesting wild game from the forest, fish from the river, or passively reflecting on "what happened here?" First Nation peoples possess a reciprocal relationship with their environment. In essence, the concept of place implies a binary transaction, like provider and receiver. As inhabitants of their landscape, First Nations are inhabited by it as well, and through the depth of that reciprocal relationship, the people and their landscape exist as a single, sacred community. This reciprocal relationship, a relationship in which individuals invest themselves in the landscape while incorporating its
meanings into their existence, is the ultimate source upon which Native peoples base their expressions of place and their reactions to environmental change.

2.5 Place Images: Mapping in Indigenous Cultures

My discussion thus far has examined two distinct ways in which members of a local aboriginal community involve themselves with their landscape. First, they may observe the landscape attending to aspects of its appearance and, on occasion, reflecting on the meaning that it holds for their group. Second, they may use the landscape, engaging in a broad range of physical activities which may build connections with other members of the group through a co-operative effort and sharing of the fruits of that effort. Depending on the duration and extent of that effort the landscape acquires a different presence in the group's collective psyche in the sense that their home place becomes a landscape of both physical and social sustenance. However, the third and final aspect of place involvement that I would like to explore in this section is how Native peoples communicate their sense of the landscape and, in particular, formulate descriptions and other depictions that they share in the course of social gatherings and discussion with members of other cultural groups.

Western society tends to be entirely preoccupied with the relatively narrow history and opinions of European culture. In cultural geographies there is typically little mention of maps made by any cultures other than those with European origins (Turnbull, 1998: 16). There is a standard method to this exclusion. An opening chapter begins with the acknowledgement that indigenous cultures used mapping, usually under the derogatory heading of "primitive" (Parsonson, 1965: 128). Some very scant examples are provided, and the discussion quickly shifts to a review of Asian mapping, perhaps because many Asian cultures (e.g. Japan, Islam, Ottoman Turks, etc.) shared the imperialist ambitions of European powers at some time during their respective histories.

The discussion presented in this section attempts to break with that tradition. It begins with the premise that every culture, albeit in different ways, uses spatial notions to organise and make sense of every day life. There is a vast gulf between indigenous attitudes towards land and the attitudes of the dominant colonial culture of North America. To the Native people of this continent, land is immediately and consciously the source of sustenance, an action space which serves to reinforce important social networks, and provides an affirmation of their historical and cultural heritage. Retention of detailed land-use information, excellent mental and paper maps, a
rich place name vocabulary, and the identification of landscape features regarded to be irrelevant by the western intellectual tradition, contrasts sharply with the perspective of a society that regards land to be either scenery or real estate (Duerden and Johnson, 1993). Whether in our minds or printed on paper these spatial notions, or maps, are powerful cultural artefacts that articulate our conceptions of environmental and social reality. They are depictions of the world for what our senses perceive through the filters of culture and experience.

Furthermore, the content and ostensible purpose of western mapping is reflected in part by the map-makers themselves. In our society, the making of maps has become dominated by trained specialists who employ satellite technology and sophisticated algorithms to convert landscape and communities into digital abstractions used to guide the development of forest companies and engineers (Sparke, 1995: 474). The result is that although we now have unprecedented access to maps, we are in danger of losing the ability to use maps to reflect our images of place – skills that our ancestors honed over several generations and many aboriginal peoples still retain. Mapping as conceptualised by indigenous peoples is at the heart of what Western culture needs to rediscover Turnbull, 1998: 19).

Thus, the central question for this section is how did societies that were rooted in place use maps to depict their conceptions of space and time and provide order to their actions? Due to the relentless subjugation of aboriginal cultures, it is difficult to find answers to this fundamental question. This section looks at how aboriginal societies made maps, how their environment was conceptualised and communicated and, finally, how contemporary indigenous cultures are using maps in the process of articulating postcolonial conceptions of place.

Before proceeding, two related purposes deserve to be made transparent. First, in spite of the prevailing orthodoxy in the cartographic literature, my purpose in this section is to demonstrate unequivocally that aboriginal cultures made maps. My purpose is to respond to some fairly common misconceptions that First Nation cultures were "too primitive" to use abstract visual representations of their landscape to communicate conceptions of territoriality and/or place meaning. A common theme in the ethnocartographic literature is that contemporary mapping technologies such as geographic information systems or landscape visualisation are "culturally inappropriate" (Turnbull, 1998: 15; Nantel, 1999) because traditional, land-based societies in North America have never relied upon visual media to convey their sense of place. However, the
following discussion will posit the idea that, not only did "primitive" indigenous cultures make and utilise maps, but these maps reflect a level of complexity and intimate familiarity with their environment that surpasses our two dimensional conception of space. To this end, I will begin the discussion with a brief examination of the cartographic techniques of the "primitive" indigenous cultures of Micronesia and North America. In addition to the fact that they are among the most prevalent examples in the ethnocartographic literature (Brower, 1984; Farrell, 1984; Gladwin, 1970; Lewis, 1972), the examples chosen provide the clearest demonstration of the use of visual media by First Nation societies to communicate traditional knowledge and conceptions of place meaning. My second, purpose is to demonstrate how First Nations today are using various forms of cartography and visualisation technology to depict an interstitial conception of space between the abstract Cartesian spatial conventions and the historically rich, place-specific oral maps of traditional aboriginal culture. In effect, mapping technology in its present form can never hope to capture fully the complexities of indigenous cultures and, in particular, the unique human-environment relationship described in the first two-thirds of this chapter. Contemporary cultural geographers are beginning to appreciate the ways in which aboriginal cartography and landscape visualisation are able to surpass our two dimensional conceptions of space, and reflects a level of complexity and intimate familiarity with place that is situated "in between" Western and aboriginal depictions of space (Bhabba, 1994: 217; Sparke, 1995).

2.5.1 Mapping Place Experience – Examples of Indigenous Cartography

*Sticks & Shells - Micronesian Sea Charts*

Most surveys of the history of cartography contain some reference to the sea-charts used by Micronesians living on the Marshall Islands in the North Pacific (Brower, 1984; Lewis, 1972; Figure 2.3, following page). Islanders constructed these maps from pieces of palm leaf tied together with coconut fibre, and the grids that were formed in distorted geometric patterns, depicted the curve, refraction, and intersection of wave patterns caused by the prevailing winds. Seashells are tied to the frame as well to indicate the location of islands. Typically, only a physical description of this unique map is included in books on cartographic history, and the interesting cultural setting that has leant to the creation of such images is often left relatively unexplored.

Micronesians inhabit very small atolls scattered in four major clusters in the Pacific Ocean – the Gilberts, Carolines, Marianas, and Marshalls. Surrounded as they are by a vast ocean, the
inhabitants of Micronesia face the constant threat of devastating typhoons and have needed, therefore, to develop highly reliable navigation techniques to move people throughout the atolls for social activities, locating and harvesting resources, and for reciprocal trade. Their physical and social requirements necessitated a technology that would enable navigation across vast distances without the benefit of landmarks, and which could be readily taught to succeeding generations of navigators.

Figure 2.3: Micronesian Sea Chart

National Geographic, October 2000: 100.

The obvious problem of traversing vast distances of ocean with no physical guides is the key challenge. To most westerners, mapping the surface of a dynamic and featureless body of water is a seemingly impossible task. However, the inhabitants of Micronesia have inhabited and travelled throughout the islands of their region for millennia. Much like Jacobo Romero living along the Rio de las Trampas, the Micronesians have accumulated a knowledge of the ocean that is connected with their physical, bodily experience of navigating the Pacific for centuries or, in other words, a form of *habitus*. Through centuries of use, and an accumulation of past trials and successes, the people of Micronesia have learned that there are regular and predictable patterns to be found on the ocean's surface and in the sky's expanse (Brower, 1984; Farrell, 1984: 11; Gladwin, 1970; Lewis, 1972). For instance, oceans are a complex interaction of tidal forces, currents and wind driven wave patterns that are replicated and observable in cycles over time. The steepness of waves, their patterns of refraction, or the amount of cresting can all be used as indicators of location. In addition, star configurations and their movement are nocturnal markers used by navigators around the globe. Sea colours, sounds, water temperature, and phosphorescence change with depth, as do the type and variety of sea creatures and birds that
can be observed. Birds are particularly useful for ocean navigators because different species fly at a variety of distances from shore. The point is that people who live "in place" develop an astounding familiarity with their natural environment. This accumulation of experience permits the development both of technologies and cultural worldviews that allow the hostile and apparently featureless environment of the Pacific Ocean to become full of opportunity and potential.

Micronesians pass on their environmental knowledge and mapping skills through a number of methods, all connected by the need to layer mapping in memory. Mapping lore is preserved verbally in stories, poems, chants, and through rhymes. It is illustrated physically in the palm stick sea charts, in dwellings whose rafter patterns depict segments of the night sky, and in model canoes surrounded by stones which mark distances and location. In this way, Micronesians weave information on navigation into their daily lives. In effect, mapping skills are not the preserve of selected technical "experts" in Micronesian culture; they are part of the common, everyday life of a culture that is deeply interconnected with its environment.

**Mapping in Indigenous North America: Beothuk Maps**

There is no more telling and poignant example of aboriginal cartography than that of Shawnadithit, a Beothuk from the ironically named Newfoundland. Matthew Sparke's (1995) article reflects the depth of Shawnadithit's mapping skills and casts her as an "agent of knowledge," through the manner in which her spatial renderings challenged nineteenth century European notions of space and history (Marshall, 1996; Such, 1978). However, as Turnbull (1998) and Sparke (1995) argue, Shawnadithit's influence continues well into the twentieth century as her cartography challenges established notions about the "great divide" between the "scientific" explorers and the "primitive" itinerants of North America.

Only after print and the extensive experience with maps that print implemented would human beings, when they thought about the cosmos or universe or "world," think primarily of something laid out before their eyes, as in a modern printed atlas, a vast surface or assemblage of surfaces ... ready to be "explored." The ancient oral world knew few "explorers," though it did know many itinerants, travellers, voyagers, adventures and pilgrims (Ong, 1982: 73).

Map making as we know it is not a natural art but a literate and above all scientific achievement (Parsonson, 1965: 128).

As the "last of the Beothuks," Shawnadithit came to the world's attention through her death in 1829, a victim of the colonial government's misguided attempts to establish contact and "civilise" the last remaining indigenous inhabitants of Newfoundland. Her obituary in the *London Times* (September 14, 1829: 5) casts her and her fellow Beothuks as anomalies and creates the
conditions for cultural erasure and for the kind of questioning of aboriginal spatial awareness that still permeates Western culture:

Died — At St. John's Newfoundland on the 6th of June in the 29th year of her age, Shawnadithit, supposed to be the last of Red Indians or Beothuks. This interesting female lived six years a captive amongst the English, and when taken notice of latterly exhibited extraordinary mental talents. ... This tribe, the aborigines of Newfoundland, presents an anomaly in the history of man. ... in Newfoundland nearly as far from China as the Antipodes there has been a primitive nation, once claiming rank as a portion of the human race, who have lived, flourished and become extinct in their orbit. They have been dislodged, and disappeared from the face of the earth in their native independence in 1829, in as primitive a condition as they were before the discovery of the New World...

Shortly before her death, Shawnadithit's story came to the attention of naturalist W.E. Cormack, who had her transferred to the Beothuk Institute which he founded to open "communication with and promote the civilisation of the Red Indians of Newfoundland" (Turnbull, 1998; Warhus, 1990: 90). Shawnadithit provided "nearly all the information we possess regarding her tribe" (Sparke, 1995; Turnbull, 1998: 27; Warhus, 1997). It was in the last six months of her life while she was at the institute that, being "clever with a pencil" and possessing no instruction in Western cartographic techniques, that Shawnadithit drew a series of maps describing her tribe's encounters with British colonists (Sparke, 1995: 16). In one map, she illustrates failed attempts by a British naval captain to return the body of Shawnadithit's mother to her people, ostensibly in another attempt at contact.² The map also illustrates the travel routes and campsites of the Beothuk and, with considerable cartographic ability, illustrates Shawnadithit's own capture (Figure 2.4, following page).

Sparke's analysis of the cortege map addresses the key issue on which Lewis (1993) and several other ethnocartographers have sought to differentiate western "scientific" maps from indigenous ones; the issue of accuracy and scalar consistency (Sparke, 1995: 12). On one side of the debate over indigenous cartography, authors such as Parsonson (1965) question the accuracy of Shawnadithit's maps and characterise her distortion of rivers and other spatial features as inaccurate, "primitive" attempts at geographic representation (Parsonson, 1965: 128). In effect, the cortege map shown in Figure 2.4 does not make use of an accurate or consistent scale to represent landscape features or the geographic distance between points of interest. It is

² Having reduced Beothuk numbers to approximately 30 people by the early 19th century, the British colonial office offered a 100 pound bounty for the capture of a Beothuk man or woman. Shawnadithit's mother (Demasduit) was captured in 1819, only to die 4 years later of tuberculosis.
on this basis that Parsonson denies Shawnadithit any semblance of cartographic or spatial literacy.

Figure 2.4: Shawnadithit’s Cortege Map


However, Shawnadithit’s maps and those of the many other Native North Americans that Warhus (1997), Mundy (1996) and Thompson (1998) have brought together show that they have profound cartographic and historiographic capabilities:

Rather than a deficiency, the uneven scale in Shawnadithit’s map can be read as a rigorous and reliable picturing of the uneven possibilities for travel by foot across so uneven a landscape. Rather than set up an imaginary abstract grid of space on which all else falls into synchronic place, the complex space-time map depicts, traces the spatiality of people and movement. It is still a representation of space, still a picturing and still an embodiment of geographical imagination. Yet it is also a spatiality rooted in the practical pathways of Beothuk journeying and knowing (Sparke, 1995: 12, emphasis added).

Recent authors such as Lewis (1993) and Sparke (1995) have revealed that Shawnadithit’s maps are sophisticated spatial-temporal representations of geography. That is, rather than depicting space as a linear, two-dimensional relationship between features on the landscape, Shawnadithit’s maps add a temporal dimension by scaling the distance between geographic features according to the time and effort required to travel across the landscape. According to Sparke, it is Shawnadithit’s creation of an “interstitial space shared but travelled through and experienced differently by the two groups’ employing a European ‘outline ordered’ format but
incorporating Beothuk perspectives" (Sparke, 1995: 15) that is very disruptive of the orthodox treatment of aboriginal mapping.

Unfortunately, while this "new view" on aboriginal mapping reveals the profound cartographic capability of indigenous North Americans, it also shows that maps can be double-edged swords. Native maps demonstrate, very clearly, aboriginal knowledge and ownership of their land. However, they have also provided the means for invaders through agencies such as the Beothuk Institute to explore the land and then take possession of it (Turnbull, 1998: 28). Maps are a tool of empire precisely because they are a way of assembling knowledge at a centre of adding information to the imperial archive. However, the imperial and the indigenous are always in tension; with every move towards hegemony an opportunity for local resurgence opens up. Maps are tools for moving local knowledge, but the movement can occur in two directions. In the next section, a contemporary example of indigenous mapping will be presented as an example of "playing the game in order to change it" (Sparke, 1998: 471). In effect, the contemporary example of mapping by the Gitksan-Wetsuweten nations in British Columbia illustrates very clearly how cartography, as an arguably western form of spatial communication and conquest, can be used to document an alternative conception of spatial reality which challenges the prevailing western paradigm. As a tool in the hands of aboriginal cultures, cartography has been compared to the roads of Rome which served to build an empire and give it control, but which also ultimately served to provide a path for the Goths to the centre and overthrow it.

2.5.2 Maps that Roar: Contemporary Aboriginal Maps of Place

Given the recent assertion of Native sovereignty and land rights in Canada, it is probably fitting that contemporary aboriginal peoples are in many ways at the forefront of contemporary mapping. Cognitive knowledge of place preserved in language, myth, and experience is being translated into graphic images. The Inuit and Inuvialuit, recognised in the ethnocartographic literature as having a long mapping tradition that predates contact with European culture, continue to be the focus of some of the most innovative contemporary mapping (Warhus, 1997). In the mid-1970s two studies were undertaken to describe graphically the spatial distribution of Inuit

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There are several other documented examples of indigenous mapping in North America. Warhus (1997) provides the most comprehensive discussion of traditional cartographic techniques that includes examples from Inuit, Plains and Algonquin cultures.
land-use. The Inuit Land-Use and Occupancy Project and Our Footprints are Everywhere: Inuit Occupancy and Land-Use in Labrador describe how teams of researchers interviewed Inuit people in order to understand their concept of use in their Arctic territories (Brice-Bennet, 1977; Freeman Research Ltd., 1976). What emerged from these studies is a glimpse of traditional cultures perhaps never before achieved. Instead of Western interpretations of Arctic society, the studies present scores of maps that simply show patterns of land-use. At the turn of the twenty-first century, innovative mapping continues to originate in the Arctic. The Tungavik Federation of Nunavut has published the Nunavut Atlas, a comprehensive series of land-use maps that played a crucial role in Inuit land claims and in the definition and creation of the Nunavut territory (Turnbull, 1988).

In British Columbia, an equally impressive range of traditional territorial mapping has been instrumental in the definition of aboriginal homelands. In the Nass Valley, the Nisga'a people have located the boundaries of extended family territories and, with a team of trained local interviewers, have marked hundreds of place names in the Nisga'a language (Harrington, 1999). More recently, the Nisga'a have purchased state-of-the-art Geographic Information System (GIS) software and have digitised satellite images of their territory to buttress claims of sovereignty, and eventually to aid in the stewardship of locally controlled forest and fisheries resources. Similarly, the Gitksan and Wet'suwet'en peoples have recorded traditional knowledge of their territories by interviewing elders (Sparke, 1998: 468). The geographic information collected was eventually used as a primary source to make an atlas representing a collective image of how Gitksan and Wet'suwet'en people inhabit and steward their territory. For the first time, the Gitksan and Wet'suwet'en people had a collection of maps that didn't represent a government or corporate scheme to pillage the land. Instead, a beautifully crafted set of images described their home, how people migrated to their present territories, the meaning of ancient place names, where berries grow, and where to catch salmon (Figure 2.5, following page).

Gitksan and Wet'suwet'en mapping acquired some degree of political notoriety in the late 1980s from the now famous case of Delgamuukw v. the Queen (Sparke, 1998: 472). The case began in 1987, and involved a trial over sovereignty and rights brought by the Gitksan and Wet'suwet'en against the federal government of Canada and the province of British Columbia. In the latter phases of the trial, cartographic tools and arguments were a key component of their
effort to outline aboriginal sovereignty in a way that the Canadian court might understand. It was one such map of Gitksan and Wet’suwet’en territory that Chief Justice Allan McEachern was beginning to unfold when he declared – “We’ll call it the map that roared” (Sparke, 1998: 470). As Dan Monet, a satirist working for the First Nations made clear, the chief justice’s reference to a roaring map evoked a strong resistance implicit in the First Nations’ remapping of the landscape (Monet and Skanu’u, 1992). In effect, the aboriginal maps provided a graphic rejection of the orientation systems, the property lines, utility lines, the logging roads, clearcuts, and all the other physical manifestations of Canadian colonialism on Native land.

Figure 2.5: Gitksan/Wetsuweten Place Names Map


At the end of the trial, McEachern dismissed the Gitksan and Wet’suwet’en claims with an outdated and absolutist set of colonial claims about the extinguishment of aboriginal rights (McEachern, 1991). However, the Gitksan and Wet’suwet’en demonstrated how a Western medium of spatial representation could be used to translate and communicate a competing assertion of territorial sovereignty based on “unconventional” (i.e. traditional) sources of information. In effect, the First Nations realised that in order to communicate their oral knowledge and understanding of territorial jurisdiction to a white judge trained in the abstractions and legal formalities of a Western nation-state, they would have to adapt their territorial knowledge to a Western standard of cartographic communication.
In the early phases of the trial, aboriginal expressions of territoriality and title followed a very traditional, oral mode of communication as witnesses from both the Gitksan and Wet'suwet'en sung or described ceremonial songs and performances in court, among them the Wet'suwet'en kungax and the many Gitksan limx'oooy (Sparke, 1998: 472). Each of these performances evoked the adaawk, a form of historical geographic record of particular Gitksan Houses and the extent of their territorial interests. Dan Monet illustrates how these performances played out in the courtroom setting (Figure 2.6). On one side, he pictures a witness, Antgulilibix, singing the limx'oooy. On the other side is Chief Justice MacEachern surrounded by his written records and maps. Monet uses the records and the maps as symbolic representations of the "proper way to approach the problem," according to the Chief Justice (Monet and Skanu'u, 1992). It was according to the rules of this game, played in abstract space of western Cartesian space that the two First Nations had to negotiate. MacEachern's ultimate ruling on the validity of using traditional oral knowledge to establish territorial claims forced the Gitksan and Wet'suwet'en to reconsider their approach:

Except in a very few cases, the totality of evidence raises serious doubts about the reliability of the adaawk and kungax as evidence of detailed history, or land ownership, use or occupation (MacEachern, 1991: 259).
In order to outline their sovereignty in a way that the Canadian court might understand the First Nations elected to follow a different strategy by translating their oral knowledge into a series of maps. This produced a clear example of Satsan's point about "playing the game in order to change it" (Satsan: 1992: 54). On the one hand, through the techniques of modern mapping, they articulated their claim to their territories through a medium that the judge might understand. In the process, they were effectively "playing the game" by mapping their lands within the reductionist, state sanctioned space of Cartesian cartography. However, simultaneously, they were changing the game by supplementing the federal and provincial depiction of the landscape with depictions of aboriginal occupancy and use that were based on oral knowledge. Thus, the maps served at once to communicate and disrupt the mapping conventions of the court (Sparke, 1998: 472-3).

The maps disrupted the court's conventions in one other very significant way. The maps of Gitksan and Wet'suwet'en territory illustrated the internal boundaries of House territories (Figure 2.7). These internal boundaries were abstracted from the oral, historical articulation in the songs of the First Nations' feasts and were represented instead in the silent, mapping language of the modern state. Yet the maps, while following these conventions of proper geographic communication and court procedure, also transformed them by establishing a toponymy for the subdivisions with the names of the First Nations' Houses. In itself this is not a very significant
aspect of the trial; the spatial extent of the House territories was mapped and named according to the House with the title or inherent interest in the territory. However, the House maps did indeed "roar" when they were placed under the colonial maps of provincial jurisdiction. Historically, the colonial maps had been figuratively placed over the First Nations' territories in a way that virtually erased precolonial representations (oral and graphic representations) of the province. However, the two maps seen together as transparent overlays provided a systematic "recodification of the land" (Sparke, 1998: 474). Spaces usually covered by apparent emptiness on modern representations of British Columbia, or seen as so many square kilometres of resources, were actively represented as a landscape rich with the cultural geography of Gitksan and Wet'suwet'en names and meanings.

In the end, playing the court's cartographic game opened up the First Nations' case to direct examination in the wider and usually opposing assumptions of the court's conventions concerning geographic space. For instance, James Macauley, a lawyer representing the federal government is recorded as arguing the following:

There is another matter that will come up when my friends, at last it is produced, that's his atlas of maps. The maps we received today. This comes as no surprise because we have seen this kind of map before. The place names, the names of creeks, rivers and hills and all the other features, are none of them geographic names, they are Gitksan names (Delgamuuk'w Trial Transcripts: 279).

The names on the government maps, the names of the state are held up as the only real names, as the "geographic names." Rereading Macauley's disjointed words, we may be able to detect signs of anxiety. The bold assertion about Gitksan names not being "geographic names" may point to how the Gitksan and Wet'suwet'en maps had at least challenged observers, and the most ardent opponents, to rethink Canada's official geography and consider the 'other' national naming of the land.

2.5.3 Emerging Trends in Indigenous Mapping & Resource Planning
The recent experience of Canada's First Nations communities with mapping in traditional land-use and occupancy planning has been largely successful. Immediately following contact, traditional land-use information was widely used by traders and explorers to become acquainted with the land. Over time, however, it has been widely displaced by European based knowledge, but interest in its use has been revived over the past twenty years in response to the proliferation of northern megaprojects in the 1970s, and as the pace of Native land claim negotiations has
accelerated during the '80s and '90s. Native perceptions of land-use and landscapes have been transcribed in the form of maps, discourses on toponymy and community economic base studies. Areas of traditional use, occupancy and sensitivity have been formally mapped (Freeman, et al., 1977; Duerden, 1985, Dimitrov, 1985; Riewe, 1988), and indigenous interpretations of landscape and environment were once more seen to have value and relevance.

Cruickshank (1984) has noted that indigenous knowledge has been applied to historical climatic research, geophysical research, paleontological studies, and land-use planning. However, beyond the rather simple data management and cartographic manipulation outlined in these applications of traditional knowledge to current mapping technologies, there are issues that are more central to the nature of the land-claims process and, eventually, the post treaty phase of resource co-management that present both opportunities and constraints for tools such as cartography. Reduced to basics, co-management involves combining indigenous knowledge and cultural wisdom about the environment with scientific knowledge in the cause of making management decisions that may affect land, water, wildlife and, eventually, people (Notzke, 1994; Roberts, 1994: 1; Robinson, 1998; Stevenson, 1998). This process involves placing holders of traditional and cultural environmental wisdom in the same room with environmental scientists, and then convening a meeting to hear submissions by potential proponents about project impacts. Possessed of the facts, and aware of the local and regional issues, the co-management committee then analyses scenarios and makes decisions that influence and may bind the proponents in the conduct of their proposed work.

In terms of the opportunities for mapping within such a schema, Duerden and Johnson (1993: 728) have suggested that the computational abilities of a geographic information system (GIS) are well suited to accomplishing such a complex task. In the approach that they suggest, the starting point is a comprehensive GIS based land inventory of the area under co-management. The stakeholder groups – both aboriginal and non-aboriginal – express their land-use needs and aspirations, and the GIS is subsequently used to identify an initial management scenario. Subsequently, the land management process proceeds in an iterative manner. Output is critically reviewed by the community and, subsequent to community discussions, the management scenarios are modified. The GIS is employed to generate another set of scenarios and the process proceeds towards an acceptable solution.
The problem with such a framework is that it assumes that the members of the affected community will readily understand the mapped information (Crerar, 1999; Duerden and Johnson, 1993; Duerden and Keller, 1992: 12; Nantel, 1999). Utilisation of indigenous land-use information is essential, but in placing it in standard cartographic format much of value may be lost. Indigenous perceptions of land and environment are highly integrated and representing it in a format that non-aboriginal populations can understand is a major cultural compromise and a lot of essential information may be lost in doing this (Duerden and Keller, 1992: 14). For instance, apart from difficulties adequately depicting thematic information an added difficulty may be that of understanding cartographic symbolism such as contour lines. The ability to read and understand cartographic devices such as contour lines and mentally reconstruct topography from them is taken for granted by those who use conventional planimetric maps frequently. In reality, relatively few people can look at a map and mentally reconstruct the landscape it represents; both aboriginal and non-aboriginal publics alike. Yet this is precisely what indigenous people are expected to do if they are to get a clear picture of the way a management scenario depicted on conventional maps would appear in the real world.

In her traditional use study in Australia’s Northern Territory, Janice Crerar (1999) noted that research to gauge the full potential of GIS as a tool to assist with natural and cultural resource management remains limited. In response to this apparent research gap, Crerar undertook a pilot study to assess the potential of GIS to assist a remote community in the Northern Territory with the management of saltwater crocodile egg harvesting. Crerar’s research underscored the effect that culture has on the way people perceive their environment, and the limited extent to which environmental processes, and cultural perceptions of those processes, are represented in a GIS. Ultimately the way people view a set of GIS maps will be affected by their cultural experiences (Mark, 1995; Strait, et al., 1994). What Crerar found in her work was that basemap information derived from vector data—such as contour lines and property boundaries—were an inadequate representation of the land for aboriginal elders. Mapping geographic entities in vector format was found to be unsuitable and of little interest to the aboriginal community because the map format was found to be “too like traditional western cartography” (Crerar, et al., 1999: 433).
For example, during Crerar's pilot project, clan estates were mapped using standard polyline vector techniques. For aboriginal elders, the clan estate boundaries that occurred where there were rivers and other geographic features - which thereby set discrete limits to the clan estate - could be mapped and were generally understood using a vector format. These natural features established boundaries for the clan estates along which vector lines could be readily applied in a GIS environment, and were generally accepted and understood by community elders. However, the maps could not reflect other attributes of clan estates such as the fact that, in many areas, the boundaries are overlapping gradients rather than solid lines (Crerar et al., 1999: 434). This is particularly true for areas where clan estate boundaries are not formed by natural landscape features such as rivers and ridges, but rather, extend across relatively flat, featureless terrain. Elders generally rejected or failed to comprehend the use of lines (vectors) which formed discrete boundaries between two or more clan estates.

The nature of the aboriginal kinship system may account for their difficulty in accepting the vector-based maps. The kinship systems provides an unlimited process of recursion that enables all things to be named and related and thus imposes an order on both the natural and social world that provides order and meaning. The aboriginal kinship system, as in many societies, provides the framework within which social obligations with regard to life, death, marriage, and land can be negotiated (Birckhead, 1996; Ritchie, 1992). Thus, the kinship system and their associated oral traditions together form a knowledge network that allows for everything to be connected. The concept of connectedness is extremely powerful in Australian aboriginal culture and is exemplified by the term likan which, in the spiritual sense, connotes "the connections among ancestors, persons, places, and ceremonies" (Birckhead, 1996; Keen, 1995; Morphy, 1991: 187-188; Taylor, 1996; Williams, 1986; emphasis added). A wide variety of traditional Australian aboriginal paintings have been interpreted as being simultaneously social and geographic, representing both the tracks of ancestors and detailed maps of places. Therefore, it is not typically good custom to display the landscape with fixed boundaries because they are permeable rather than fixed entities with rights of access being required and most frequently granted across kinship boundaries. Areas can be owned by more than one group and routes can be common property. Boundaries are more properly the subject of negotiation and exchange in ceremony and ritual which means that aboriginal conceptions of place do not
correspond with Western notions of enclosure but are more typically of open and extendible
“strings” of connectedness ( Turnbull, 1998: 35)

Thus, the western tendency to depict territories as discrete, dichotomous entities – i.e.
yours and mine – conflicted with the connected and highly fluid perspectives of Crerar’s aboriginal
research participants. In addition, Crerar found that community elders experienced some difficulty
translating contour information into a mental representation of their traditional territory. However,
when presented with a Landsat representation of the same landscape (similar to the image shown
below), the elders demonstrated a greater level of familiarity with the area and could more easily
describe and identify the locations of traditional crocodile egg harvesting sites (Crerar, 1999: 433).
This and similar research findings by Duerden and Johnson (1993: 729), Ervin (1992), and
vanZuidam (1986) point to the need for more accurate and realistic visual representations,
typically in the form of three dimensional computer models, to enhance the visualisation of
landscapes by user groups. Using the approach suggested by Duerden (1993) and Ervin (1992),
a digital representation of terrain surfaces using three dimensional perspective views can all
someone to stand in a valley looking up at the surrounding hillside. It enables the user to get a
feel for the landscape with which they are familiar, to see what a land claim or a forest
management proposal looks like on the ground. During a traditional use mapping project with the
Council of Yukon Indians (CYI), Duerden found that three dimensional perspective views were
more effective in allowing elders and other members of the community to visualise the terrain,
identify trails, burial grounds, and other culturally important sites at a highly localised scale
(Duerden and Johnson, 1993: 729). In addition to direct land claim applications, the CYI have
used visualisation techniques to investigate and protect other land-use interests. The Kluane
Tribal Council used the visualisation technique to model the aesthetic impact of a proposed mine in
their traditional territory. This use of “what it might look like?” (Ervin, 1992) analysis has also
been actively used in site planning and gravel pit management by the CYI and other groups.

What these authors have concluded is that assertion of indigenous values and the use of
both indigenous perceptions of the land and consensual decision making are essential
components of a fair land claim and, in the future, resource co-management process (Crerar,
coupled with landscape visualisation capabilities may prove to be a useful tool in bridging the gap
between traditional landscape perceptions and the demand for more formal cartographic representations of land necessary for land claim negotiation and management.

2.6 Chapter Summary

If nothing else, my initial exploration of Xa:ls and the moral landscape of the Fraser Valley, and aboriginal fishing practices on the Fraser River should lend substance to the claim that the sensing of place is a form of cultural activity. Removed from the arena of academic jargon – needs, attributes, mechanisms, etc. – sense of place can be seen as a commonplace occurrence, as an ordinary way of engaging one's surroundings and finding significance in them. Albert Camus stated that "sense of place is not something that people know and feel, it is something people do" (Camus, 1955: 88). That idea brings the whole concept firmly down to earth, which is where I believe the notion of sense of place belongs.

I would also argue, that as commonly felt as it is, sense of place can be felt at varying levels of emotional and mental intensity. In its more common occurrences, as Seamus Heaney (1980) has observed, sense of place may prompt individuals to "dwell on themselves in terms of themselves," as private persons with private lives to ponder. However, in its fuller manifestations, these private reflections occasionally yield to thoughts about membership in social groups, of participation in activities that transcend the lives of particular people, and of close involvement with communities and their historical traditions. Experienced this way, as what Heaney (1980: 133) terms a "mode of communication with a total way of living," sense of place becomes a powerful sacred or religious force. Fueled by sentiments of belonging to a community, and connectedness to the past, sense of place roots people in their cultures and holds them there in the grip of a shared identity.

For many Native people, place is a reality rather than an abstraction. Spaces and landforms are experienced as locuses of spirit beings whose presence give meaning and sacredness to a person's perception of the land. As Brown (1985: 30) points out, "It also gives meaning to the life of a man who cannot conceive of himself apart from the land." It is this sense of place that defines a person's life. Thus, to the extent that Native cultures and histories are based in the land, and their lives are inseparably intertwined with it, the land is their life.

However, as aboriginal cultures assert their unique cultural and spiritual relationship to the land, Native communities are turning in ever greater numbers to the cartographic techniques of western science to render their relationship "readable" and understandable in a non-aboriginal
setting (Turnbull, 1998: 37). The social theorist and geographer, John Fox, among others, has pointed to some very profound concerns about GIS and the space making techniques of western science:

Researchers should remember that by developing Cartesian maps of customary boundaries we are changing the intrinsic nature of these systems. Once boundaries are mapped and recognised by the state, they lose their fluid and flexible nature. Another consequence of mapping system boundaries is the potential for conflict it creates in villages and between neighbouring villages. The potential for conflict should not be underestimated. Finally, researchers should not overlook the social and economic conditions that operate independently of the individual. Legal recognition of customary forms of tenure does not guarantee that indigenous people will be able to hold onto those rights or profit from them (Fox, 1994: 11).

There is no simple path, or code of ethics to guide us in coping with these issues. However, we live in interesting times. We must try to allow for the emergence of a third space in which indigenous and scientific knowledge traditions can encounter each other, rather than in opposition. Perhaps as Frank Duerden and others suggest, environmental simulation may be that third space in which western and indigenous knowledge traditions can be performed together, where representations of place will be understood by both traditions, and where neither can dominate.
Chapter 3
Cultural & Historical Background

3.1 Introduction
"The authenticity of ethnographic knowledge," writes Jackson (1995: 163), "depends on the ethnographer recounting in detail the events and encounters that were the grounds on which the very possibility of this knowledge rests." The description of events and encounters is always from the perspective of the social scientist, who highlights certain incidents and observations and draws out their implications for research. However, the characteristics of the research setting (i.e. the community, environmental context, etc.) itself may affect the study's results (Schensul et al., 1999: 286). Therefore, it is essential to document the geographic and historical context of the people and culture involved in the research, particularly if such contextual information affects or at the very least elucidates the results (Goulet, 1998: 3; Schensul et al., 1999: 287). In effect, participation within and observation of other people's lives can generate useful insights, but it must also be recognised that the perspectives and concepts that are a product of social science research are a joint creation of the historical experiences of a community with their social and physical environment (Goulet, 1998: 28).

As such, this chapter documents the historic and geographic context of the Cheam people. At its most fundamental level, the objective of this chapter is to provide a descriptive account of the Cheam community in terms of the physical environment that they inhabit (Section 3.2.1), the historic and political circumstances that affect the setting and have led to the contemporary arrangement of Indian reserves in the Fraser Valley (Section 3.2.2) and, of primary importance to this thesis, an exploration of Sto:lo spiritual practice and culturally significant places (Sections 3.3 and 3.4). A theme that runs throughout much of this chapter is that the recent history of European settlement in the Fraser Valley, with the associated influx of agricultural development, natural resource harvesting and urbanisation, bears substantial consequences for Sto:lo cultural and spiritual practice. In effect, the legacy of European settlement in British Columbia has resulted in the physical segregation of First Nations from their traditional territories, and because Sto:lo cultural practice is inextricably tied to the land, their cultural existence has in turn been deeply affected by the process of colonisation.
3.2 The Landscape & Changing Land-Use in the Fraser Valley

3.2.1 The Physical Setting

The Sto:lo are a river people, centred along the upper and central reaches of the Fraser River valley in southwestern British Columbia. From the Fraser Canyon above Yale to the southeastern coast of Vancouver Island across the Georgia Strait, the language that is traditionally spoken by the people of this region is Halkomelem. Sto:lo traditional lifeways, past and present, have centred upon the Fraser River and the rich salmon fishery that has shaped and influenced most aspects of Sto:lo society, including economic life, social networks, settlement patterns, mobility, communications, family life and religious beliefs (Mohs, 1990). As Duff pointedly notes, the name by which the people refer to themselves and prefer to be called is Sto:lo, which translates as "People of the River" (1952: 11).

The traditional territory of the Sto:lo First Nation (Figure 3.1) covers an area of approximately 100 square kilometres, extending from 5 Mile Creek near Yale in the northeast to Whonnock near Fort Langley in the west, and from the north bank of the Nooksack River in the United States north to include Chehalis Lake and much of Harrison Lake. The eastern extent of

Figure 3.1: Sto:lo Traditional Territory

Sto:lo territory includes Chilliwack Lake and the Coquihalla River valley (Duff, 1950, 1952; Smith, 1947; Wells, 1968). In terms of physical geography, the regional ecology is diverse,
breathtakingly spectacular, and abundantly rich in natural resources. Much of the terrain is
mountainous incorporating the Pacific Range of the Coast Mountains to the north and northwest
and the Cascade Mountains to the south and east (Holland, 1964: 28). Apart from the Fraser,
river valleys are narrow with steep mountain slopes dropping to the valley floors.

The Fraser River bisects the region flowing out of the Cascade Mountains to the
northeast. Above Yale is the Fraser Canyon; below Yale there is a narrow valley basin that
extends as far as Hope. For its first 30 kilometres below Yale, the river valley seldom exceeds a
kilometre in width and follows a direct, southerly route. Due in part to the narrowness of the valley
bottom, this section of the Fraser is relatively “natural” with rugged cliff faces; thick stands of
Hemlock, Douglas Fir and Red Cedar; and small Cottonwood dominated islands and accretion
bars scattered throughout the silty water of the river. The Trans Canada Highway, an
aboveground gas pipeline and the occasional settlement are the most obvious forms of human
incursion into the upper valley landscape.

At Hope, as the Fraser turns west and the valley gradually expands into a broad basin
that is bordered by the Coast Mountains on the north side of the valley and the Cascade Range to
the south. When the Fraser reaches Chilliwack, the valley is some 10 kilometres across and the
valley floor is interfaced with sloughs, wetlands, small creeks, estuaries and ponds. It is
predominantly here that human transformations of the Fraser landscape, from a rich ecosystem to
a broad expanse of roads, buildings, agricultural fields, power lines and parks, have created new
issues and concerns for the Sto:lo people. On a warm sunny day, the eastern valley skyline is a
brown haze – the mountains sometimes completely obscured – the result of various gases
produced by cars, industry and heavily fertilised farmers’ fields. The highway roadside is dotted
with signs, advertising the newest suburban housing developments being constructed in the
forested hillsides. The old Sumas Lake bed between Abbotsford and Chilliwack is home to
livestock, and fertilised and irrigated vegetables. A population of two million in the lower stretches
of the Fraser has settled throughout the expanse of clearcut forests, and is rapidly expanding into
the hills and mountains along the valley’s fringe.

Given modern incursions into the Fraser Valley, it is difficult to envision what this
landscape was like before the arrival of the first Europeans. Writing in the mid-nineteenth
century, Thomas Crosby provides one of the more vivid descriptions of the original landscape:
No one could go through the primeval forests of those days without being impressed by their greatness. Tall firs abounded, many of them from two hundred to three hundred feet in height, standing straight, their stems unbroken by a single branch until they reached the bushy, spreading tops. Equally tall and gigantic cedars grew side by side with hemlock, spruce and smaller vine maple, the shady, broad leafed soft maple, ash, birch, cottonwood, apple, cherry and alder. 

It was while working on the Government road that fall [1867] that I first saw the large dog salmon jumping and floundering up a stream so narrow that we could jump over it. So crowded were they, and so great was their number, that their fins and tails were, many of them, worn off in the struggle. It was not an uncommon thing to see black bears, in such a field, fishing for themselves, and eagles by the score, as well as ravens, carrying off their supply of food. We saw elk and deer in great numbers, and waterfowl in clouds. And the conviction grew upon one that a land of such mountains and rivers, seas and forests, teeming with life, such coal and gold fields and such a magnificent climate, was destined to become a great and grand country (1907: 38-39).

Traditionally, the Sto:lo occupied this abundant landscape and organised themselves into a number of tribes or tribal groupings. Boas (1894) lists 14 mainland tribes including the Katzie, Kwantlen and Musqueam. Hill-Tout (1902, 1904) places the number at 15 including the tribes of Vancouver Island. The most important distinction or internal cultural division traditionally recognised by the Sto:lo is that between the upriver (teltiyt) and downriver (tellho:s) Sto:lo (Duff, 1950, 1952; Smith, 1947; Mohs, 1987). The boundary between the two occurs roughly in the Mission/Fort Langley area with the Matsqui and Pilalt tribes included within the former, and the Kwantlen and Musqueam in the latter. A major difference between upriver and downriver tribal groups is linguistic; each speaking a different dialect of the Halkomelem language.

The basis of Sto:lo tribal organisation has historically been the village; an arrangement that remains largely intact through the contemporary system of "Indian" reserves. Traditionally, the most important of these were Yale, Cheam, Fort Langley, and Musqueam (Duff, 1950; Smith, 1947). Generally speaking, most tribes comprised a number of villages although a few were represented by single villages (Duff, 1952: 81-86). Today, twenty-four reserves with a total population of approximately 4,200 people are recognised by federal authorities today in the Upper Sto:lo area. Each has its own administration – the band – and these bands are consolidated into a regional government that presently incorporates all but two of them (i.e. Musqueam and Chehalis) and is collectively known as the Sto:lo Nation.

My field research began on the Cheam reserve, a 500-hectare community of 150 people located on the north shore of Cheam Lake between Chilliwack and Hope (Figure 3.2, following page). The reserve takes its name from the Halkomelem word meaning “always wild
strawberries," reflecting the abundance of wild berries and other foodstuffs — wild game, fish, medicinal and food plants — that traditionally sustained the Cheam people (Duff, 1952; Suttles, 1987). Ethnohistorical accounts of the area in the mid to late eighteenth century describe the landscape in the shadow of Mount Cheam as abundant in plant and animal life (Boas, 1895).

Figure 3.2: Location of the Cheam Reserve

Thick forests of cedar and hemlock interspersed with stands of big leaf maple and alder provided habitat for deer and elk herds that supplemented the Cheam's staple diet of salmon from the Fraser River. The mountain itself was regarded as a guardian of the Cheam people and abundant provider of berries, medicinal plants and mountain goats that supplied a heavy wool used to weave the elaborate blankets that became the trademark of the Coast Salish peoples. Echoes of this natural abundance still resonate through the community. Conversations with elders and their children describe a time in the first half of the twentieth century when it was still possible to catch salmon in the many creeks and sloughs that traverse the landscape; when children could dip a fishing line into the cold water streams below Mount Cheam's waterfalls; or collect bushels of hazelnuts from the trees that once surrounded the reserve (Mary [Cheam Informant], Personal Communication).

The contemporary Cheam lifestyle is modern in several ways, and over the past two hundred years the Cheam and their Sto:lo neighbours have lived through all the changes experienced by other Pacific Northwest peoples. The hunters and fishers of the past who travelled through the valley from summer to winter villages in dugout cedar canoes have now settled permanently on the reservation to live in government built houses serviced with electricity.
and running water (Carlson, 1999; Mohs, 1992: 188). Sources of household income are many: income generated from fishing and hunting, wages earned on and off the reservation through part-time and full-time employment, as well as family allowances, old-age pension benefits, and social welfare provided by different levels of government. Trucks, cars and motorboats are the means of transportation to fishing camps or nearby towns and cities. All families rely on store-bought food in addition to the substantial amounts of salmon, deer meat, fowl and berries harvested by both men and women from spring to early autumn. Over the past year, several visits to Cheam households have brought me face to face with the rich products of fishing, hunting and gathering activities.

The persistence of the Cheam subsistence economy in the face of modern incursions into their culture is a remarkable testament to its capacity to coexist with the material trappings of a society that many outsiders regard as antithetical to a traditional way-of-life. As a Sto:lo grand chief emphasised after a day of salmon fishing on the Fraser River, motor boats and gill nets do not detract from the essential relationship that the Cheam have managed to retain with the river and its salmon resource (Frank [Cheam Informant], Personal Communication). In effect, the river continues to provide for their material sustenance as it did in their ancestors' time, albeit to a somewhat lesser degree. Modern technologies and implements make the task of harvesting resources more efficient and, on occasion, with substantially reduced risk to life and limb (Bierwert, 1999: 50).

The few whites that spend any time on the reserves of the upper Fraser Valley typically see communities such as Cheam as strange places. Conceived, designed and built by whites, the reserve settlement itself has little relation to the social, domestic and economic life that their residents have traditionally regarded as good and proper. Perhaps in the case of several Sto:lo reserves that have been located near the fishing resources on which people depend, there is an association between a traditional way-of-life and the reserve community. Situated as it is on the banks of the Fraser River, the Cheam people have managed to retain their distinctive relationship with the river and, as such, river fishing has become a focal point of cultural and political life on the reserve (Darryl [Cheam Informant], Personal Communication; Bierwert, 1999: 224).
Beyond the pickup trucks, television and detached housing that are so pervasive on reserve communities, perhaps the greatest threat to the persistence of Cheam culture and tradition comes from the expanding envelope of urban settlement into their traditional territory. Located less than fifteen minutes away from Chilliwack, and just over an hour from Greater Vancouver, the quiet rural surroundings of the reserve have been encroached upon by two expressions of population and economic growth in the Lower Mainland—tourism and suburban development. As the first map in Figure 3.3 depicts, the reserve was surrounded in the mid-1960s by a small patchwork of open fields and thick forests. At the time, Cheam Lake had been drained to dredge marl from the lake bottom (a calciferous substance used as an agricultural fertiliser), and the landscape itself was populated with a relatively sparse concentration of farm houses and reserve dwellings. Thirty years later (Figure 3.3: Cheam Reserve and Rosedale—1996), the character of the landscape surrounding the reserve has been altered dramatically. Urban expansion from Chilliwack during the economic boom years of the early 1990s brought new residential subdivisions to the southern border of the Cheam reserve and, along with the new influx of permanent residents, there has been a concomitant growth in the local tourism industry.
Waterslides, a golfcourse, themepark, and botanical gardens have clustered at the base of Mount Cheam in the last twenty years, perhaps capitalising on the visual grandeur that the mountain provides, as well as enticing the wealthy tourists vacationing at the nearby Harrison Hotsprings Resort.

The urban growth that the Cheam have encountered over the last thirty years is similar to that experienced by other reserve communities throughout the Fraser Valley. Accompanying these incursions into the Stó:lo homeland, reserve communities have experienced frequent disruptions of their cultural and spiritual life, disruptions that are in part a function of government policies that have diminished the size of Stó:lo reserves and permitted the intrusion of non-aboriginal activities and uses into sensitive traditional areas. In the following discussion, I will explore the history of European settlement in what the Stó:lo people refer to as S'ólh Temexw - Our Land (Carlson, 1999: 166). The discussion will begin with an abridged history of the Indian reserve system and describe how the government sanctioned process of land appropriation and industrial development has led to the present configuration of reserve communities in British Columbia. The discussion will then conclude with an examination of the cultural and spiritual consequences of provincial land use and economic development policies in Stó:lo traditional territory.

3.2.2 European Settlement and the Indian Reserve System
Traditional or ancestral Stó:lo villages are scattered throughout the Fraser Valley. Although oral tradition and archaeological evidence both affirm that the Stó:lo have occupied traditional village sites such as the Cheam reserve for several centuries, the location and size of contemporary Stó:lo reserves is a product of relatively recent historical events. Between 1850 and 1851, Governor Douglas arranged fourteen treaties with the Coast Salish chiefs on Vancouver Island, securing their village sites and providing payment in exchange for title to surrendered lands that totalled 358 square miles (Tenant, 1990: 23). Douglas’s actions laid down precedent for recognition of aboriginal title, however his treaty-making initiative was terminated within three years of its inception. In effect, no additional money was available from the British Colonial Office and, therefore, the colony did not have the authority to sign treaties with the mainland Natives (Tenant, 1990: 26). Nonetheless, Douglas proceeded with surveying the lands of the lower mainland. Parcels of land that Douglas referred to as “Indian lands” were simply apportioned separately from areas that had already been occupied by settlers or made available
for sale (Carlson, 1999: 71; Tenant, 1990: 24). The process began by sending surveyors to stake out the boundaries of territories then in active use by the Sto:lo people. The Sto:lo themselves were to point out their villages, fields, “favourite places of resort,” sacred places and burials (Carlson, 1999: 71). Douglas’s intent, as he stated shortly before retirement as governor in 1864, was to:

...secur[e] them against the encroachment of settlers, and forever remov[e] the fertile cause of agrarian disturbance (Tenant, 1990: 33).

However, surveying and recording Sto:lo land proved hardly enough to secure their traditional territories. The next phase of colonial administration that immediately followed Douglas’ government, and dedicated to the economic development of the province, pushed the treatyless policy of land appropriation past the limits of acceptability for the Sto:lo people. Joseph Trutch, from his position as chief commissioner of lands and works, redrew the limits of Native lands, restricting those areas reserved for Native use to ten acres per person, a ratio vastly smaller than that applied anywhere else in North America (Carlson, 1999: 73). In 1867, he wrote to the lieutenant governor about the reserves in the Upper Sto:lo area:

The Indians regard these extensive tracts of land as their individual property but of by far the greater portion thereof they make no use whatever and are not likely to do so; and thus the land, much of which is either rich pasture or available for cultivation and greatly desired for immediate settlement, remains in an unproductive condition – is of no real value to the Indians and utterly unprofitable to the public interests. I am, therefore, of the opinion that these reserves should, in almost every case, be materially reduced (Tenant, 1990: 43).

Within a year, as a result of Trutch’s reassessment, Sto:lo lands were reduced by 40,000 acres, or sixty-two square miles. Clearly at odds with the philosophies and policies of Governor Douglas, Trutch rested the practice of imposing land limitations by executive order upon a denial of aboriginal title. “Claims of possession” replaced title; “agricultural and pastoral” use of land replaced rights to hunt, fish, and gather on ceded lands, “as the progress of the settlement of the country seemed to require” (Tenant, 1990: 41). Upper Sto:lo leaders sent petitions protesting the loss of their most valuable lands. In 1872, a group of Upper Sto:lo chiefs, led by Chief Alexis of Cheam, organised a protest rally at the provincial land registry in New Westminster drawing hundreds of Sto:lo supporters (Carlson, 1999: 74). In 1874, the same organising group called together an assembly of chiefs that produced a written grievance to the federal Indian Commissioner Israel Powell:
For many years we have been complaining of the land left to us as being too small. We have laid our complaints before government officials nearest to us; they sent us to some others; so we had no redress up to the present; and we have felt like men trampled on, and are commencing to believe that the aim of the white men is to exterminate us as soon as they can, although we have always been quiet, obedient, kind, and friendly to the whites (Tenant, 1990: 53-4).

In 1906, Sto:lo chiefs gathered to affirm their political presence and solicit support from the a broader public, and a contingent travelled to London with petitions to Queen Victoria, seeking recognition of their aboriginal land rights and for access to resources in appropriated lands. Yet again, no relief or response was forthcoming. Although these formal actions left a considerable paper trail in the archives of the Department of Indian Affairs, they had no effect on title or the size of reserves at the time (Tenant, 1990: 87). Provincial actions continued to presume authority over land use, while development within British Columbia proceeded unabated.

During the next decade, First Nation political networks would continue to fight for land rights, but they faced tremendous pressure. To keep the economy expanding, the federal government organised a special commission for Indian affairs empowered to redefine, once again, the British Columbia reserves (Carlson, 1999: 81). The commission was established ostensibly to settle the grievances raised by Native leaders, and was thus charged with determining Native needs for land. Hearings were held with Native leaders all over the province. After the hearings, in 1916 the commission recommended adding over 88,000 acres, mainly in the northern half of the province, and reducing over 47,000 acres of much more valuable land, primarily in the south (Carlson, 1999: 81; Tenant, 1990). In January 1920, the federal government responded by passing legislation that exempted the recommendations from needing the consent of band councils. Statements of First Nation protest continued, but in 1924 the federal cabinet passed an order implementing the commission's recommendations and creating the present configuration of First Nation reserve lands in British Columbia. That the actions were seen as attacks is evident in the term that First Nations use to refer to them - "cutoffs" (Tenant, 1990: 98). Even more extraordinary and far-reaching was the "closing" of the issue in 1927 by federal legislation that made it illegal to raise or use money for the purpose of pursuing First Nation land claims.

Throughout this period, as First Nation leaders fought for the right to occupy and use their traditional territories, government authorities transformed the landscape of the Fraser Valley and generated revenue primarily through a booming timber industry and land sales to farmers and
speculators (Carlson, 1999: 79). In 1885, the Canadian Pacific Railroad was laid through the valley, connecting the growing commercial port of Vancouver to the prairies and the eastern Canadian provinces. As a regional centre that connects the Canadian hinterland with the flow of commercial goods from the Pacific, Vancouver was built largely from the export of staple commodities such as timber, wheat and fish to the growing industrial economies of the United States and Japan. By the early twentieth century, the B.C. economy prospered to such an extent that a second railway, the Canadian National, was cut across the nation parallel to the Canadian Pacific track that was already established. Blasting for this new line caused a massive rockslide that completely blocked the Fraser River canyon in the summer of 1913 and trapped millions of salmon migrating upriver to spawn (Carlson, 1999: 122).

In the early 1920s, large-scale agricultural enterprises began to change the face of the upper Fraser Valley. Sumas Lake near present day Abbotsford was drained to make more farmland available for sale, and drainage channels helped to shift the smaller river courses that fed the shallow lake (Carlson, 1999: 80). Along with other shallow lakes and wetlands, old growth cedar forests with their ecological complexity were almost entirely clearcut to make way for vegetable, berry and hop farms. However, stands of Western Red Cedar continued to be replanted on less arable upland soils for future logging according to the best theories of industrial productivity. The valley floor, regraded and contoured, supported a mixture of large and small single crop farming from orchards to hopyards and dairy farms. Compared to the abundance that had supported the Native economies of fifty years before, the Fraser Valley was ecologically devastated and the lives of the valley's Sto:lo residents shifted in response to the new commercial activities that had come to dominate their landscape. First Nation people worked in canneries at the river's mouth, in logging camps in the mountains, and in berry and hop farms on the valley floor. However, what is most startling about these land use transformations is the legal and political context in which they occurred. Like the vast Cree territories of Quebec and the lands of the Northwest Territories, almost all of the lands of British Columbia were subject to, and claimed by sovereign First Nations throughout this process (Tenant, 1990: 116). Unlike these other territories, however, British Columbia's natural resources were significantly exploited while still subject to First Nation claims and protests.
3.2.3 European Settlement & Conflicts with Sto:lo Cultural Practice

Today, three consequences of the European settlement process are strongly felt in Sto:lo communities. First, reserve lands have never been restored to their original size as mapped by Sto:lo leaders and recognised by Governor Douglas. With contemporary railroad, highway, and utility easements, Sto:lo reserves have been reduced even further. Often, the development of such communication or utility routes has cut communities in half, or destroyed delicate fish habitat and ecosystems along the edge of the Fraser River and its tributaries. In the mid-1980s, the Canadian National Railway planned to add a second track to the existing railway through the Fraser Canyon. This threatened not only the environment but also numerous Sto:lo sacred sites. In 1988, when discussing the potential impact on fisheries habitat and Sto:lo sacred sites of the CNR's proposed twin tracking scheme, Sto:lo elder Tilly Gutierrez of Chawathil commented on the seemingly insatiable appetite of mainstream Canadian society:

...when Xa:ls went through making things right we had accepted him because he was nice to us. ...pretty soon Simon Fraser [came], Douglas, and you name them all, them big shots that came through. After, the Xwelitem [white people] started taking things away from us. Pretty soon the railroad and highways. We got nothing (Gutierrez in Carison, 1999: 82).

Second, beyond the alienation of Sto:lo land by government and corporations, reserves have been further reduced by the Canadian government’s unwillingness to respond equitably to natural changes in the landscape (Carlson, 1999: 81). For instance, Sto:lo reserves are commonly located at the juncture of the Fraser River and any of its several sloughs and tributaries, or on islands situated in the middle of the river such as MacMillan Island in Langley (Figure 3.4, following page). The difficulty for communities that abut the Fraser is that each year the river erodes land from the reserve’s upriver section, depositing it either on the down river portion or washing it much farther downstream away from the reserve community. According to government policies that govern title to reserve lands, the land that washes away is officially and forever lost to the reserve (Carlson, 1999: 81). By contrast, when reserve territories are enlarged from the deposits or accretions that collect on reserve lands, the additional reserve property that is accumulated becomes Crown land outside the official reserve boundaries.

The third legacy of the reserve system presents an entirely different set of problems, particularly to those reserves that are surrounded by urban development. Most often, non-aboriginal people living on private property near reserves complain that drumming associated with the smilha, the longhouse or Winter Dance ceremonial, disturbs their sleep and infringes on their
right to peace and quiet (Mohs, 1987, 1990: 56). This places Sto:lo communities in a difficult position. In effect, the Sto:lo wish to establish positive relationships with their neighbours, but they do not want to compromise their right to practice their cultural activities in accordance with tradition.

**Figure 3.4: Reserve Boundary Erosion**

Adapted from a map created by Reserve Commissioner G.M. Sproat, 1879 in Carlson, 1999: 81.

Winter Dancing is still integral to the spiritual lives of many Sto:lo people and is perhaps the greatest source of discomfort and disquiet for non-aboriginal residents living in close proximity to Sto:lo communities. A documented published by the Sto:lo Nation in the mid-1990s estimated that there are nearly 900 winter dancers, and at least twice that number who attend Winter Dance ceremonies in other capacities throughout Sto:lo territory (McHalsie, 1994). During the winter months, from November to March, *smilha* ceremonies occur each night at various longhouses and community halls. Spirit dancers will typically gather at a longhouse toward dusk and, from a distance, the opening of *smilha* ceremonies will begin with a loud drumming and singing that sounds cacophonous. If a non-aboriginal person is privileged enough to witness the ceremony from the inside, they will first notice dancers and spectators arriving and gathering in small groups to “warm up.” From each group the songs and drumming surge, centred on a dancer who needs to express his or her song and release their spirit’s power through a form of trance or spirit
possession. As each song ends, a dancer's trance subsides and the group dissipates. Much later in the evening, often towards midnight or two o'clock in the morning, the dancers will "holler" one after another in a series moving counterclockwise around the gathering as the others sing and drum each dancer's song.

The longhouse season typically runs from November through late March or April. Without fail, the clamour of noise and activity that the longhouse ceremonial generates invariably conflicts with their neighbours' need for peace and quiet. A February 1992 letter to the editor of the Chilliwack Progress complained of smilha activity and specifically targeted the sounds of longhouse drumming as the key problem that was keeping some outsiders awake. The writer suggested an 11 p.m. curfew on Sto:lo gatherings, for the benefit of neighbours who had moved into the area to escape the noise of Vancouver. At the time, Chilliwack and Sardis were in a boom phase of development, and the letter appeals to a frontier sentiment by arguing that if the community wants more "settlers," the municipality should "keep those reserves quiet" (Chilliwack Progress, 1992, A9). Yet, in the face of those who presume priority of non-aboriginal rights, and risking others' relentless complaints of their savagery, longhouse people continue to holler.

However, the difficulties and conflicts that spirit dancers encounter with their non-aboriginal neighbours persist well beyond the reserve and municipal boundaries. The central source of spiritual power in the longhouse ceremonial is the vision, sought by contemporary longhouse ritualists by fasting and bathing in secluded forest streams far removed from the protection of the reserve (Suttles, 1987: 200). During the vision, the seeker encounters some animal — real or mythical — which confers upon him/her a particular skill and becomes, in anthropological language, a "guardian spirit" (Suttles, 1987: 200). The seeker also usually receives his or her syowen, a "spirit song," which manifests itself by making the dancer ill. A shaman or ritualist can recognise the afflicted person as a "new dancer," and help them to control their song, and to dance with it in the longhouse in a state of spirit possession. Each winter, people with songs acquired in this way dance possessed at the longhouse gatherings held for the purpose of releasing the syowen's power and strengthening the new dancer's ability to control the spirit song.

Logging activity and recreational activities (hiking, fishing, camping, boating, etc.) interfere with traditional Sto:lo uses of the mountain and forests as places of spiritual refuge and,
for spirit dancers, as questing sites for spiritual visions (Mohs, 1987, 1990; Suttles, 1987: 204). Areas such as Pitt and Alouette lakes, Sumas and Chilliwack Mountains, Mount Cheam, and the Chehalis River valley are heavily utilised by Sto:lo shamans and spirit dancers. Sto:lo people who continue such activities in these and other areas are increasingly disturbed by outsiders. In the most extreme cases, the destruction and transformation of the environment prevents the Sto:lo from practising their culturally important traditional activities.

The factors underlying public hostility (and sometimes indifference) toward Sto:lo ritual practices may stem from fundamentally different perceptions of cultural and spiritual practice. Ritual practices such as the longhouse ceremonial are vulnerable to attacks and/or incursions from non-aboriginal uses of the land in part because Sto:lo spirituality is not recognisable according to conventional understandings of religion (Bierwert, 1999; Suttles, 1987: 207). Ironically, even in terms of First Nation religion where the ceremonial traditions of the Northwest Coast (e.g. Haida, Tsimshian, Nisga'a, etc.) are celebrated in ornately decorated longhouse and public buildings, the lack of monumental display that is characteristic of Northwest Coast ceremony has perhaps prevented Sto:lo religious practice from being seen as a religion. The frenzied state of ecstasy that spirit dancers encounter during the pinnacle of longhouse dancing belies any notion of order and scripted ritual that a Western outsider is accustomed to witnessing in Christian or Eastern (i.e. Jewish, Muslim, Buddhist, etc.) religious practice. In addition, the longhouse itself provides a release for spiritual energy, however, Sto:lo ritualists find their source of spiritual veneration and reflection from the forest and bathing pools. There is nothing analogous in traditional Sto:lo spiritual practice to a temple of worship, which often leaves spirit dancers and shamans vulnerable to further attacks that Sto:lo spiritual practice lacks a monumental architectural setting and, therefore, any semblance of religious legitimacy.

Yet longhouse leaders have responded to outside threats not by justifying their practices comparatively, nor by claiming a ritualised order that is apparent to outside eyes, but rather by building up cultural practices within their communities. The following section explores the foundation of Sto:lo spiritual beliefs and practices by revisiting the discussion of Sto:lo sacred places presented in Chapter 2. My objective is to penetrate deeper into the Xa:ls legends and address the characteristics of places and landscape features that the Sto:lo traditionally describe as culturally important. From this discussion it should become apparent that the natural or
"wilderness" condition of Sto:lo cultural places will invariably obscure their existence to conventionally trained Western resource managers, and thus render them vulnerable to damage or destruction in the course of development.

3.3 Sto:lo Culture and Spirituality Revisited

3.3.1 Xa:ls and the Creation of Sacred Places: Monumental Landscapes
An understanding of Xa:ls and his place in Coast Salish cosmology is essential for comprehending the cultural significance of many Sto:lo places. According to legend, it was Xa:ls who created the salmon and taught the first people how to fish. Xa:ls created the cedar tree and provided the Sto:lo ancestors with the knowledge of how to use its various parts, and it was Xa:ls who inspired the art of Salish weaving. Furthermore, Xa:ls gave the world its present order, ridding the land of many evil people and creatures so that the Sto:lo people would have a safe place to live. In so doing, Xa:ls transformed many of the tribal ancestors giving the valley its present form and appearance (Boas, 1894; Jenness, 1955).

Figure 3.5: Siwash Rock

One of the earliest published accounts of the Xa:ls legends was written in 1911 by Pauline Johnson, a novelist of Mohawk and British decent who moved to Vancouver to document the stories of the Coast Salish people. The legend of Siwash Rock is perhaps one of the more colourful narratives found in Johnson's work *Legends of Vancouver*. The story opens with a young chief swimming in salt water as his wife prepares for the birth of their first baby; he is purifying himself to receive his child. Xa:ls and his three brothers approach him in a canoe shouting, "Out from our course ... We are men of the Sagalie Tyee and we command you ashore out of our way!" (Johnson, 1911: 64) The young man refuses, there is a brief tense exchange,
and the swimmer accounts for his behaviour. The strangers deliberate; “never had they been defied before” (Johnson, 1911). As the chief’s newborn baby cries out, Xa:ls rises from the canoe, “stretches out his arms towards the rising sun and chant[s] not a curse on the young chief’s disobedience, but a promise of everlasting days and freedom from death” (Johnson, 1911: 65). The bathing man is changed to stone, and his wife and baby are transformed as well to be near him (Figure 3.5, preceding page). In contrast with the morally deficient people that the Transformer encounters elsewhere in his journeys (See Chapter 2, section 2.3.1), Xa:ls’ transformation of the young chief and his family into stone is intended to create a permanent talisman for future generations of superior spiritual and moral conduct:

Through my mind raced tumultuous recollections of numberless articles in yet numberless magazines, all dealing with the recent “fad” of motherhood, but I had to hear from the lip of a Squamish Indian chief the only treatise on the nobility of “clean fatherhood” that I have yet unearthed. And this treatise has been an Indian legend for centuries; and, lest they forget how all-important these two little words must ever be, Siwash Rock stands to remind them, set there by the Deity as a monument to one who kept his own life clean, that cleanliness might be the heritage of the generations to come. (Johnson, 1911: 65; emphasis mine).

Features such as Siwash Rock are relatively small in comparison with many other landmarks that reside within Sto:lo traditional territory. In the upper Fraser Valley, Mount Cheam itself is a place where Xa:ls once journeyed and, in the process, transformed several Sto:lo ancestors into the grand peaks and ridges that comprise the Cascade Range (Figure 3.6). In my

Figure 3.6: Mount Cheam (Lhilheqey)

Photograph by author.
earliest encounters with the Cheam people, I learned that the mountain possesses other names – *Lhilheqey* or “Lady Cheam” – and embodies a spirit or persona that many people still call upon today in moments of need or distress (Darryl [Cheam Informant], Personal Communication). In my initial search for understanding of what the mountain is, and what it means to the people of Cheam, I looked for stories about Lady Cheam in archived accounts. Oliver Wells’ 1962 taped interviews with Sto:lo elders were an invaluable source of information. One elder – Mrs. Amy Cooper – told Wells that the mountain was once a woman known as Lhilheqey who had been taken as a wife by a man who became Mount Baker (Wells, 1987). He took her to his home south of the Fraser Valley and they parented three boys, who were later to become Mounts Rainier, St. Helens and Shasta. When the boys grew up, she had three girls and, growing despondent over her ancestral home, she decided to return to the Sto:lo (i.e. the Fraser) Valley. According to legend, Lhilheqey pronounced that she would “...stand and guard the Fraser River, that no harm comes to my people, and no harm comes to the fish that comes up to feed them.” The three little points in front of the main peak are her children – “they say she holds the smallest one (Oyowo:t) in her hand” – with a rise behind being the dog that followed them back to the Fraser Valley (Wells, 1987: 34). Wells recounts another version of the story in which the mountain and the ridge peaks are sisters. In this narrative, the younger sister Oyowo:t cried and cried to be in front looking at the river, “and so she stayed there in front, facing upriver” (Wells, 1987). In both accounts, the women were transformed by Xa:ls, and they became mountains.

Thus, I found considerable detail about Lhilheqey in other ethnographic accounts. All the stories that I could find about Lhilheqey describe the mountain as having once been a very particular but troubled woman. The Xa:ls legends describe her with some sympathy, but certainly not with the idealisation that is found in the Siwash Rock legend. Xa:ls' purpose for Lhilheqey appears to be entirely different. Rather than creating a permanent moral testament for future generations of Sto:lo people, the love and fondness that Lhilheqey felt for her people moved the Transformer to such an extent that he placed the woman's spirit in the mountain so that she would become a permanent guardian of her people (Bierwert, 1999: 68). Mount Cheam so visibly dominates the sky and oversees the valley that Mrs. Cooper's image of the mountain as a sentinel corresponds with the visual impression that the mountain creates. The mountain is a grand feature in the valley's landscape and, when the people of Cheam (and other Sto:lo people)
reflect on the legend that is associated with the mountain, this grandeur becomes implicit and embedded in the mountain itself. In effect, the mountain becomes an integral part of the Cheam's oral tradition and, therefore, an emblem of Cheam heritage (Bierwert, 1999: 68).

The encounters between Xa:ls and early Sto:lo ancestors often involve confrontations resulting in the transformation of human characters into stone landmarks. However, in Chapter 2, I also mentioned that Xa:ls' transformations were not limited to inanimate bodies of stone, but that he had also transformed many people into animals and plants as well. In another legend, Xa:ls finds the “one good man” then in the world and changes him into the cedar tree. This is a more materially productive gesture than the Xa:ls of other stories, and it provides a different perspective on the Transformer as a figure who provides for the “good people” by creating an abundant resource for the future.

One legend common to all Sto:lo tells the story of the origin of the cedar tree. It goes like this. At one time there was a very good man who was always helping others. He was always sharing whatever he had. When Xexa:ls (the Transformers) saw this they transformed him into a cedar tree so he would always continue helping the people – cedar roots for baskets, bark for clothing, and wood for shelter. (Albert McHalsie in Carlson, 1999: 55).

Most of the Xa:ls legends that I have dealt with thus far describe encounters with people who become physical landmarks that are tied to the landscape. While most of the stories that have been explored in this chapter or in Chapter 2 include references to specific places, none of the Xa:ls legends involving encounters with plants and animals include specific references to place. In essence, animals move and are not fixed to any particular geographic location. Similarly, cedar trees are fairly ubiquitous on the West Coast landscape and are unlikely to possess the landmark status retained by places such as Siwash Rock or Mount Cheam. However, cedar forests are relatively unique because, as the creations of Xa:ls, they are the living essence of Sto:lo spirituality which are, nevertheless, literally rooted in the landscape (Carlson, 1999). In the following discussion, I wish to provide a deeper exploration of the cultural value that is represented in cedar forests. I will argue that the forests that Xa:ls has created are often defended by the Sto:lo from outside incursions (e.g. logging, urban development, etc.) because they are embodiments of Sto:lo culture and tradition that are fixed in the land and are, therefore, sacred places.
3.3.2 The Cultural Dimension of Forest Resources

In many Pacific Northwest cultures, trees are endowed with a variety of colourful human characteristics. Trees have a conscious life, they have a 'soul,' and are capable of feelings and thoughts just like human beings (Boas, 1921: 1220; 1927: 616; deLaguna, 1972: 822). The Kwakiutl, for instance, consider a cut-down tree to be killed (Curtis, 1915: 11). Trees are also endowed with the faculty of speech. The Bella Coola on the central coast believe that trees and people could at one time speak to each other, and, although human beings had forgotten their language, trees could still understand human speech (Macllwraith, 1992: 91-2). In essence, a human could talk to a tree, and address it in prayers. Being proper people, trees were treated like people.

Trees in Sto:lo culture, particularly cedar trees, are considered to be living, animate beings imbued with both material and spiritual value. According to Sto:lo oral tradition, they believe that cedar trees had been created by Xa:ls from a distant human ancestor and, therefore, possess a living spirit or life force that humans should respect when interacting with them (Carlson, 1999: 55). This living force explains why wooden objects such as carvings, wooden implements, and even longhouses are regarded by the Sto:lo as conscious, living things. The reddish colour of cedar wood, equated with blood, gives it the supernatural force that the Kwakiutl call *nawalak* and the Sto:lo call *shxweli* or, in other words, the spirit flowing through the tree's body (Carlson, 1999: 55; Mauze, 1999: 240). For the Sto:lo, all objects made of cedar wood or bark – e.g. life poles, planks, ceremonial paraphernalia, etc. – are alive because they are products of something that is very much alive. In Goldman's words, wooden objects are:

...forms of life that undergo transformations, becoming all other forms. From this point of view one does not speak of images carved in wood, but of wood transformed (1975: 19).

The need to create and utilise objects from natural elements is fully recognised by the Sto:lo people. In fact, the Xa:ls legends affirm that natural elements such as cedar wood and salmon were created by the Transformer for the benefit and use of the Sto:lo (Carlson, 1999: 55). However, attendant with the right to use the products of nature is the obligation to treat them with reverence and respect. Thus longhouse builders or canoe makers did not fell trees at random. When planks are needed for a building, they are sometimes split from a standing tree, but only one that is old enough and sturdy enough to withstand the wound inflicted on its body. It is with the same respect for a tree's life and continued growth that Sto:lo women harvest bark with
extreme care, always leaving enough bark on the tree for sap circulation to continue and selecting trunks that would not be harmed by the partial removal of their bark. In many instances, before cutting a tree, prayers would be offered along with gifts to the tree's spirit:

So our resources are more than just resources, they are our extended family. They are our ancestors ... Our elders tell us that everything has a spirit. So when we use a resource, like a sturgeon or a cedar tree, we have to thank our ancestors who were transformed into these things (Albert McHalsie in Carlson, 1996: 55).

Ritual procedures when taking a cedar tree, based on gratitude and on the acknowledgement that trees are giving up their lives for the benefit of people, are intended to ensure an abundant supply of resources for future years. It is because they explicitly and emphatically acknowledge the central role played by the life-giving cedar in their lives, that Sto:lo people address them with reverent expressions and refer to them as si:le (pronounced see-lay, meaning ancestors or elders; Bierwert, 1999: 65).

Therefore, as the living embodiments of distant ancestors that have been provided to the Sto:lo people by Xa:ls for their benefit and use, cedar forests are sacred. Western people are continually bombarded by the extensive use of the word "sacred" in North America and elsewhere in the world. The term "sacred" has been used so often in political contexts and New Age philosophy that its original meaning is now almost undetectable under the many layers of new meanings. The idea of trees as sacred objects has been characterised in the following way:

A tree becomes sacred through recognition of the power that it expresses. This power may be manifested as the food, shelter, fuel, materials used to build boats, or medicine that the tree provides ... Sacred trees have also provided beauty, hope, comfort and inspiration, nurturing and healing the mental, emotional, and spiritual levels of our being. They are symbols of abundance, creativity, generosity, permanence, energy and strength (Altman, 1994: 9; emphasis added).

In addition to providing material sustenance and symbolising moral values, trees also epitomise the loss of nature and purity. In fact, given their great longevity, they are thought to be the living witnesses of an idealised, pre-contact period that preceded the era of conquest brought by European settlers:

Because many of the old growth Cedar predate the coming of the white man, they are our link to more pure times before the land was desecrated and razed ... We need a place where old-growth trees, especially the red-cedar, live along with young trees; where we know our shrines will be unmolested; where we can obtain cedar for ceremonial purposes; where we can go for retreat and meditation with our Grandmother, the cedar; and where we can take our spiritual baths unmolested (Pavel et al., 1993: 64).
This latter statement is intended to provide an argument supporting the historical link between Pacific Northwest people (in this case, the Skokomish of Washington State), the cedar tree and old-growth forests. It should be interpreted as a political statement in defence of traditional lands on the ground that they are culturally important and essential for religious practices. A sacred place thus becomes a site "where cedar grows in a natural state" and where Native people take "the new initiates of [their] ancient secret society for purpose of isolation, meditation, spiritual cleansing, ritual bathing and schooling. The things that dwell in these sites are the teachers of [their] people" (Pavel, et al., 1993: 77-8). Thus, cedar forests are sacred because they are living entities that have been created by a spiritual being to provide for the material and spiritual welfare of the Sto:lo people. Cedar forests become meaningful and sacred places because they are providers, which posits a reciprocal human-environment relationship that is perhaps more intimate and materially productive than the discussion of place making in Chapter 2 would suggest (See section 2.4.2). In essence, cedar forests are sacred and meaningful places because they are more than an embodiment of ancient historical events, moral imperatives or personal memories; they are meaningful because they are a living source of physical and spiritual sustenance. This is a fundamental source of Native assertions that human beings are integral parts of the land, and that they must live responsibly to avoid upsetting or destroying what Europeans and non-Native North Americans would call the 'natural order' (McCormack, 1998: 28).

In their pronouncements of cedar forests as sacred places, First Nations are fighting against massive clear-cutting. Cedar preservation is more often a matter of political and cultural survival than one of ecological survival. Many groups in British Columbia are promoting research on aboriginal forest management practices by examining culturally modified trees – CMTs (Jones, 1998: 215; Stryd and Eldridge, 1993). CMTs are proof of the long history of occupation of First Nation ancestral territories and, as such, they can be cited in land claims and litigation processes. However, whether they are addressing landscapes that contain CMTs, transformer sites or sacred cedar groves, the difficulty that First Nations often encounter is the inability of Western forest managers to recognise the sacredness of such places; either because their cultural background precludes them from interpreting these sites as significant, or they simply lack the requisite cultural education (McCormack, 1998; Redmond, 1996; Stankey, 1992: 101). The following case
study is intended to illustrate what can transpire when a forested setting with profound cultural or spiritual significance is subjected to competing land-use pressures from culturally uninformed public land managers.

**Case Study - The Hidden Dimension of Sacred Lands**

The most difficult challenge for First Nations, from a resource management perspective, is dealing with insensitive government agencies that are antagonistic or indifferent to cultural values. Those who are in the best position to make a difference are the resource managers at the local level, and the anthropologists and archaeologists upon whom they rely. Mount Shasta, in Northern California, is one place in North America where some progress is being made, largely due to better public management by a sensible District Ranger of the U.S. Forest Service, and to an ethnographer working with local First Nation communities (Cummings, 1998: 287).

Mount Shasta itself is sacred to numerous California and Oregon First Nations. It is a majestic dormant volcano, with beautiful forests, icy glaciers and a magnificent profile on the larger landscape. In the mid 1990s, the Forest Service proposed a second ski resort to be built on Mount Shasta which would ultimately desecrate Panther Meadow, a place especially sacred to the Wintu people (Cummings, 1998; Magary, 1996). The spring site at Panther Meadow is a rare and fragile mountain wetland, the source of the McCloud River, and an ancient Wintu ceremonial site that has been in continuous use for thousands of years. The leading opponent to the project, Florence Jones, is the spiritual leader and 85 year old elder of the Winnemen Wintu. She is a "top doctor," the highest spiritual achievement of the Wintu tradition. As a spirit doctor, Florence is a healer, who uses the springs at Panther Meadow as a source of her medicine and for community ritual. Florence is one of the last authentic traditionally trained herbal doctors having studied plants for 38 years, and taught by elders who practised Wintu medicine prior to contact with white society.

The Forest Service is very acquainted with Florence, and has provided her with permits over the years for ritual gatherings on and off Mount Shasta. She is very well known and respected throughout the area. However, when developers selected her spring site at Panther Meadows for a ski run, the Forest Service ignored Florence's cultural interests in the mountain. They did the usual archaeological survey, and finding no arrowheads, bones, pots, or other tangible evidence of human use and occupation, they concluded that there were no cultural resources at the Meadows site (Cummings, 1998: 288). The Forest Service then told Florence
that they were building the ski resort without consulting her. Subsequently, they wrote their reports, and on the basis of the archaeological survey, sought and received clearance from the State Historic Preservation Office (SHPO).

Florence sought the advice of a lawyer, who succeeded in obtaining a procedural delay in court, giving Florence the opportunity to convince the SHPO that they had been too superficial in their studies. With the help of the California SHPO, the Forest Service agreed to do an ethnographic and ethnobotanical survey of the mountain and the meadows. They progressed from making a finding of “no historic properties” on Mount Shasta, to nominating both the meadow and the mountain itself to the National Register of traditional cultural properties (Cummings, 1998: 288). This success can be attributed to three factors: the involvement of a dedicated traditional leader, improved local management by the Forest Service, and the lack of a strong political force behind the development project.

Most culturally sensitive areas in the United States and Canada remain situated on public or Crown land, although many are threatened by encroachments from urban development and resource extraction activities (Bobiwash, 1998; Cummings, 1998; Mohs, 1987, 1990). This places forest managers and other land-use planners under an enormous burden of responsibility (whether they choose to recognise that such a responsibility exists or not) to take care of public lands, and consider matters involving the cultural dimensions of the landscape in their land-use decisions. In the case of Panther Meadows on Mount Shasta, or cedar forests in the Fraser Valley, cultural sites require a certain land base; they are attached to a natural habitat that sustains them and their cultural community. As the case of Mount Shasta shows, First Nation peoples are forced to seek protection for their sacred places through laws and government policies that do not recognise their essential and special characteristics. The law demands concrete evidence of human use and modification, typically by providing archaeological evidence (i.e. human artefacts) taken from a site as proof that the setting has been used for ritual or sustenance activities.

David Schaepe, who works for the Sto:llo Nation, said ... transformer rocks need to be protected under the Heritage Conservation Act. ‘They don’t have that protection at present, because the province defines archaeological artefacts only as things created by humans.’ He said only one transformer has heritage status in Sto:llo Territory and that is because it is surrounded by artefacts, such as arrowheads and blades and is near an old village site. (Vancouver Sun, August 9, 1999; A1)
In general, the need for objective evidence, and a tendency to dismiss statements of proof based on oral traditional and mythology, means that the law and government policy as it currently exists is stacked against the preservation of culturally significant places in British Columbia.

The following section is intended to round-off my exploration of sacred places by examining the classification of spiritually significant sites that has been compiled by the Sto:lo Nation. Through photographs and descriptions of typical cultural sites within each category, the discussion is intended to illustrate the natural, unmodified quality of many Sto:lo cultural sites which makes them relatively obscure and difficult for resource managers to distinguish. Moreover, based as it is on an examination of the general characteristics of culturally significant places in Sto:lo territory, this discussion will allow me to extrapolate and develop planning recommendations that apply beyond the particular landscape features that are examined in Chapter 6.

3.4 Sto:lo Cultural Places

To date, the bulk of the current research on culturally significant Sto:lo places has centred on documentation of the values accorded to them by elders and other members of Sto:lo society (Carlson, 1999: 5; Mohs, 1994). In order to gain a better understanding of these places and their role in Native society, site documentation has been conducted to record location and descriptive information, field identification, and the formulation of a Sto:lo Nation site registry.

The Sto:lo people do not have a single word to describe all sites with cultural significance. The Halkomelem word *sti’ilt’aqem* is used to describe a spirited spot or spirited place (Carlson, 1999: 192; Suttles, 1987). *Sti’ilt’aqem* include places or sites which are, in themselves, believed to be spirited or inhabited by supernatural forces, most notably sites with resident spirits or supernatural creatures, transformer sites, and a few other spiritual places. There is also a word, *sxwoxwiyam*, that is used more generally to describe landmarks that have cultural narratives or legends associated with them (Carlson, 1999: 193; Suttles, 1987).

For inventory purposes, several "classes" or "types" of cultural places have been identified by the Sto:lo Nation, based on interviews with community Elders (Mohs, 1987, 1990, 1994). Taken together, these comprise what can be considered Sto:lo sacred grounds or spiritual sites. In the context of this chapter the terms 'sacred ground' and 'spiritual site' are used interchangeably to mean a site or physical locality with which members of a Native group have strong cultural ties or feelings based on traditional beliefs and/or ceremonial use.
3.4.1 Transformer Sites

These are sites that are attributed to or associated with the deeds of Xa:ls and other transformers. Transformer legends are powerful stories about places and events held sacred in the hearts and minds of many contemporary Sto:lo people. Recorded ethnographically at the turn of the twentieth century and in the 1940s and 1950s, these legends have been maintained to the present day, demonstrating their importance to the Sto:lo (Duff, 1952; Jenness, 1955). They are an integral connection to the past and demonstrate the persistence of traditional narratives.

Figure 3.7: Transformer Rock, Chitmexw

According to legend, when Xa:ls travelled throughout the Fraser Valley putting things in order, he made numerous transformations. The legacy of his deeds and actions are to this day identified with many geographical features in the landscape. In effect, transformer sites represent individuals or groups of people who were transformed into stone by Xa:ls and, not infrequently, they go unnoticed by archaeologists:

I can’t begin to tell you about the heritage sites you’ve missed. I can show you a place where Xa:ls transformed a man, woman, girl, boy and dog into stone right close to Siwash creek (Mohs, 1984: 3-4).

Several transformer sites are of unusual shape. However, an equal or greater number are rather subtle in terms of actual form. In fact, within areas where transformer sites have been identified, the transformer rocks are occasionally not the ones with the most unusual, conspicuous forms (Mohs, 1987, 1994; Figure 3.7). To date, about seventy transformer sites have been identified.
Most are associated with bedrock outcroppings, prominences, or large boulders, although a few caves, small boulders, river pools and one mountain (i.e. Mount Cheam) are also represented.

3.4.2 Spirit Residences
These sites are believed to be spirited or inhabited by supernatural creatures, usually related to particular spirits and/or beings, such as ghosts, water-babies, Thunderbird, sasquatch, serpents, and so on (Mohs, 1994: 195). Sites with resident spirits or creatures are generally much larger in area than transformer sites, and are distributed more evenly throughout the landscape. Spirit residences are typically small lakes (Figure 3.8), but they may also consist of small river pools (i.e. oxbows), stagnant ponds, a few caves, knolls and rock formations. Places of this nature, as well as all transformer sites, are believed to possess residual spirit powers, which can be drawn upon by those undergoing vision quests. For some, spiritual encounters at these locations can be highly transformative.

Some spiritual areas with resident spirits and all transformer sites are considered “power” spots in the sense that they are believed to have residual power. Those undergoing vision quests can draw upon this power. However, to those unwary of these places, the effects can be quite dramatic:

Charlie Douglas ... used to make fun, josh the syowen [spiritual] people and make fun of it and call people bullshitters. His mother-in-law was a dancer, and when she was dancing, he would say, "Oh, bullshit!" like you don't have nothing, there is nothing there. And so he went out hunting in the woods, up in below Mount Cheam. And he got his vision of three lakes. And he started looking at those lakes. And all of a sudden he went numb and started getting dizzy. So he turned and started running home. And when he started running, he started hollering. His cry came out ... But when he got home and started singing, he called all the people. And his mother-in-law heard about him and came over. And they sang his song, and he was dancing. And his mother-in-law came [and
3.4.3 Ceremonial Areas

Ceremonial areas are associated with ceremonial functions, religious observances, feasts, mortuary rituals, and so on (Mohs, 1994: 195). Most areas are associated with winter spirit dancing and include the locations of many large cedar longhouses or 'smokehouses,' ritual bathing pools situated along the shallow areas of rivers, creeks, sloughs, lakes and highland training grounds (Figure 3.9). Bathing pools and isolated training areas are particularly important for new initiates into the winter spirit dancing society, and their locations are jealously guarded secrets.

Figure 3.9: Ritual Bathing Pool

Among Sto:lo elders, there is a reverence for former ceremonial places, notably those at traditional settlements. Accordingly, there is a rising concern over the recovery, removal and sale of religious artefacts including ancient ornamental stone sculptures removed from pre-contact settlement sites.
3.4.4 Traditional Landmarks
These places relate to specific aspects of Sto:lo culture and/or particular historical events. Of particular importance are several locations associated with the origin of the sxwo:yxwey mask and Sto:lo tribal ancestors (Mohs, 1994: 196). One of the more important of these places is Liíhetatlets, a large pool that appears in a dry, side-channel of the Fraser River only during low-water times. Cultural areas of traditional significance are represented by a variety of features including boulders, caves, cliff faces, pools and, occasionally, longhouse locations and pithouse settlements (picture not available). One example of the latter is the pithouse settlement of Sxwoxwiymelh ('a lot of people died at once'), associated with the smallpox epidemic of 1806.

3.4.5 Questing Areas
These areas relate to personal vision quests or other rites of transition such as puberty rituals, and others are repository sites for cedar 'life-poles' and the ceremonial regalia of winter spirit dancers (Mohs, 1994: 197; Figure 3.10). Most of these locations are associated with

Figure 3.10: Questing Area, Foothills on Mount Cheam

This photograph is typical of questing areas on Mount Cheam. The abundance of cedar and clean mountain water provide ideal conditions for meditation and spiritual cleansing. Privacy during quests is of the utmost importance and, therefore, their locations are closely guarded secrets. Photograph by author.
isolated areas in the mountains, isolated stretches of the river, caves and transformer sites. The Sto:lo spiritual revival that has occurred in the past thirty years has seen many of the younger generation undergo extended periods of spiritual training in these areas. New dancers seek out wilderness areas in order to place their training regalia, and also their cedar life poles, which often involves tying the pole to a young sapling so that the life pole and tree become united with the passage of time. It is generally believed that disturbance, removal or destruction of a life pole or an initiate’s regalia can cause severe harm to both the initiate and the interfering party. As such, repository locations are kept secret.

3.4.6 Legendary Places
These places are associated with important legends and/or characters in Sto:lo folklore; they may also be judgement and prediction sites (Mohs, 1994: 197; picture not available). Sites of legendary and mythological significance may vary considerably in nature, form and geographical distribution. Examples include buried villages and several mountain caves associated with the Sto:lo Flood story. One of the better-known mythological places is P'o'th'esala (‘baby basket rock’), a small island in the Fraser River near American Bar. Formerly, women brought their baby baskets to P'o'th'esala after their infants had outgrown them. They were placed in a hollow in the rock, turned to the sun, and left. Sto:lo women were required to make a new basket for each baby in much the same tradition that a new costume is made for each spirit dancer initiate entering the smokehouse. To do otherwise would cause harm to befall to subsequent users.

The baskets were left in commemoration of Salmon Woman who, according to legend, was travelling upriver with a message from the saltwater people for the people living upstream. She was travelling with her baby, who was in a p'o'th'es (baby basket). The p'o'th'es was heavy and hindered her travel, so on the way Salmon Woman bathed the baby in medicines to make it grow fast. At P'o'th'esala, the baby finally got large enough to travel without the p'o'th'es, and it was here that Salmon Woman left it, in a hollow in the rock.

3.4.7 Burial Places
Burial and mortuary places include tree burials, box burials, funerary houses, cave burials, and interment locations (Mohs, 1994: 198; picture not available). Traditionally, tree burials, box burials and funerary houses were most common, but today interment is the most common form of burial. Among the Sto:lo, human remains are treated with respect, whether they
date from recent, historical or pre-contact times. It is generally believed that the handling of human remains can have a potentially harmful effect on the living, notably spirit sickness or spirit loss. The handling of human remains thus requires strict procedures of personal cleansing and protection. It is also a common belief that the spirits of the dead reside among the living. Although some spirits are thought to offer protection, most are believed to bother, disturb, or generally interfere in the lives of the living. The reasons for this vary, but it is often thought that the ancestral spirits are upset by the personal conduct of the persons affected. To reconcile and rectify this situation, ceremonial burnings are regularly conducted at funerals and on other occasions, such as memorials.

3.4.8 Traditional Resource Areas
Resource utilisation sites from which materials for spiritual or ceremonial activities are obtained are generally small in size and scattered throughout Sto:lo territory (Mohs, 1994: 198). The most common are quarry locations from which ceremonial paint is extracted and used by contemporary Winter Spirit Dancers. The location of these quarries is a private matter, knowledge of which is shared by family members involved in Winter Dancing. Formerly, certain types of rock quarries such as rock crystals would also be included within this category.

Figure 3.11: Traditional Resource Area, Cedar Bark Stripping

Carlson: 1999: 56.
In addition to mineral quarries, the highlands of Mount Cheam are important for the collection of medicinal plants and cedar bark (Mohs, 1987: 65, 1994; Figure 3.11, preceding page). Among the Sto:no, resource utilisation areas associated with the collection of medicinal plants are equally as important as the more 'general' resource utilisation areas such as berry harvesting grounds, cedar stripping areas and family fishing sites (family-owned fishing sites are described in Chapter 2, section 2.4.2). Hence, places of this nature are included within this category as a type of cultural area rather than within a particular category of "spiritual resource utilisation area" (Mohs, 1987: 65).

3.5 Chapter Summary
Based in part on readings of the Coast Salish ethnographic literature, and drawing to a large extent from first-hand discussions with Cheam band members, the traditional Sto:no relationship with the land is predicated largely on spiritual conceptions of reverence and respect. The only law that will protect this alternative worldview is one that would allow traditional cultures to live sustainably on their own terms and give them complete control over the places that are sacred to them. Given the current pace of treaty and land claim settlements in British Columbia, that level of cultural sovereignty does not seem entirely practical in the near future. The problem that this creates for First Nations seeking to protect their cultural lands stems from the characteristics of the places that I have reviewed so far in this chapter. First, with a few exceptions, sacred lands are situated on government administered Crown lands that are isolated from the reserves on which indigenous people reside. The legacy of European settlement and Sto:no resettlement onto reserves (section 5.2) illustrates that reserve territories have as a general rule diminished rather than increased in size over time. Frequently, territorial reductions and "cutoffs" have been imposed at the cost of isolating reserve communities from their traditional cultural areas. Thus, without jurisdiction and responsibility for cultural places, the First Nations who are their caretakers are unable to use and appropriately protect them.

Second, transformer rocks, cedar forests, springs and other cultural places typically lack any tangible, outward evidence of their significance as culturally important settings (section 5.3). With the exception of culturally modified trees – i.e. trees that have been harvested for their wood and/or bark but are left standing (Figure 3.12) – most sacred sites in Sto:no traditional territory are relatively unaltered natural features. Without the requisite cultural knowledge, most non-aboriginal residents and tourists travelling through the Fraser Valley are likely to interpret features
such as Th'exelis, Siwash Rock and Mount Cheam as little more than intriguing landmarks with some scenic appeal. In the hands of a forest manager, cedar forests and cold water streams are regarded as little more than economic commodities; a resource for which our governments have designed laws to protect the access and removal rights of commercial licensees. In essence, Sto:lo cultural places do not have the same familiar and easily recognisable characteristics of archaeological sites. Typically there are no artefacts, no cultural markings or alterations, and no distinguishing characteristics that will make them readily apparent even to the most culturally sensitive land manager. In general, intangible symbolic concepts, mythologies and ritual uses of the land are of little interest to resource managers when the laws are written to protect only those sites with architectural or archaeological significance.
4.1 Introduction
This chapter describes the research approach and research strategy used in the investigation. I begin by making explicit the methodological assumptions behind my research strategy, which can best be described as a qualitative, ethnographic study. Because a deliberate effort was made to produce sound ethnographic scholarship, the discussion outlines some of the main "methodological postulates" (Lincoln and Guba, 1985) found in the ethnographic literature.

In the second part of the chapter I provide a procedural account of the methods used for data collection and analysis. A theoretical rationale is given for each step in what was essentially an emergent research design. I also comment on the measures taken to ensure the validity and reliability of the findings and how the ethical principles of ethnographic research were followed.

4.2 Research Approach
The approach that one takes to an investigation is usually determined by both its suitability to the research question(s) and one's view of the world (Yin, 1984; Merriam, 1988; Kirby and McKenna, 1989). Yet the reasons why a certain approach is taken frequently go unmentioned in research reports. In this section, I discuss some of the philosophical assumptions about the nature of cultural research which influenced my data gathering process. This is done in an effort to provide the reader with a rationale for why the study was conducted as it was, and to ensure that nothing about the process is hidden from scrutiny.

4.2.1 Suitability of Qualitative Ethnographic Research
Methodologists take different positions with respect to what ethnography is and how to go about conducting ethnographic research (Schensul, J., et al., 1999: 9). One definition of ethnography posits that it is:

"... a scientific approach to discovering and investigating social and cultural patterns and meanings in communities, institutions and other social settings" (LeCompte and Schensul, 1999: 21).

My approach to ethnography takes the position that human behaviour and the ways in which people construct and make meaning of their worlds are highly variable and locally specific. All humans are defined by the fact that they make, transmit and share cultural traits in a group. Ethnographers begin and end their work with a focus on these patterns and traits which, seen in aggregate, constitute a people's culture. The result of such a focus is a body of work or document that is called an ethnography (LeCompte and Schensul, 1999: 3).
There are several reasons why I have chosen to use a qualitative ethnographic approach rather than other research methods such as surveys and controlled experiments. A key difference between ethnography and other behavioural and social scientific methods is that ethnography assumes that we must first discover what people actually do and the reasons they give for doing it before we can assign interpretations to their actions drawn from our own personal experience or from our academic disciplines. This is essentially why the tools of ethnography are designed for discovery. Much like naturalists, ethnographers learn through systematic observation in the field by interviewing and carefully recording what is seen and heard, while learning the meanings that people ascribe to what they say and do.

The emphasis of ethnographic research upon discovery meshes well with the objective of this research which is to discover “how” the people of Cheam express a cultural and spiritual attachment to the land rather than to determine “how many.” In effect, this thesis is intended to be exploratory rather than predictive in nature because of the relative uniqueness of the topic (Schensul and LeCompte, 1999: 29). Before a researcher can establish how prevalent a particular phenomenon or construct is within a group, the ethnographer must at least have an understanding of the phenomenon that is being examined. To date, there has been no systematic examination or documentation of the nature-based cultural values of the Cheam or their neighbours within the Sto:lo Nation. In effect, what the Cheam value about their environment, and why aspects of the Cheam’s environment are perceived to be culturally and spiritually significant is a relatively new and unexplored research question. This makes an ethnographic approach to working with the Cheam preferable to experiments, surveys and other forms of research because ethnography emphasises discovery; it does not presume answers (LeCompte and Schensul, 1999: 33). Ethnography permits open-ended or semi-structured techniques that allow the researcher to gather information identifying the phenomenon in question. The understanding that is gained from this initial phase of discovery can potentially serve as a foundation for building hypotheses which can be tested and, in some cases, adapted for use elsewhere.

A further characteristic of ethnography which makes it particularly suitable to the present study is that ethnographic researchers cannot control what happens in their field situation of choice (LeCompte & Schensul, 1999: 33). Ethnographic research is conducted in field settings
where the researcher enters as an "invited guest" to learn about what is going on through a process of mutual dialogue and learning (Bierwert, 1999: 113). Thus, the ethnographic field situation is unlike experimental research, where most aspects of the environment are controlled and where researchers can use the same instruments and expect to get the same results if the study is repeated. Even when the researcher uses the same instruments, changing circumstances beyond the ethnographers' control may generate different results that must be explained.

A key consideration in my decision to select an ethnographic research design over a more controlled, experimental approach was my status as an invited guest within the Cheam community. I had been advised by several informants at the Cheam band and the Sto:lo Nation that an investigative approach involving surveys and controlled tests would be negatively perceived by the research participants and, in particular, by Cheam elders. For instance, much of what the Sto:lo people have to say about their relationship with the physical world is communicated through oral histories and teachings. Many of these teachings take the form of personal experiences and, on occasion, colourful narratives based on local myth and legend which are intended to educate the listener (Bierwert, 1999). The expectation of the storyteller is that the listener will patiently attend to what he or she is saying, following the frequent lateral tangents of the speaker, until the point or lesson of the story has been reached.

Experimental research presumes that interaction with the "subject" will follow a pre-established protocol which uses a prescribed set of questions or stimuli, and often precludes speakers from engaging in lengthy and seemingly "off-topic" discourses. When a speaker is interrupted because they are deviating from the protocol of the experiment, or because the researcher does not require a lengthy verbal response from the "subject," the storyteller is often left with the feeling that their experience and perspectives are not valued by the researcher. Offended, the participant may then choose to physically or mentally detach from the research and provide only fleeting, half-thought responses (personal communication, Darwin Douglas, November 10, 1999). Thus to avoid insulting the research participants, I had been advised to follow the cultural norms of the Cheam by assuming the role of learner and invited guest and carefully listen to what was said during the interviews (personal communication, Darwin Douglas, November 10, 1999). In effect, I decided to avoid the tendency in most research to transform the
researched into “objects of scrutiny and manipulation” and decided instead that the more open-ended, dialogic process of inquiry inherent in ethnography would be a more culturally suitable approach.

I would also argue that, as an exploratory exercise, the study should be rich in description in order to capture the complexities and nuances of Cheam nature-based cultural values and to learn from their expressions of those values. At the risk of over-generalisation, First Nations environmental values are typically characterised as holistic and complex, embedded in multiple dimensions of their cultural, economic, political and spiritual life. Since my perspective and understanding of the world is constrained by my own cultural and conceptual baggage, I chose not to presume any answers about how the Cheam conceptualise their environment and decided instead to allow the themes to emerge from my discussions with the research participants themselves (Schensul and LeCompte, 1999: 83).

Given these various arguments in favour of using an ethnographic research design, the question remains, why use a largely interpretive research design over an approach which is more experiential or based on participant observation? According to recent cultural theory, true understanding of another culture's world-view can be facilitated by engaging in first-hand observation and prolonged participation with the members of a cultural group. In effect, some authors would contend that true and valid knowledge can only be derived from direct personal experience (Sanoff, 1986: 10; Scollon & Scollon, 1979: 185; Wax and Thomas, 1972; Goulet, 1998: 30). LeCompte and Schensul (1999: 41) argue that the choice of research designs is often the result of the personal preferences of the researcher, as well as the constraints and needs of the research setting. Experiential research requires a considerable investment of time on the part of both the researcher and the subject group. When performed correctly, experiential research involves immersion in the life patterns of the subject group and learning through direct experience and action (Goulet, 1999: 33). Thus, for example, if an ethnographer hopes to develop some insight into aboriginal ritual performances, according to the experiential paradigm, he or she will be expected to engage in prolonged and intense participation in their world. This frequently requires involvement in the ritual performances and in the day-to-day life of the subject group (Goulet, 1999: 244). The degree of personal involvement demanded by the experiential paradigm is well beyond the scope of a Master's thesis, as well as the time and resources available to
conduct the research. In such instances, methodologists have argued that the techniques of interpretive ethnography - e.g. in-depth interviews with key informants - are appropriate where the researcher's involvement with the subject group is constrained by the limitations of time (LeCompte & Schensul, 1999: 88; Pelto & Gove, 1978).

In addition, I believe that an interpretive approach to cultural research is as valid as an immersive, experiential approach. My perspective on cultural research is that an experiential paradigm will potentially make one competent in another's world to some degree, but there will always be a sense of having barely scratched the surface. However intense and prolonged a researcher's participation in another's world he or she remains, at best, "an outsider who knows something of what it is to be an insider" (Keesing, 1992: 77; Goulet, 1998). My belief is that, ethnographic research can never hope to place the researcher completely within the mindset of other people, thereby inhabiting their world (Jackson, 1985: 135). At the very most, the researcher can begin to develop an understanding of another world-view by listening "to what, in words, in images, in actions, they say about their lives" (Geertz, 1986: 373). The approach taken in this thesis will, therefore, focus on interpreting the system of symbols - speech and actions - that the Cheam use to order their subjective environmental experiences and speak about them (Geertz, 1986; Goulet, 1998).

4.2.2 Some Ethical Issues

The Researcher-Researched Relationship

There are several aspects of the relationship that the researcher establishes with the subjects of her/his research that are crucial facets of ethnographic methodology. As described in the preceding section, researcher-researched relationships are considered to be important due to the assumption that the "hierarchical and controlling" nature of experimental research methods can be disruptive and offensive to research participants (Bierwert, 1999: 123; Jayaratne and Stewart, 1991: 136). The ethical argument is that ethnographic research should minimise the tendency in most research to transform the researched into "objects of scrutiny and manipulation" because indigenous peoples have traditionally been objectified and subordinated in our society (Booth and Jacobs, 1990; Carlson, 1999: 94; Deloria, 1973).

In order to do this, it is suggested that the ethnographer establish a non-hierarchical relationship with the research subject. This can be achieved in a number of ways - by downplaying my role as a researcher and academic and choosing instead to refer to myself as a
"learner"; by allowing the research participants to define their own experiences in their own words; and by disclosing personal information to the research participants. Many ethnographers refer to their subjects as "participants" to convey such a relationship (Kirby and McKenna, 1989; Reinharz, 1992). In addition, it is also important to involve the participants as collaborators in the research process – from identifying other participants to making suggestions about the presentation of findings.

Finally, if the relationship between the researcher and the researched is to be considered egalitarian, it must be reciprocal – both parties must derive benefit from the research results. In other words, the researcher must not simply take information from the subjects and then return to the academy to write about it in a monologic process. Rather, he or she must ensure that the information obtained in the research is shared with and is of some worth to the participants (Kirby and McKenna, 1989; Reinharz, 1992).

**The Position of the Researcher**

Stemming from the critique of objectivity and detachment as goals of research, a second important principle in ethnographic methodology is that the researcher should be involved on equal footing as a subject in the research (Reinharz, 1992). This is related to the above criterion in that the experience of the researcher is also examined and analysed, putting the researcher on the same playing field as the people being studied. Writing from the perspective of feminist social science, Sandra Harding suggests that:

"... the best feminist analysis ... insists that the inquirer him/herself be placed in the same critical place as the overt subject matter, thereby recovering the entire research process for scrutiny in the results of the research" (1987: 9).

Placing the researcher in the same position as the researched can involve describing the personal origins of the research question; personal reflections on the research process; locating the researcher in the social structure; and writing in the first person singular (Kirby and McKenna, 1989; Reinharz, 1992). The importance of researcher self-disclosure in ethnographic research is related to assumptions concerning bias. While many critics of ethnographic research, indeed qualitative research in general, often view such work as too personal or subjective and therefore unscientific, many ethnographers believe that it is the concealment of bias, rather than the biases themselves, that corrupts the research process. If the reader and research participants are made aware of the researcher's standpoint and "conceptual baggage", then he or she is able to interpret the results in an appropriate context (Kirby and McKenna, 1989). My approach, being a response
to the "pseudo-objectivity" of traditional approaches, is predicated on the belief that as humans, we cannot escape imposing our personal knowledge and mental constructs on our work and nor should we be expected to do so (Reinharz, 1992: 258).

4.3 Research Design

4.3.1 Sampling I - Rationale for Working with the Cheam First Nation

This research involved two sampling decisions — the choice of a subject for the research, and the participants within the research endeavour. The sampling strategy used to select the research subject can best be described as "purposive" (Lincoln and Guba, 1985). Commonly used in qualitative research, purposive sampling is based on the notion that in order to gain the most insight into a particular problem, one needs to select a sample that can provide the most appropriate information. In order to find out how indigenous environmental perceptions are articulated, I felt that the most appropriate and obvious method would be to obtain information directly from a First Nations community.

The Cheam Indian Band initially came to my attention in the winter of 1999 following a workshop hosted by the Faculty of Forestry. During the workshop, representatives from the band learned that some early work was being conducted through the Faculty in the general area of computer-based forest landscape simulation. By contacting and meeting with three members of the band's administration — Ernie Victor, Sid Douglas and Darwin Douglas — I learned that the potential for a mutually beneficial research partnership existed. According to the Cheam, their interest stemmed from the need to expand their current archive of local cultural and environmental knowledge for use in treaty negotiations with the federal and provincial governments. Several traditional use studies had been conducted throughout the Sto:lo Nation's territory in recent years using mapping technology, however, the studies were regarded by the Cheam as being too broad in their coverage and failed to address the cultural interests of specific bands. The Cheam's previous experience with computer-based mapping meant that they were amenable to using GIS technology and landscape simulation techniques to explore their cultural values in a more focused and innovative manner.

My interests stemmed from the more academic objective of entering the new and, as yet, untested ground of assessing the relative effectiveness of photo-realistic landscape simulations against the standard technique of using planimetric maps to elicit and discuss cultural information with the members of an aboriginal community. The congruence of my research objectives with
the Cheam's interests was therefore the most central and natural consideration for selecting the Cheam Indian Band as a partner in this research.

A second consideration in choosing to work with the Cheam is that they are one of the few bands in British Columbia which is actively articulating culturally-based critiques of Western environmental management as it is practised by different government agencies (i.e. the Department of Fisheries and Oceans and the Ministry of Forests). In the sensitive and volatile climate surrounding aboriginal land claims and treaty negotiations in British Columbia, an invitation to explore the cultural and spiritual knowledge of an indigenous community presents a relatively rare and unique research opportunity. In this sense, the Cheam represented what Goetz and LeCompte would call a "unique case selection" (1984: 82).

4.3.2 Sampling II - Participant Selection: Issues of Entry and Rapport

After concluding a research agreement and protocol with the Cheam (Appendix x), the first step was to establish a relationship with the group and assess the feasibility of my research project. I needed to determine which community members to select for interviews and how to obtain access to their cultural archive materials. My initial meetings with Ernie Victor left me with the impression that band members would, by and large, be willing to participate in my research. However, Ernie also advised me that the willingness of band members to participate in this research would not be automatic, and that some level of familiarity and trust would have to be cultivated with the community. As such, I agreed to make my presence on the reserve more frequent and accepted an invitation to spend a week living on the reserve in the home of a Cheam elder. For their part, the band office would provide a list of key informants that I could contact to discuss my research interests and, ultimately, to schedule prospective interview times.

The list that the band office provided contained the names of twelve interview candidates. Of the twelve names, seven of the candidates were members of the Douglas family, a prominent family in the political and cultural life of the Sto:lo Nation. Some initial concern with the list stemmed from the obvious overrepresentation of a single family in my interview sample (i.e. 58% of the sample). However, as I soon came to appreciate during my time on the reserve, the Douglas clan comprises more than three-quarters of the Cheam population. That a single family should so overwhelmingly dominate the population of a reserve is a stark and sobering reality of the Sto:lo peoples' post-contact experience. That Native peoples suffered tremendously in their first encounters with European epidemics is a relatively well-known historical fact. However,
something that few non-aboriginal British Columbians realise is that several Sto:lo communities disappeared from the Fraser Valley landscape as entire Sto:lo villages perished from an inability to cope with European contagion such as smallpox. Salvation for the decimated aboriginal population came in the form of a unique genetic resistance to European diseases carried by only a handful of Sto:lo families (Bierwert, 1999). Thus, what one finds throughout the Sto:lo Nation today is that entire villages have been bequeathed to one or two surviving families such as the Douglas clan. Therefore, the demographic reality of the Cheam community literally dictates that the Douglas family will dominate my list of interview candidates. In addition, on a more superficial level, I also needed to be mindful of the fact that the Douglas family represents only fifty-eight percent of my sample while they represent over seventy-five percent of the band's population. Thus, I could assert that the Douglas family is, in fact, slightly underrepresented by my participant list.

From the initial list of twelve suggested participants, eleven consented to participate in the interviews. The sample of eleven participants appeared to be appropriate according to McCracken (1988) who recommends eight as the maximum number of participants in a long interview research situation. Although I would hesitate to argue that the sample represents an accurate or true cross-section of Cheam society, I can safely claim that its composition is diverse in age (~25-80), and possess varying levels of cultural and spiritual involvement. Two members of the group were women and nearly the entire sample, with the exception of those under the age of thirty-five, have been educated in the residential schooling system. Only one participant within the sample group has received a university education. In terms of their respective employment histories, every participant in the sample group has been employed by or currently works for the Cheam Band. The range of positions represented by the group is quite diverse and includes Sto:lo Nation Grand Chief, Band Chief, Band Council members, technical staff and staff administrators. The only clear distinction that could be made in terms of the participants' respective work histories is involvement in the forest industry. Now retired, the oldest members of the group had been employed by the forest industry and were engaged in some timber related activity such as falling or heavy equipment operation. With the exception of the female participants, the younger members of the group between the ages of forty and sixty had worked occasionally in forestry, interspersing periods of timber harvesting with salmon fishing or band
administration work. Among the youngest members of the sample, forest industry employment was considered a vestige of their parents' or grandparents' time. Employment for the young adults came largely from Band or Sto:lo Nation administration, and traditional forms of subsistence such as salmon fishing and hunting.

As such, I found that I could divide the sample into fairly manageable and meaningful sub-groups according to age. I have divided the list of interview participants into three age cohorts to which, as shown in the following table, I have assigned the nominal categories of elder (65-80), adult (35-64), and young adult (20-34). Figure 4.1 provides a breakdown of the number of interview participants within each age cohort.

<table>
<thead>
<tr>
<th>Figure 4.1: Interview Participants by Age Cohort</th>
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<tbody>
<tr>
<td>Elders</td>
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<td>2</td>
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A combination of networking and my week spent on the Cheam reserve helped me to establish a rapport with the community and, in particular, with the interview participants before proceeding with data collection. I believe that by disclosing myself as a graduate student and by describing my primary motives for learning from them, that I was able to overcome some initial reluctance to participate. Further, by asking them to play a consultative role in my research I assured band members that they would not be misrepresented in my thesis. That they grew to accept my research objectives and me is evidenced in the fact that I was able to have free access to their band office and files. I believe that the time spent in establishing a rapport with the Cheam has resulted in the rich quality of the data collected.

4.3.3 Data Collection
The ethnographic methods literature suggests that evidence should be collected from as many sources as possible (Yin, 1984; LeCompte & Schensul, 1999). The use of multiple data sources in the same study is known in the literature as "triangulation," a concept borrowed from Euclidean geometry which asserts that the most robust statement of fact can be presented when at least three sources of evidence converge or coincide (Yin, 1984; Merriam, 1988). In effect, greater confidence in the researcher's understanding and interpretation of an event, and therefore the internal validity of the research, can be established if the study demonstrates that information elicited from each participant is corroborated by information from other participants (Yin, 1984)
and, where possible, hard copy sources (e.g. newspaper articles, archival documents, field notes, etc.). Thus, in the present study, interviews of Cheam community members, documents obtained from the Cheam Band office and archival sources have been used (Yin, 1984: 85-95).

**Direct Observation**

A key source of information during the early phases of my work with the Cheam came from the use of direct, personal observations within the Cheam community and the recording of those observations within a set of field notes. As I described in the discussion of sampling issues, I had been encouraged to spend some time living on the reserve to make my presence on the reserve more familiar to band members and, ultimately, to cultivate some level of trust and acceptance of my research interests. However, my time on the reserve taught me a great deal and offered some privileged insights into Cheam life. The wealth of my experience was reflected by the varied and intimate exposure to Cheam life ranging from the day-to-day ritual of taking meals with the Douglas family, talking with elders about the “old ways,” visiting traditional wind-dry fishing camps, and spending an entire day with the Douglas and Quipp families salmon fishing on the Fraser River.

The ethnographic methods literature affirms that such direct, personal observation is key to the conduct of good ethnographic research (Schensul, et al., 1999: 114). The challenge for the researcher, however, lies in the transformation of observations into field notes, which then serve as a record of experiences for future reference. In effect, the goal is to strive for reasonably accurate and complete field notes which will enable the researcher to catalogue, code and use them as data. To this end, the following general guidelines were used to collect and compile the notes:

- Include within the field notes, whenever possible, exact quotes from conversations or informal meetings with research participants;
- Use pseudonyms or unique identities (numbers/letters) throughout the notes to ensure anonymity;
- Describe activities in the sequence in which they occurred;
- Differentiate the researcher’s summaries of the events and conversation from direct quotes of the participants. (Schensul, 1999: 119).

The value of providing direct quotes from conversations is obvious but, during the conduct of field observations, it is seldom ever practical. One purpose of the field work is to collect and record observations based on conversations and experiences with the community. However, the primary purpose of any field visit is to garner the trust and confidence of the people with whom I, as the researcher, hope to work in close collaboration. Recording observations in a
notebook during what are generally seen as informal conversations is not only seen as rude and impolite but will assuredly appear intrusive and demeaning on the part of community members. Although no ethnographer should depend on memory alone for constructing field notes, it is frequently necessary to assemble post hoc observations of events and conversations rather than risk engendering suspicion from potential interview respondents.

The field notes were compiled into a database of observations, informal meetings and, later, with the transcripts assembled from the formal interviews held with eleven members of the Cheam community. The notes were content coded and, along with the interview transcripts and archival sources, were analysed according to the method outlined in greater detail in section 3.3.5 by looking for patterns and associations in the data. Data from the field notes are utilised extensively throughout Chapters 6 and 7 and are referenced as "personal communication."

The Interview Process
The interviews can best be described as open-ended, semi-structured conversations that took an average of an hour and a half to complete. I decided against unstructured interviews in favour of a semi-structured format because I already had a clear sense of what information I wanted to obtain. I also favoured the semi-structured format because, while the interviews are guided by a list of questions to be raised, neither the exact wording nor the order in which they are asked need remain constant (Merriam, 1988). In this way, I was permitted to respond to the situation at hand, and to the answers that each individual participant provided. It also allowed the participants to "tell their own stories in their own terms" (McCracken, 1988: 34).

The interview phase of data collection consisted of a three part process. The first stage was to create and submit a letter of introduction to all potential interview participants (Appendix A1). The letter spells out in brief detail the purpose of the research, the individuals involved in conducting and supervising the work, an assurance of confidentiality, and a statement expressing the researcher's interest in contacting that individual to establish an interview date and time.

The second part of the interview process was to review a statement of consent with the participants before the interviews commenced (Appendix A2). This statement essentially fulfilled two purposes, both dealing with the ethical considerations of the research. First, it obtains the consent of the participants for the researcher to tape record and transcribe the statements of interview participants for use in this thesis. Second, the statement sets out explicitly what the interviewees can expect from the researcher in the final product. The statement assures the
interviewees that their anonymity will be protected, that they may review copies of their respective
transcripts to verify or edit statements, that they will receive a copy of the case study report, and
that they may discontinue their participation in the research at any time.

Finally, the third part consists of the actual interview questions themselves. The
questions were compiled from the theoretical insights gleaned from a review of the literature
dealing with First Nations environmental perceptions and land management principles, as well as
ethnographic accounts from other Coast Salish communities. My own experiences in the Cheam
community through meetings and over night visits to the reserve helped to inform the question
development process. After an extensive list of candidate interview questions was compiled, the
questions were pre-tested on two local residents with considerable long-term knowledge of the
Cheam territory. The pre-tests were instrumental in two ways. First, they helped to assess which
of the questions on the original draft list would be understood and, therefore, most effective in
eliciting environmental perception information from interview participants. Second, the dry-run
interviews also served to gauge how many questions could be asked within the one to two hour
time period. The final list of questions used in the interviews is presented in Appendix A3.

Due to the characteristic complexity of First Nations culture and environmental
perception, it was felt that the interviews should take the form of open ended discussions as one
interview question prompts a number of seemingly related responses from the interview
participant. In addition, as Yin points out (1984: 75), interviewees on occasion may not fully co­
operate in responding to certain questions. With these assumptions in mind, the interview guide
was designed according to a semi-structured format. In this manner, I was guided by a list of
questions but retained the freedom to address statements made by interview participants with
additional “probing” questions as the discussions progressed (Merriam, 1988). This allowed me
to explore concepts and situations that were not anticipated during the question development
process, and allowed the interview participant to tell their story as they see it.

Although the participants were allowed to speak freely during the interviews, some order
or structure was built into the interviews that reflected the fundamental objectives of this research
(See Chapter 1):

1. To explore the cultural definitions of place as expressed by the people of Cheam.
2. To explore the connections between land management and culture and, in
   particular, to identify the ways in which cultural perceptions and uses of the land
   are affected by resource management activities.
3. To explore the effectiveness of various data and landscape visualisation media as a means of eliciting land-based cultural values from the people of Cheam.

4. To discuss the implications of land-based cultural values for resource management in British Columbia and examine any barriers to the effective integration of cultural values in BC forest management.

After the introductions and review of the statement of consent, the interviews began by showing the participants a set of map images which depicted hypothetical timber management options on the lower slopes of Mount Cheam. The images were based on a series of three different management conditions — preservation, partial cut harvesting (75% removal), and clearcut harvesting (100% removal) — and the participants were asked a range of questions drawn from the interview guide. The interview guide was divided into three sections, each containing questions designed to elicit a particular subset of information related to the four research objectives (See Interview Guide, Appendix A3):

Part A (Objectives 1 and 3): Place recognition questions, e.g. “Do you recognise the place shown in this map/image?” and place meaning questions, e.g. “Is this an important or special place to you (or your family)?”

Part B (Objective 2): Scenario preference questions, e.g. “Which of these alternatives do you prefer?” Scenario perception questions, e.g. “How do you think the management conditions shown in these pictures will affect the land/environment?”

Part C (Objective 4): Comments about land management in BC and general wrap up questions asked at the completion of the interviews, e.g. “In what ways can the Cheam people play a role in forest/watershed management?”

When it appeared that the participant had no further insights to provide about the mapping information, the maps were substituted for simulations depicting the same set of management options on the Mount Cheam slope. The line of questioning was repeated for the simulations and, as with the map information, the discussion progressed until the participants had exhausted their perspectives and comments.

The sequence of presenting mapping information, followed by a set computer simulations was repeated a second time using a different location within Cheam territory as the study site. The second study location comprised a stream adjacent to the Cheam reserve that bisects a cattle pasture and, according to my Cheam informants, had once been a fully viable salmon spawning habitat until its riparian cover was removed. The maps and simulations depicted the stream under three different management conditions including its existing condition, a “best management” approach involving a planted 15 metre riparian buffer, and a “modified plan” based

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*The management scenarios along with the visual imagery (i.e. maps and 3D landscape simulations) used to depict them are discussed at length in Chapter 5.*
on an optimum riparian cover of 50 meter buffer strips. The content and sequence of questioning was repeated for the second half of the interviews as the participants were once again asked to reflect and comment on the different management conditions. The interviews were wrapped up with a general discussion about forest and resource management in British Columbia as well as an informal “tell me about yourself” conversation that I hoped would put the participants at ease as well as to obtain information about their educational backgrounds and occupation. Overall, the sequence of image presentation and questioning is shown in Figure 4.2.

Following the pre-tests, I decided to break my sample group into two sub-groups and vary the order of presentation for the visual media. Each sub-group contained at least one elder, one participant from the adult cohort, and one young adult. A “matched pairs” approach was used to divide the sample into two roughly balanced sub-groups of elders, adults and young adults. The final configuration of the age cohorts within both sample groups is shown in Figure 4.3 (following
For Group A, the maps were presented at the outset of the interview and discussed, followed in turn by the computer simulations. For Group B, the order of presentation was reversed with the simulations presented first, followed by the maps. This was done in an effort to isolate order of presentation as a factor in participant response to the management conditions shown in the visual media.

An additional outcome of the pre-tests was the observation that the visualisations appeared to engage the attention of the interview participants to a noticeably greater extent than the maps. In addition, there was a range of tactile responses and interactions with the different media, ranging from touching and staring at the images to disregard or casual gesturing, which reflected varying degrees of interest and comprehension of the different media (Figure 4.4). The third objective of this research is to gauge the relative effectiveness of various landscape visualisation media – planimetric maps and photo-realistic simulations – in eliciting landscape-based cultural values from Cheam Band members. I therefore decided that it would be worthwhile to record these responses and code them according to the list of response categories that were developed from the patterns of behaviour observed during the pre-interviews (Figure 4.4).

The basic hypothesis that guided this aspect of the data collection/analysis process was that the more a participant understood any particular visual medium, the more comfortable that individual would be using the medium to inform and guide their judgements and discussion. In effect, a set of images that are poorly understood by an interview participant, as reflected by their occasional or infrequent use of the medium, cannot be an effective means of eliciting environmental perception information. A greater level of understanding and comfort in the use of
a visual medium would be reflected by an interview participant who points or touches an image to draw attention to areas of interest or, at the very least, carefully studies or stares at an image to inform their judgement and responses. At the very bottom of the scale, where participants feel that the images are unnecessary to our interview discussion, casual references and fleeting gestures to the images can be interpreted as a sign of general disinterest and non-reliance on the visual medium. During the interviews, a note-taker was responsible for recording these tactile interactions. For each gesture, reference, look, stare, point or touch, the note-taker would place a tick under a column for either the maps or the simulations, depending on which medium the interview respondent was interacting with at the time.

The interviews were conducted at the Cheam Band office, or in the homes of elders for their convenience. Generally, I had developed some acquaintance with the participants through the time that I had spent on the reserve during the summer. However for the elders whom I had not previously met, I began the interviews by introducing myself and the note-taker who accompanied me to the interviews. During the interviews I tried to let the participants determine the direction of the conversation, only stepping in with my prompts or to redirect if necessary. Throughout this process I observed that it is challenging to find a balance between allowing the participant to speak freely and getting the particular information desired for the research.

In general, the interviews were very productive and quite enjoyable. They were more like what Reinharz (1992) calls "guided conversations" than formalised data generating interviews. As mentioned previously, the time spent in establishing a rapport with Cheam Band members clearly contributed to the richness of the information obtained. At the end of the interviews, I asked whether there was anything that they would like to add that I had perhaps missed in the interview. To close I asked them if they had any questions to ask me — in accordance with the principles of equity and non-hierarchical relationships.

After the interviews were conducted, the tapes were transcribed verbatim and sent back to the participants for review. I asked that they clarify, change or omit any information in the interviews if they felt it necessary to do so. This step served as a second, self-administered interview with the same questions, only this time the participants could take time to mull over their answers. I included this step for two reasons. First, it was to ensure that the data were as accurate and as representative of the participants' views as possible by having them check the
transcripts for errors and clarify points. This method, called “member checks,” is one of the key means of ensuring the internal validity of the findings (Lincoln and Guba, 1985: 236). Second, I hoped it would maximise participant satisfaction with the finished product by protecting them from misrepresentation. I felt it also provided the participants with a degree of control over the data and thus gave them an active role in the research.

4.3.4 Data Analysis

The data collection process was concluded after most of the available documents were assembled from the Cheam Band offices, eleven interviews were completed and transcribed, and a set field observation notes were compiled. The sufficiency of the database was assessed, in part, according to Lincoln and Guba’s theoretical guideline for ending the data collection phase of the study – the appearance of regularities in the data. It was determined that, due to the repetition of information in the interviews, additional data would yield no new information of use to the research.

My method of data analysis can be described primarily as a qualitative content analysis. It most resembles Glaser and Strauss’ “constant comparative method”, but the information on how to conduct such a process came from secondary writings rather than their original book, The Discovery of Grounded Theory (1968). The most influential of my readings on qualitative data analysis were Merriam (1988), Kirby and McKenna (1989), Lincoln and Guba (1985), and Goetz and LeCompte (1984) who all provided very helpful explanations of the constant comparative method. The following is an account of the data analysis stage of my research.

To begin, data were organised into a research database. I maintained several files containing Cheam documents, participant revised interview transcripts, and a journal containing my field observations. This database was read through several times in order to get a sense of it as a whole body of evidence rather than as separate bits of information. As I read through the written materials, I kept a running list of the main themes or regularities in the data. I then went back and separated the data into distinct units, identifying “units of information that [eventually] serve as the basis for defining categories” (Lincoln and Guba, 1985: 344). According to Lincoln and Guba (1985), a unit of information should be 1) heuristic – in that it should be relevant to the study and encourage the reader to think beyond that individual piece of information, and 2) able to stand alone – be interpretable without any additional information other than a general understanding of the context in which inquiry is carried out.
The units of information were pulled out of the transcripts and coded for identification according to the document from which it was derived, or the speaker and question number of the quote. After all the transcripts had been culled for units, the units were sorted into piles by interview question. Then, in order to develop conceptual categories, the units were sorted further into piles by constantly comparing the information in one unit with that in the next. The piles were then assigned a descriptive title. The units that stood alone were placed in a miscellaneous pile but were not forgotten — the information was treated as relevant despite its uniqueness. Each pile became a conceptual category or theme to discuss in the interpretation portion of this thesis (i.e. Chapters 6 and 7). This inductive process is integral to theory building as the concepts and themes emerge from the data rather than being determined by pre-existing notions.

Although this research is largely a qualitative effort intended to describe the land-based cultural and spiritual values of the Cheam people, some attempt was made to quantify the results of the content analysis. This was done in two ways. First, as described in the preceding discussion, the units of information that are pulled out of the transcripts are sorted into conceptual categories which are assigned their own descriptive titles or themes. Often in qualitative studies, the conceptual categories are presented with little or no discussion of their relative weight or frequency of occurrence within the case data base. However, the more often a category occurs within the case data base, an argument can be made about that category’s relative weight or importance to the interview participants. Therefore, the number of responses, or units of information, for each category have been counted and calculated as a percentage of the total in order to assess their relative magnitude and, one might argue, importance in the overall case data base. Second, in the introduction to this chapter, I described the research design as “emergent.” It became apparent as I was culling the units of information from the transcripts and sorting them into conceptual categories that some categories contained a noticeable preponderance of one age cohort. With a fairly obvious pattern emerging in the case database, I felt that it would be appropriate to calculate a set of frequencies and percentages for each conceptual category by age cohort. From these simple statistics, I could make some basic comparisons of the conceptual categories to determine if there are any patterns in the broader data set, and then conjecture about the underlying factors that may be associated with these patterns.
In addition, the tactile data described in the preceding section were recorded in a spreadsheet from which I could calculate the frequency with which any participant used one medium relative to another and the types of tactile interactions that the participant used. Since there is a relatively broad age spread among the interview participants, I was particularly interested in making comparisons between participants to determine whether age is a factor in the use of different visual media. The work of Janice Crerar (1999) and Frank Duerden (1993) described in chapter two provides some documented evidence of the difficulty which aboriginal elders experience in interpreting planimetric mapping information, and how their understanding of the mapped information can be greatly enhanced when presented as a three-dimensional model. The tactile response data provided an invaluable means of testing this finding within my participant group.

After compiling the tabular data for the conceptual categories and the tactile responses, I decided that it would be appropriate to subject the numbers to a test of significance. In essence, I needed a statistical test that would allow me to determine if the same results produced by the tables would be revealed if I had interviewed the entire population of the Cheam reserve. In order to answer this question, I have to assess the probability that my tabular results could have occurred by chance or by sampling error, a determination that is usually made with a chi-square test of significance (Phillips, 1992; Wilson, 1988). However, the utility of a chi-square test is limited by the fact that the data being tested should be the product of an experimental research design and/or generated from a random sample of the population (Phillips, 1992: 87). In order to place my analysis of the quantitative data on firmer footing, I decided that it would be appropriate to perform a test of significance for the tactile data. In essence, the data for the conceptual categories (of land-based cultural values) and the tactile results are both derived from a "purposive" – i.e. non-random – sample of the Cheam population. However, being the closest approximation in this study to an experiment or hypothesis test, I decided that the chi-square test should apply to the tactile analysis results rather than to the conceptual category data.

4.3.5 Criteria for Evaluating Ethnographic Research

All research is concerned with producing valid and reliable knowledge. Ethnographic research is no exception. In fact, owing to the qualitative nature of this type of research, such concerns may be more significant than in experimental designs where reliability and and validity are accounted for at the start. This section describes the issues of validity and reliability as they
apply to the present case study. Three commonly used tactics will be explored, paying particular attention to how these tests will be applied throughout the subsequent conduct of the research. Respectively, these tests include (Merriam, 1988: 163-77; Yin, 1988: 40-1; Yin, 1984: 39-40):

**Internal Validity:** Ensuring that the study's evidence and evaluation of that evidence reflects 'reality' as it is perceived by the study's participants.

**External Validity:** Also called generalisability, it refers to the degree to which a study's findings can be extended across groups.

**Reliability:** Demonstrating that the operations of a study – such as the data collection procedures – can be repeated with the same results.

*Internal Validity*

Internal validity deals with the question of how one's findings match reality. In other words, "do the findings capture what is really there?", "Are the investigators observing or measuring what they think they are measuring?" (Merriam, 1988: 166). One of the assumptions underlying ethnographic research is that social reality is holistic, multidimensional and constantly changing; it is not a single fixed, objective phenomenon waiting to be discovered, observed and measured.

Ultimately, the question which the ethnographer needs to address is – what is being observed in this research, and how does one assess the validity of those observations? What is being observed are people's reconstruction of reality, how they understand the world:

The [researcher] constantly attempts to capture and portray the world as it appears to the people in it. In a sense for the [researcher] what seems to be true is more important than what is true. For the [researcher] ... the internal judgements made by those he studies, or those who are close to the situation, are often more significant than the judgement of outsiders (Walker, 1980: 45).

Thus, in ethnographic research, internal validity involves understanding the perspectives of those involved in the phenomenon of interest, to uncover the complexity of social behaviour in a contextual framework, and to present a holistic interpretation of what is happening. Two key strategies were used to ensure the internal validity of this research.

*Triangulation* – In effect, greater confidence in the researcher's understanding and interpretation of an event can be established if the study demonstrates that information from interviews, documents, and the researcher's own field observations all coincide. Thus, in the present study, interviews with Cheam Band members; documents including memoranda, environmental assessment reports prepared by Cheam members for Band Council, and archival sources; and field notes have been employed in order to ensure the internal validity of the evidence.
Member Checks – This technique involves taking evidence and interpretations back to the people from whom they were derived and asking them if the interpretations are plausible and realistic. Lincoln and Guba (1981) suggest doing this continuously throughout the study. Thus, for the present study, interview participants have been asked to review the transcripts of interviews in order to ensure that their testimonies are recorded accurately and to allow them to double-check their claims and assertions. The latter provides respondents with an avenue to change statements if they feel those statements do not adequately reflect their perception of the world. In addition, to prevent misinterpretations of evidence from entering the final report, interview participant have been invited to review draft copies of thesis chapters.

External Validity (Generalisability)

External validity addresses both the extent to which the results obtained in one study also hold true for other populations, and whether or not theoretical frames, definitions and research techniques used in one study can be applied by other researchers to comparable case studies. Some researchers argue that ethnographic studies are so unique that neither their results nor their techniques can be applied anywhere else. Such research tends to develop idiosyncratic terminology to describe the special conditions they find in their research sites (Schensul, et al., 1999: 285). However, these threaten the scientific value of their studies, because one of the hallmarks of good research is the extent to which it increases our knowledge of human life in general not just our knowledge of a particular small group. I, therefore advocate a position that both recognises the uniqueness of the cultures studied in ethnographic research, and also makes it possible for other researchers to make use of their results (Goetz and LeCompte, 1984).

In terms of the generalisability of the cultural knowledge acquired from the Cheam people to other First Nation, and even to other members of the Sto:lo Nation, two points need to be made clear. First, the cultural diversity and plurality of First Nations within North America and British Columbia in particular is enormous and, even within large national association such as the Sto:lo Nation, there is recognition of culturally distinct tribal groups such as the Pilalt, Chilliwack, Katzie and Squamish. The people of these different tribal groups all possess common cultural practices and traditions, but demonstrate subtle variations of common cultural artefacts ranging from their oral histories to their spoken language (i.e. each tribal group within Sto:lo territory speaks a different dialect of the Halkomelem language). Second, cross-group comparisons may be invalid because of the unique historical experiences of different tribal groups within the Sto:lo Nation.
Political and economic considerations are important considerations here but, more importantly, urbanisation, acculturation and other historical processes create unique conditions that need to be documented in the research. Some of this historical background will be provided in greater detail in Chapter 5, but the argument can be made here that the proximity of the Musqueam and Squamish peoples to Vancouver will exert different social and cultural pressures than upon their more rural Pilalt cousins in the upper Fraser Valley. Thus, to avoid making incorrect and inappropriate generalisations from Cheam culture to the larger Sto:lo Nation, the position that I have taken in researching Cheam culture has been to learn from their particular experiences and perceptions of their home environment – not to determine what experiences and perceptions exist generally within the Sto:lo Nation. Stake (1978) notes that:

When explanation, propositional knowledge and law are aims of an inquiry, the case study will be at a disadvantage. When the aims are understanding, extension of experience and increase in conviction in that which is known, the disadvantage disappears (in Merriam, 1988: 173).

Assessment of the generalisability of this research should be left up to readers or, more appropriately, members of the Sto:lo Nation who wish to apply the findings to their own situations. They may do so with a full understanding of how the results were obtained and the philosophical assumptions that informed the investigation.

Reliability
Reliability refers to the extent to which a study’s findings can be repeated. In other words, if the study is repeated will it yield the same results? Reliability is problematic in the social sciences simply because human behaviours and perceptions are seldom constant. Reliability in a research design is based on the premise that there is a single reality which, if studied repeatedly, will yield the same results. This is a central concept of traditional experimental research which focuses on delivering causal relationships among variables:

Positivists assume that ... people’s behaviour occurs as the law governed result of many antecedent variables. They want to isolate the numerous laws whose operation in conjunction is observable as the flux of behaviour and events. ... The aim of their research is to establish laws, and to link these laws into a deductively integrated theory (Halfpenny: 801).

Ethnographic research, however, does not seek to isolate the ‘laws’ of human behaviour. Rather, it seeks to describe and explain the world as those in the world interpret it. Since there are so many rival interpretations of what is happening in the world surrounding us, there is no single benchmark from which one can take repeated measures and establish reliability in the traditional
positivist sense. In essence, because what is being studied in an ethnography is assumed to be dynamic, multidimensional and highly contextual, and because information gathering is a function of who gives it and how skilled the researcher is at getting it, achieving reliability in the traditional sense is not only difficult but impossible. Repetition of an ethnographic study may not yield the same results. Several interpretations of the same data can be made, and all are equally valid until directly contradicted by new evidence.

Since the concept of reliability in its conventional methodological sense seems to be something of a misfit when applied to ethnographic research, Lincoln and Guba (1985: 288) suggest thinking about “dependability” or “consistency” of the results obtained from the data. In effect, rather than demanding that outsiders derive the same results obtained from the data, one wishes outsiders to concur that, given the data collected, the results make sense – they are consistent and dependable. Once again, the primary technique the investigator can use to ensure that the results are dependable is triangulation.

This tactic has been addressed in the preceding section. To summarise, it consists of using multiple methods of data collection and analysis in order to strengthen the internal validity as well as the reliability of the case study. In essence, if the information from multiple sources of evidence coincides, a very strong, conclusive argument can be made that the evidence is an accurate reflection of reality as the subjects of the study perceive it (internal validity), and that the results make sense (reliability/dependability).

4.4 Chapter Summary

The purpose of this chapter was to provide the reader with sufficient information to interpret the research, as well as to demonstrate the rigour with which the research was conducted. Extreme care was taken to follow a research protocol appropriate to a study of this nature. My own philosophical approach to research has been made explicit, and each step has been accounted for and justified by supporting methodological literature. As with all research, however, there are some limitations to be noted. These limitations as well as opportunities for future research are discussed in the concluding section of Chapter 7.
Chapter 5  
Research Design & Methodology (II)  
Elicitation Technique – Landscape Visualisation

5.1 Introduction

In the previous chapter, I explored a number of the methodological issues and assumptions that underlie this research. The discussion in chapter three centred on the use of semi-structured interviews as the primary means of eliciting cultural information from Cheam research participants, as well as providing a procedural account of the methods used for data collection and interpretation. In addition to the protocols and interview questions, a key piece of the data collection exercise is the use of visual imagery in the form of landscape simulations to elicit reactions to hypothetical alterations to the Cheam landscape. The purpose of this chapter is to complete the methodological picture by providing a procedural account of the methods used to develop the simulations and the assumptions underlying the landscape management scenarios depicted in the simulations. In part, this is to ensure that nothing about the simulation planning process is hidden from scrutiny but, more importantly, to provide a theoretical justification for the techniques used, as well as an argument in support of the accuracy, credibility and clarity of the simulations.

This chapter is divided into three sections. The first section (5.2) will provide a brief exploration of the conceptual paradigms underlying different approaches to environmental perception research. I attempt to situate the approach taken in this thesis within the four broad theoretical camps identified in the environmental perception literature, and argue for the validity of using photo-realistic landscape simulations to elicit environmental perceptions based on three decades of research and professional practice. The second section (5.3) describes some of the more pragmatic issues affecting the quality of simulations – i.e. comprehension, credibility and bias – and provides some principles that can be employed to safeguard the quality of simulations and, ultimately, the validity of reactions to the images. In effect, section two is intended to provide a general framework to evaluate the simulation procedures described in section three (5.4). This final section of the chapter will describe each step in the simulation exercise from defining the purpose and scope of the simulations to the specifications used to design and reproduce the presentation panels for the interviews. A procedural justification is provided for each step in the simulation development exercise according to the principles outlined in section two.
5.2 Research Approach

Based on the arguments that were presented in chapter two, the environment in which we live includes both a physical and a social dimension. Yet, because of the nature of professional and academic study, there appears to be an arbitrary division between the two. There are the designers and environmental planners who affect the structure of the physical and natural environment to make "places." In addition, there are the social scientists who have focused on the characteristics of a group of people living in a particular "place." Ostrander (1974) describes the disparity between the environmental and the social sciences as "the visual-semantic communication gap." It is his contention that social scientists are analytical thinkers, separating things into parts and looking for relationships between the parts. On the other hand, environmental planning and design professionals attempt to combine the parts of our environment into a unified whole. Through place theorists such as Hall, Steele and Eliade, an awareness has emerged recently of the interaction between the two components of human culture and the environment. Stemming from this emergent awareness of human-environment interactions, a range of theoretical paradigms and methodological techniques has been formulated in an effort to investigate and structure people's perceptions of the environment (Sanoff, 1986: 4).

5.2.1 Approaches to Environmental Perception Research

The range of approaches that have been developed to bridge the visual-semantic communication gap is invariably characterised by the diverse disciplines of contributing researchers. The paradigm classifications developed by Zube, Sell and Taylor (1982) categorise environmental perception research into four major paradigms:

- Expert;
- Psycho-physical;
- Cognitive;
- Experiential.

Similar paradigm classifications have also been identified by Daniel and Vining (1983) and discussed by Uzzell (1991). Research based on the expert and psycho-physical paradigms tends to emphasise landscape management applications. In the expert paradigm, landscape quality and visual impacts are assessed by highly skilled experts such as landscape architects or ecologists. The presumption is that through their training and experience, qualified experts have become more sensitive to the aesthetic qualities of landscapes, and therefore are better qualified than ordinary people to appreciate landscapes and formulate appropriate management decisions. According to the psycho-physical paradigm, landscape is valued for its ability to stimulate
responses in observers. In this view, the value of the landscape is part of its stimulus property, external to the individual and invariant (Zube, 1982). Based upon the methods of conventional experimental psychology, psycho-physical research measures the conditioned aesthetic response of observers to the external properties of a landscape (Daniel, 1976). Observer responses can then be categorised and classified for use by designers and managers as a basis from which to manage and enhance the qualities of a landscape.

Cognitive and experiential research seeks to understand the importance of valued landscapes, how landscapes are internalised or represented and, most importantly, what meanings can be gleaned from landscape and how people react to it (Kroh and Gimblett, 1992: 2; Zube, 1982). The cognitive paradigm differs from both the expert and psycho-physical paradigms by providing a theoretical foundation for landscape perception, by attempting to explain why people prefer different landscapes rather than focusing solely on examining what landscape types people prefer (Sanoff, 1986: 9; Lynch, 1987; Gimblett, et al., 1985). The emphasis in this paradigm is upon the search for human meaning associated with landscapes or landscape properties (Sanoff, 1986, Zube, 1982: 8). Information is received by the human observer and, in conjunction with past experience, future expectation, and social conditioning, lends meaning to landscape. Subjective responses to actual landscapes or landscape images are used to understand environmental perceptions and to verify findings based on objective data. Most research following the cognitive paradigm has been conducted using verbal response techniques (interview questions, adjective checklists, and so on) and visual images as stimuli for the social associations that respondents make with various settings.

The techniques used by experiential researchers are less structured than those used within other paradigms (Sanoff, 1986; Kroh and Gimblett, 1992). The experiential paradigm is predicated on the assumption that environmental perceptions reside in both the landscape and in the meaning of the landscape to people (Zube, 1982: 7). Most experiential researchers posit that landscape perceptions are difficult to separate from the immediate context of the observer's situation and, more importantly, from their emotional experience. Such a dynamic, give-and-take context makes it difficult to employ techniques for analysis other than unstructured interviews (Merleau-Ponty, 1962; Seamon, 1979), reviews of art and literature (Lowenthal, 1979; Sopher, 1979) or personal journals, diaries and travelers descriptions (Sanoff, 1986). The content of
these sources is examined for evidence of human values and cultural expression in documented perceptions.

Zube, Sell and Taylor (1987) suggest the benefits of combining paradigms to study, manage and design the landscape. As such, I have utilised an approach that combines a cognitive technique of eliciting subjective responses to simulations of the Cheam landscape. To complement this approach, I have also relied to some extent on the documented experiences of ethnographers and other field researchers who have provided rich narrative accounts of their work with the Sto:lo people. Whether in the form of ancient oral histories or simple descriptions of place settings for events and human settlements, these descriptions frequently provide important insights into local values and landscape meanings.

5.2.2 Elicitation Techniques in Cognitive Research

Elicitation techniques in the cognitive paradigm are as varied as the sources of information used by experiential researchers. A common approach in cognitive environmental research is to accompany residents on a community walk, asking particular questions about their home environment. Generally referred to as transect mapping, this technique often involves entering the field with research participants to discuss their understanding and sense of place meaning as they experience the landscape (Chambers, 1991, Jiggins, 1989; Shute and Knight, 1995). However, an early study by Lowenthal and Riel (1972) indicated that human responses to surrogate representations for actual place experiences – i.e. still images and moving pictures – were very similar to responses to directly experienced places. This has led to a proliferation of different approaches to measuring subjective landscape perceptions using visual media. One approach involves having people record their thoughts and perceptions on a map as they recall their environment (Brody, 1988; Shute & Knight, 1995). Yet another approach has been through interviews using photographs of the environment to generate insights about resident familiarity (Kroh & Gimblett, 1992) and preferences (Zube et al., 1975; Sanoff, 1991). The assumption behind these studies is that cognitive maps of environment are acquired largely through direct place experiences, and that representations or simulations of the landscape are an effective means of triggering recollections and personal knowledge of the environment.

However, various studies have grappled with the question, “how good is a simulation” as a means of eliciting reactions that are similar to those that would be obtained in response to the real scene (Wood, 1972; Seaton and Collins, 1972; Ackering and Culler, 1973; Cunningham, et al.,
1973; Zube, 1973; Wynne, 1975; Schomaker, 1979; Kileen and Buyhoff, 1983; Janssens and Kuller, 1986; Bishop and Hull, 1991; Oh, 1994). Called "response equivalence" by environmental psychologists, a large body of empirical literature has accumulated over the last three decades which attempts to measure the relative degree of similarity (or dissimilarity) between user reactions to simulated landscape images and reactions to the actual setting (Zube et al., 1974; Sheppard, 1989: 140; Hull and Stewart, 1992; Bergen et al., 1995).

A related but more focused research question stems from the recognition by several researchers that some simulation techniques are far more effective in reproducing reality in all of its critical aspects – i.e. colour, texture, form, dimension, motion, and so on (Appleyard, 1977). Therefore, measuring the perceptual effectiveness (Oh, 1994: 202) or response equivalence (Sheppard, 1989: 140) of simulation media ranging from very abstract wireframe models to highly realistic photomontage images (Figure 5.1, following page) has become a familiar question in environmental perception research as computer-based simulation methods have proliferated in recent years and become relatively commonplace in environmental planning and design practice.

The findings from this research clearly demonstrate that there are significant differences in the way people perceive landscape representations and that the perceptual effectiveness of a simulation varies with its level of abstraction. Results from this research indicate that there is a close correspondence between viewer responses to images – i.e. photographs and photo-realistic simulations – and to responses obtained in studies of real place experiences (Shafer and Richards, 1974; Zube et al., 1975; Daniel and Boster, 1976; Ward & Russell, 1981; Bishop and Hull, 1991; Oh, 1994; Bergen et al., 1995). Conversely, simulations which are moderate to highly abstract, such as wireframes and some surface model simulations, elicit responses which bear only a modest similarity to perceptions of the real landscape.

The finding that photographic media (pictures, slides, photo-realistic simulations) are acceptable surrogates for the landscapes they represent is a relatively straightforward concept. For the present study, it merely serves to validate the use of highly realistic, still images as a means of triggering recollections and perceptions of the environment. However, photographs have the disadvantage of only showing what presently exists. Manually altering photographs through photo retouching, using computers to scan and manipulate photographs or to generate photo-realistic digital models is required to simulate and discuss proposed landscape changes.
Figure 5.1: Landscape Simulation Media, Levels of Abstraction

Abstraction

Wireframe Simulation

Landscape Model (Abstract)

Landscape Model (Realistic)

Photomontage


with key decision makers and/or affected members of the public (Zube et al., 1987; Hull and Stewart, 1992; Bergen et al., 1995). Ervin (1992) explores the increasing power and
sophistication of computer simulation technology to produce realistic landscape images and systematically explore future landscape management alternatives using a series of simple "What if?" exercises. For example, in one study for a microwave tower transmission company, landscape architect Curt Westergard was able to illustrate the visibility and visual impact of proposed transmission towers (Ervin, 1992). He achieved this first by photographing proposed sites from several vantage points, and using photo-montage to digitally insert three-dimensional CAD (Computer Aided Design) models of the structures, and then by demonstrating the impact of different paint colours on the towers – i.e. "what if we paint the transmission towers blue, grey, or green?"

Visual what if exercises have now become a key facet of professional and academic planning practice. Image processing – the art and science of blending actual photographs with proposed changes – has taken artists renderings of proposed projects to new levels of detail and accuracy (Ervin, 1992). Landscape architects working at the Centre for Landscape Research at the University of Toronto use sophisticated landscape simulation software to address urban design issues such as "What if various height restrictions are or are not implemented in downtown Ottawa" (Ervin, 1992)? This research is intended to measure the impact that height restrictions of differing severity have on the visibility of monumental buildings and sunlight in public open spaces. In British Columbia, computer based landscape simulation is a burgeoning industry as forest and land-use planning firms which formerly specialised in the more traditional, "bread and butter" business of cartography and GIS (Geographic Information Systems) are moving in greater numbers into the burgeoning field of landscape simulation.

The proliferation of visual simulation techniques in environmental planning and perception research has been met by a relative paucity of standards which guide the development and presentation of landscape simulations (Sheppard, 1999). In the absence of such standards, the potential for poor or misguided planning decisions based on simulations which use inaccurate data, untested methods, or biased presentation formats is a matter of considerable concern for professional practitioners. However, the lack of professionally accepted simulation development standards bears some consequence for academic practitioners as well. In the next section, I would like to present a case for simulation development and presentation standards in environmental perception research and, in particular, explore the principles and guidelines for
simulation quality that have been spelled out in the environmental planning literature. These principles will form the basis from which the simulation techniques used in this thesis can be evaluated.

5.3 Evaluating Simulations in Social Science Research

The importance of effective simulation appraisal is rooted in the practical and, more importantly, in the legal and ethical aspects of professional planning practice. Simulations are often used to depict future environmental conditions in light of a proposed building project or resource management plan such as timber harvesting or riparian restoration. When used properly as an input to the decision making process, rather than as an end product in itself, simulations can assist key decision-makers in evaluating the merits of a proposal. However, simulations are often created as an after-thought to the planning exercise without careful attention to the details of simulation preparation and presentation. In the absence of careful simulation planning, a set of images may be presented to a decision-maker that conveys the wrong message or, at the very least, results in confused and conflicting interpretations of the message. If simulations cause confusion or uncertainty in the minds of those trying to interpret them, they are likely to be ignored or become the focus of conflict. In either case, decisions will be made without the correct visual information which may result in expensive litigation procedures and attacks on the professional credibility of the simulation preparer when the completed project does not meet the expectations established by the simulations.

It follows then that potential problems in the simulation must be detected before decisions on project approval (or rejection) are made. A set of simulation planning and design standards have been developed for professional practice which enable land-use planners, the public and/or key decision makers to evaluate a project on its own merits without the benefit of comparison with the final project (Sheppard, 1989: 63-5). The benefits of these standards for project appraisal as it occurs in professional practice are clear, but are these really necessary to evaluate simulations in academic research which are often predicated on hypothetical management conditions that may never come to fruition?

I believe that these standards are essential to the conduct of planning research if the fundamental question is understood to be whether the simulations are good or bad. In other words, is the information presented in the simulations accurate and clear, and do the simulations allow the interpreter to make a fair and independent assessment of the management conditions
depicted by the images? According to Sheppard (1989: 51) good simulations that purport to meet these standards have the following essential characteristics:

- **Comprehensible** – they are understood by the simulation interpreter;
- **Credible** – they are convincing to the interpreter;
- **Unbiased** – the interpreter can make an independent judgement.

The following discussion provides a brief but sufficiently detailed explanation of how adherence to these professional standards can enhance the credibility of social science research. Each standard is accompanied in turn by a set of principles that can be used to evaluate the quality of simulations employed by researchers.

### 5.3.1 Comprehensibility

The issue of simulation comprehension is rooted in the fundamental idea that a simulation fails as a communication tool if it cannot be understood, or causes ambiguity and problems in recognition (Sheppard, 1989: 52). When a simulation is understandable, the simulation interpreter can derive enough information from the image in order to make a clear and definitive assessment of the project depicted by the simulation. The corollary occurs when a simulation is difficult to interpret because the image contains problems that are readily apparent to the observer, or is simply chaotic and confusing.

**Visual Clarity**

The inability to interpret a simulation stems from an obvious lack of visual clarity inherent in the simulation itself. In effect, the detail, parts and overall content of the simulation should be clearly recognisable to the simulation interpreter. According to Sheppard (1989: 96), a simulation's visual clarity can be compromised in two fundamental ways. In the first instance, difficulties interpreting a simulation can occur when the simulation preparer fails to consider the audience that will be interpreting the simulation, or the type of information that they will need to derive from it (Sheppard, 1989: 98). This is a fairly common occurrence in forest management where a forest engineer or landscape architect may be able to interpret a complex set of topographic maps or forest management plans, but the general public may not have the training or experience to do so (Figure 5.2, following page). In effect, a presentation style that provides considerable technical support to trained professionals may result in confusion and frustration for local residents. In planning practice, frustration finds expression through opposition to the project proponent's scheme. However, in academic research, an interview participant is likely to withdraw from the task of attempting to decipher the image's message and, most crucially, from
responding to the interviewer's questions. Inevitably, a visual message that is difficult to interpret will result in responses that are either full of confusion and error or, to the researcher's frustration, elicit no responses at all.

**Figure 5.2: Image Clarity and Planimetric Mapping**

Alex Fraser Research Forest - Little Gavin Lake Block
Shelterwood Systems

A Planimetric map illustrating a complex silvicultural prescription for the Alex Fraser Research Forest, UBC. Such a map may raise issues of clarity and comprehensibility if presented to lay members of the public for interpretation. Map prepared by John L. Lewis, for the Alex Fraser Research Forest. 1999.

On the other hand, a simulation may make its point too aggressively, as occurs in the use of arrows and other graphic devices to highlight particular features in an image (Sheppard, 1989: 96). In this case, the interpreter's attention may be drawn to the highlighted portions of the image to the exclusion of other features that may be of interest to the interpreter. Similarly, other diversions such as overstylised graphics and artistic effects may be highly distracting, drawing the interpreter's attention away from important features, thereby minimising the positive or negative impact of the simulation. Therefore, in interview settings where the participant is asked to examine and respond to the entire simulation, but finds their attention continually drawn to highlighted or artistically appealing areas of an image, landscape features with important cultural or symbolic meaning may be missed. In this instance, crucial pieces of the participant's conception of their environment may be omitted entirely from the discussion and, ultimately, from the researcher's findings.
In both circumstances where the message is either confusing or too forceful, the (internal) validity of the researcher's findings may be called into question if the simulations fail to elicit fully the participant's perceptions and understanding of the world. Problems stemming from visual clarity are relatively easy to avoid and can be addressed by looking for the following clarity issues (Sheppard, 1989: 96):

- Overstylised or artistically presented images;
- Excessively detailed images;
- Distracting labels, borders or formats;
- Images that are too large or too small;
- Poorly reproduced images (fuzzy, grainy, blurred, dark, and so on).

5.3.2 Simulation Credibility

Questions of simulation credibility typically occur when the interpreter understands the message conveyed by the simulation but, for the reasons described below, the interpreter is inclined to disbelieve and discredit the message (Sheppard, 1989: 54). A simulation's credibility is established when the interpreter feels compelled to believe that the real landscape will resemble the scene that is depicted. However, problems associated with simulation credibility typically arise when the simulation is visibly incorrect or appears to be misleading.

Defensibility

A simulation's credibility may be questioned if there are obvious problems with the depiction of features in the image itself. For instance, a situation may arise where the features in an image such as buildings or trees are clearly out of proportion or scale, their relative placement on the ground may be incorrect, or where the simulation preparer is depicting a future condition based on some clearly untenable assumptions. In any of these circumstances, the simulation interpreter will likely respond in either one of two ways. First, interpreters may be compelled to suspend their disbelief and provide misguided perceptions of the scene based on the erroneous message presented by the simulation. This situation is particularly prevalent when simulation interpreters are asked to respond to highly realistic, computer-generated graphics. In effect, people are frequently overawed and easily compelled to believe a computer-generated image simply because of the perceived level of sophistication and complexity inherent in the simulation, regardless of the accuracy of the underlying information (Sheppard, 1989: 55). Alternatively, a lack of confidence in the simulation may lead to conflicting perceptions of the image and, eventually, a dismissive attitude towards the research exercise as the simulation is seen either as a deliberate attempt to deceive, or as a reflection of the researcher's ineptitude.
In either case, if the simulation interpreter is misled by the simulation or discredits the information entirely, questions can be raised about the validity of the researcher's understanding and interpretation of simulation responses. Questions of simulation credibility will often be raised by other researchers who, upon reviewing the simulations, will challenge the information contained in the images and, in particular, the ability of the images to elicit responses that are true portrayals of the world as the simulation interpreter understands it. Ultimately, the credibility of a simulation is based on whether or not the simulation is defensible. In effect, a simulation is defensible if it can be shown how it was produced and to what degree it is accurate:

- Description of major data sources, assumptions, uncertainties, and tolerances or margins of error in preparing [the] simulations;
- Rationale for the selection of viewpoints and viewing concerns;
- Graphic evidence demonstrating the accuracy of the simulation and, showing the steps in calculating or generating perspectives and preparing final simulations (Sheppard, 1989: 103).

Where the simulation process and assumptions are documented, disputes over the correctness and accuracy of the images can be resolved and attention can be directed to the more pertinent issues of the interpreter's perception of the images and, ultimately, the internal validity of responses to the images.

5.3.3 Simulation Bias
Perhaps the most critical but least understood aspect of simulation use in research is the issue of bias. Bias generally occurs when an interpreter comprehends and believes that the image is a credible representation of the project but, for various reasons, the simulation conveys incorrect and misleading information causing the interpreter to render a poor judgement. According to Sheppard, a simulation is considered to be unbiased if it leads to response equivalence, that is, if the simulation generates "reactions and judgements similar to those that would be obtained from views of the real scene" (1989: 56). In professional practice, evidence of simulation bias exists when the user's reaction to the simulated project is fundamentally at variance (either favourably or unfavourably) from their assessment of the real view of the project.

However, the uncertainty surrounding the concept of simulation bias stems from the relative scarcity of post-construction evaluations of simulation use to compare user responses to the simulation and the project as built. As such, very little reliable information is available to indicate how much bias is occurring in simulation use, and what its causes are. Sheppard (1989:
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65) argues that based on the limited evidence available, simulation bias appears to be affected by the representativeness and accuracy of the simulations.

**Representativeness**

A representative set of simulations can be defined as a series of images that show the project in all important and typical views that give a uniquely different perspective of the project (Sheppard, 1989: 65). There are three points implicit in this definition of representativeness that should be addressed. First, satisfying the requirement that the simulation interpreter is exposed to every important aspect of the project is based on the premise that a project's appearance will vary significantly from any of several possible viewpoints (Sheppard, 1989: 65). In other words, a project may be viewed from several vantage points, and the differences in viewing angle and viewing distance at each point will invariably result in unique perspectives on the project's appearance. Second, there may be ephemeral changes caused by the time of day, season and/or weather that may noticeably affect the appearance of a project (Sheppard, 1989: 67). For example, mountainside clearcuts are likely to be far more visible during the winter season because of the stark visual contrast created by a white ground surface, enveloped by the dark green/black hues of the surrounding forest canopy. Thus, simulations of timber harvesting may be unrepresentative, and therefore prone to bias, if only the more favourable viewing conditions of summer are depicted. Third, the field-of-view represented by a simulation is crucial to its representativeness. On average, human vision covers a lateral field of sight encompassing 180 degrees, but our focus is typically within a narrow range of 50 degrees (Sheppard, 1989: 67). Research has demonstrated that simulations which show fields-of-view that are narrower than the 50 degree focal range will tend to give the simulated project greater dominance than it would have in reality. Conversely, a simulation with an excessively wide field-of-view will tend to de-emphasise the project and make it appear less dominant on the landscape (Figure 5.3, following page).

Based on these considerations, the following principles are intended to ensure that a set of simulations is fully representative of a project:

- Illustrate "all the important views that give a clear and distinctly different view of the project to significant numbers of people;"
- Illustrate "views of the project in different conditions that radically affect its appearance;"
- Provide "simulation images with adequate field-of-view presented at an image size and viewing distance that recapture the actual viewing relationships and site context" (Sheppard, 1989: 76).
Of course fulfilling these requirements may necessitate producing a substantial number of simulations. In a research setting involving lengthy interviews and research participants with limited amounts of time, the ability to fulfil these standards will often be constrained by the available time and patience of the participants themselves.

**Figure 5.3: Field of View and Project Dominance**

Illustration of the effect of varying field-of-view on project dominance. Items c and d illustrate the effect of varying the field-of-view excessively beyond the “central area of acute vision.” In item c, the project appears to dominate the scene, while the corollary happens in item d. Adapted from Sheppard, 1989: 66).

**Accuracy**

The accuracy of a simulation is a function of the similarity between a simulation and reality after the project has been implemented or built (Sheppard, 1989: 76). In other words, a truly accurate simulation will depict the landscape and any proposed alterations to it in a way that is as consistent with the real view as possible. Of course, judging how faithfully a simulation depicts the reality of a completed project is a little difficult beforehand; however, there are two essential ways in which simulation accuracy is affected. First, a simulation may be inaccurate in terms of the subject matter depicted (Sheppard, 1989: 76). Simply put, a simulation may ignore aspects of a scene that would be seen in reality or, alternatively, the simulation may depict objects such as trees, buildings and other structures that do not exist. Second, the simulation may contain inaccuracies within the elements that comprise the image (Sheppard, 1989: 79). The objects or features shown within a picture can be readily described in terms of their relative position, scale, colour, and texture. However, in some instances, such details of the image may be simplified or abstracted. Alternatively, colours and details of scale and texture may be included in the image, but they are incorrect or distorted. Thus, the ground surface colours of a cutblock may be depicted in a simulation, but if the simulation preparer uses guess work and
intuition to inform his/her judgement of the appropriate colour and texture, then the resulting simulation is likely to be inaccurate.

The distinction between an inaccurate simulation that is susceptible to biased responses, and one which will raise issues of simulation credibility, is subtle. Simulations that provoke disbelief contain flaws that are obvious and visible to the interpreter. As discussed in the section on simulation credibility, visible mistakes or problematic scenario assumptions will tend to provoke some measure of scepticism from the interpreter and confound the researcher’s efforts to elicit meaningful and valid perceptions of the image. However, inaccuracies that elicit biased responses are less likely to be identified by the respondent. Thus, where there is distortion in a scene, and largely imperceptible inaccuracies exist with the simulation’s image elements and/or subject matter, the simulation will be subject to misinterpretation. The findings of the research can then be criticised as invalid because the interpreter’s perception of the scene has been misled and would not be borne out in reality. Addressing the following guidelines can potentially safeguard a simulation’s accuracy:

- Containing “all parts of the project and surroundings that would be visible in that view;”
- “Illustrates the project and its surroundings in approximately the position, scale, shape, colour and important detail they would have in that view of reality;”
- Use “techniques that have been tested and their accuracy verified” (Sheppard, 1989: 96).

5.3.4 A Framework for Simulation Evaluation
The preceding discussion outlines typical problems and solutions that influence the quality of simulations in terms of their comprehensibility, credibility and potential for bias. The discussion addresses some of the decisions and issues that typically must be considered in practice when simulations are planned, prepared, and presented. Based on the issues and simulation design principles that were presented, the following evaluative framework (Figure 5.4, following page) can be used to determine how effective the simulation preparer has been in meeting the fundamental objectives of good simulation design.

This framework is intended primarily for research reviewers who do not routinely use simulations for their own work, and are therefore unfamiliar with the design standards needed to evaluate simulations prepared by other researchers. The principles outlined in this framework will be revisited continuously throughout the following more detailed discussion of the specific techniques used to plan, prepare and present the simulations developed for this research.
5.4 Simulation Design

Good simulations are seldom ever the result of guesswork or haphazard design. In practice, the actual process used to prepare simulations can vary significantly but, whether the simulation preparer is using conventional methods of hand illustration or new and technically sophisticated computer graphics, the simulation planning process remains fundamentally the same. Choices need to be made about what needs to be represented in the simulation, the type of media to use (pen and paper or computer software), the angle and distance of view to be shown, and the number of images to prepare. In effect, good simulation design is the result of careful planning (Sheppard, 1989: 108), and many of these more practical considerations are rooted in the fundamental objectives of the research itself.
5.4.1 Purpose of the Simulations
The most basic question that needs to be addressed by the researcher is whether simulations are necessary to achieve the more general aims of the research project. In Chapters 1 and 4, the following objectives expressed the essential purpose of this research:

1. To explore the cultural definitions of place as expressed by the people of Cheam.
2. To explore the connections between land management and culture and, in particular, to identify the ways in which cultural perceptions and uses of the land are affected by resource management activities.
3. To gauge the relative effectiveness of different visualisation media (i.e. planimetric maps and photo-realistic simulations) in eliciting land-based cultural and spiritual information.
4. To discuss the implications of land-based cultural values for resource management in British Columbia and examine any barriers to the effective integration of cultural values in BC forest management.\(^5\)

Considered independently, objective one is an insufficient justification for the use of simulations in this research. In section 5.2, I described several methods that are available within both the cognitive and experiential paradigms to elicit land-based cultural and spiritual values. Whether the approach taken is to accompany local residents on a walk through their home environment, or to investigate expressions of place meaning through art and literature, there are a variety of well-tested and defensible means of understanding the human-environment relationship that do not require the use of landscape simulations. In fact, if the scope of this research were limited entirely to objective one, then several other approaches would be appropriate substitutes for the difficult and time-consuming task of preparing simulations of the Cheam landscape. However, there are two key constraints on the elicitation techniques that can be used in this research, both of which stem directly from a consideration of objectives two and three.

First, in subsection 5.2.2, I argued that landscapes and landscape surrogates in the form of photographs are an effective and valid means of triggering perceptions and personal recollections of the environment (Shafer and Richards, 1974; Zube et al., 1975; Daniel and Boster, 1976; Ward & Russell, 1981; Bishop and Hull, 1991; Oh, 1994; Bergen et al., 1995). Yet most photographic representations of the landscape have the inherent disadvantage of showing only what presently exists, while most forest managers and environmental planners are interested in gauging peoples’ reactions to hypothetical or planned future landscape changes. Whether they

\(^5\) Based as it is in questions of policy and procedural barriers to the inclusion of cultural values in resource management, objective four is not a relevant factor for determining the appropriateness of simulations for this research. The following discussion will therefore address objectives one through three in order to establish the need for simulations to achieve the aims of this thesis.
take the form of manually retouched photographs or computer generated three-dimensional images, photo-realistic simulations are a valid and necessary means of fulfilling my second objective of eliciting reactions from the Cheam community to hypothetical changes in their landscape (Zube, et al., 1987; Hull and Stewart, 1992; Bergen, et al., 1995).

Second, the third research objective stems from a concern regarding the prevalent form of land-use consultation with First Nations which is heavily reliant on planimetric mapping to represent and elicit responses to proposed landscape changes (Duerden, 1992). The prevailing assumption in the environmental perception literature is that more realistic, and less abstract landscape representations are more acceptable (i.e. credible) as surrogates for the landscapes that they purport to represent and, therefore, are more effective in eliciting valid and unbiased perceptions of proposed landscape disturbances (Sheppard, 1989: 112). Yet nowhere has the relative effectiveness of planimetric mapping and realistic landscape simulation been systematically tested and documented with an aboriginal community. If the results that flow from this objective should confirm the prevailing orthodoxy in environmental perception research, it will have significant implications for the approach to community consultation followed by government agencies such as the BC Ministry of Forests.

Taken together, objectives two and three not only justify the use of simulations to achieve the general aims of this research, but require the use of different simulation media ranging from abstract planimetric maps to realistic landscape simulations to assess their perceptual effectiveness with an aboriginal community. Having established the need for simulations as a significant component of this research, the next series of simulation design questions address the specific content of the images.

5.4.2 Scope of the Simulations
As a planning exercise, scoping involves making some basic decisions about the content of the simulations and the appropriate number of simulations to achieve the research objectives (Sheppard, 1989: 108-9). In part, this is the stage at which the defensibility of the simulations is established by providing an explicit rationale for the selection of viewpoints (i.e. where to simulate) and a justification for the landscape conditions depicted in the images (i.e. what to simulate). As the other key aspect of the scoping exercise, establishing the number of simulations is intended to address questions about the simulations' representativeness. Considerations of bias, such as ensuring that the simulations represent every important view and
view condition, enter the simulation planning process at this point. However, questions of simulation quantity need to be balanced against the competing objective that interview participants are not inundated, and thereby bored or confused, by an endless stream of images. Both of these considerations will be evaluated towards the close of this section.

**Viewpoint Selection – Where to Simulate**

The choice of where to select viewpoints in Cheam traditional territory was guided to a large extent by considerations of familiarity. First, the viewpoint locations must be accessible and familiar to significant numbers of Cheam band members (Sheppard, 1989: 68). The assumption underlying this criterion is that remote, inaccessible and relatively unfamiliar locations may carry significant cultural value, but their importance is likely to be expressed only by those people who are familiar with and actively use those locations. Moreover, inaccessible areas are sometimes valued because of the opportunity that they afford to conduct ceremonies and other cultural activities in relative seclusion (Bierwert, 1999). In this instance, interview participants may be reluctant to discuss the cultural significance of such places for fear of disclosing their importance and opening them to trespass by outsiders (Carlson, 1999: 71). In either case, the cultural importance of the landscape depicted from the viewpoint will likely be understated and, therefore, lead to questionable and potentially invalid results. As such, I decided to pursue viewpoint locations that are accessible and familiar to a broad cross-section of Cheam society. To achieve this, I solicited the advice of my Cheam Band contact, Ernie Victor, to recommend locations that possess some cultural significance but possess a measure of significance that will, at the same time, permit open and meaningful discussion of their importance to the Cheam community.

The viewpoints chosen are shown in Figure 5.5 (following page). The photograph at viewpoint one is facing east and depicts one of the forested foothills below the summit of Mount Cheam. It is situated along a road that connects the Trans-Canada Highway with Bridal Veil Falls Provincial Park and possesses a number of highway amenities such as two local restaurants, a Petro-Canada station, Minter Gardens, Bridal Falls water slides, a nine-hole golf course and “Dinotown” amusement park. In spite of the location’s obvious tourist orientation, Cheam band members are frequent patrons of the local restaurants and, on occasion, pass through the area to gain access to the roads and trails that traverse the foothills and enter the highlands behind Mount Cheam. Viewpoint two depicts a feedlot pasture located approximately 2 kilometres east of the Cheam reserve. The photograph is taken from the roadside overlooking a shallow stream.
that bisects the property and drains into nearby Cheam Lake. Although the stream appears fairly insignificant, its historical condition as a vibrant salmon bearing stream and proximity to a pre-contact Cheam village site means that it possesses considerable cultural and historic value for the Cheam people.

In addition to the considerations described above, both locations were selected as suitable viewpoints for the following reasons:

- The viewpoints were the choice of the Cheam Band contact, Ernie Victor;
- There is a lack of foreground elements which obstruct views to the Mount Cheam foothills and to the feedlot stream;
- Each location integrates elements of forest and watershed management within the same viewpoint to permit testing of Cheam perceptions of the relationship between both resource values.

The first factor was intended to ensure that the viewpoints are both familiar and accessible to a broad cross-section of Cheam Band members, and to ensure that the cultural significance of the
viewpoints will not preclude discussion of their importance with interview participants. Criterion two was particularly important for the selection of viewpoint one because, as several field reconnaissance visits to the Cheam-Rosedale area revealed, the heavily wooded lowland portions of the valley provide very few close and unobstructed views of the Cheam foothills. Viewpoint two also satisfied this criterion in terms of permitting wide and unobstructed views to the stream, the surrounding pasture and, to some extent, to the feedlot buildings situated at the far end of the property. Finally, both viewpoints permit some testing of the interaction between forest management and stream quality, an interaction which (according to the discussion in chapter 5) is of considerable importance to Sto:lo culture. Although it is not readily apparent in the photograph of viewpoint one, the marshy area seen in the foreground contains a shallow, slow moving stream that would be affected to some degree by timber harvesting in the upper watershed on the face of the mountain.

**Viewpoint Condition – What to Simulate**

At this stage, decisions need to be made about the landscape management conditions or scenarios that will be depicted by the simulations. In other words, if viewpoint one is intended to represent different forms of timber harvesting, scenario development requires determining the nature and extent of timber harvesting that will occur on the mountain. The choice of landscape management scenarios to be depicted by the simulations was based on two considerations. First, at the very least, both viewpoints should provide a best and a worst case scenario. This has very different implications for viewpoints one and two. In the case of viewpoint one, the best condition is clearly the mountain's existing condition where no timber is removed from the mountainside. By contrast, the worst case scenario for viewpoint one would be to simulate a conventional, clearcut harvesting prescription involving the complete removal of large timber blocks from the mountain. For viewpoint two, the worst case scenario for the stream would be to retain it in its present condition. In its current state, the stream is incapable of supporting a viable salmon population due in large part to the absence of tree cover along the stream's banks, a condition which deprives the stream of shade and nutrients for resident fish populations. A best case condition for the stream would therefore require depicting the stream banks covered by a mature stand of vegetation using species that are typical of riparian plant life in the upper Fraser Valley – e.g. cedar, alder, willow and cottonwood.
Second, depicting the viewpoints under extreme conditions of preservation and disturbance (i.e. restoration or harvesting) will elicit a similarly broad range of perceptions. I therefore decided that it would be appropriate to include a set of “mid-range” scenarios in order to capture a broader range of reactions to landscape change. However, determining the precise nature of these more nebulous scenarios required some expert guidance. I turned to Dr. John Nelson, the acting director of the Forest Resources Management department and an expert in forest operations to discuss the timber harvesting possibilities available for viewpoint one. After reviewing a set of topographic and timber supply maps with Dr. Nelson, he confirmed from the purely technical perspective of forest operations (i.e. disregarding considerations of scenic quality and ecosystem integrity) that timber harvesting on the foothills of Mount Cheam is a viable activity. In addition, he recommended a “mid-range,” partial-cut management option involving 75 percent timber removal from the hillside. This range was based on Dr. Nelson’s estimate of the maximum quantity of timber that can be removed without causing “significant” soil movement, while at the same time ensuring that enough stems are retained on the hillside to mitigate the effects of windthrow (Dr. John Nelson, personal communication).

For the mid-range conditions to simulate at viewpoint two, I obtained the advice of Dr. Scott Hinch, an expert in the subject of stream management and restoration in the Faculty of Forestry, and Matt Foy, a specialist in aquatic habitat management with the federal Department of Fisheries and Oceans (DFO). Based on their review of the viewpoint photographs, both experts agreed that an optimal or best case scenario for the stream would depict a mixed riparian buffer of cedar, alder and cottonwood trees between the stream and the adjacent cattle pasture. However, the question of the ideal width for the riparian strip prompted significant differences between the experts. Both agreed that recent scientific evidence supports the recommendation that 50 metre riparian buffers are necessary to ensure the successful restoration of salmon to a heavily damaged (i.e. denuded) stream (Millar, et al., 1997: 21). However, Matt was quick to point out that a 50 metre buffers are inconsistent with the DFO’s current stream restoration practices. Citing considerations of cost and labour supply, as well as some scientific data which support the argument that smaller buffer widths are sufficient to ensure “satisfactory” habitat conditions, Matt advocated a much reduced buffer width of 15 metres (Millar, et al., 1997: 2). The disparity between the advice of academic and government experts provided a clear basis from
which to develop the best case and mid-range scenarios. In effect, the former would be developed according to the 50 metre riparian buffer standard that is advocated as "optimum practice" by the aquatic science community, while the mid-range "current best practice" scenario would be based on the 15 metre buffer standard advocated by Matt Foy.

**Quantity of Simulations – How Many Images Required**

Deciding how many simulations to present during the interviews was a function of two competing requirements. First, under ideal circumstances, the simulations should strive to be fully representative of the scenarios depicted at the viewpoints in terms of illustrating views of each scenario (i.e. timber management or stream management) in different conditions that radically affect its appearance (See section 4.3.3). This is intended to safeguard the research from responses that are biased by a limited and perhaps unrepresentative set of viewing conditions. Second, the practical constraints of time potentially limit the number of simulations that can reasonably be presented and discussed in an interview setting. Based on conversations with Ernie Victor in the early summer of 1999, it was agreed that the interviews should be limited to a maximum of two hours (Ernie Victor, personal communication). This would permit the participants who work for the Band administration to set aside sufficient time for the interviews without compromising their busy schedules. A two-hour limit was also considered to be a suitable time frame for Cheam elders who may not have the patience or endurance for sustained conversations of longer duration. Thus, deciding how many simulations to use for the research was reduced to finding a balance between the functional consideration of keeping the interviews within a reasonable time constraint, while at the same time fulfilling the methodological requirement of presenting a representative set of simulations.

<table>
<thead>
<tr>
<th>Figure 5.6: Estimate of Simulation Quantity</th>
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<tr>
<td># of Scenarios</td>
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<td>3</td>
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As Figure 5.6 illustrates, three management scenarios depicted at two viewpoints and using two forms of visual media – i.e. maps and simulations – will generate twelve images. My initial sense was that twelve simulations would provide a sufficiently representative but not overly drawn-out range of imagery for the interviews. However, I decided to use the pre-test interviews to provide a more objective determination of the appropriate number of simulations. If twelve
simulations could easily be accommodated within the scope of a two-hour interview, I could justify adding more simulations to the image set.

On average, the two pre-test interviews were completed within an hour and forty-five minutes. During this time the interview participants were able to respond effectively to the full complement of simulations presented to them, with the added opportunity of exploring a range of lateral, but highly relevant, topics of discussion (e.g. treaty issues, areas of archaeological value, aboriginal/non-aboriginal relations in the Fraser Valley, etc.). Based on the length of the pre-test interviews, I decided to retain the number of simulations at twelve in order to provide maximum opportunity to discuss the images, and therefore obtain as many insightful responses to the images as possible, while minimising inconvenience for the participants. In hindsight, I believe that this was a prudent decision as many of the Cheam Band administrators expressed some fatigue and restlessness after an hour and a half of questioning. Furthermore, I began to sense a growing impatience with the constant stream of questions and images through the increasing brevity of participant responses. I therefore decided that additional images would unnecessarily lengthen the interviews and compromise the depth and richness of participant responses.

5.4.3 Simulation Method

Defining the simulation method is generally the stage at which some of the more functional considerations of the simulation type, the appropriate level of abstraction and simulation media need to be identified and balanced against the constraints of cost and time (Sheppard, 1989: 109). Typically, the first decision to be made at this juncture is the appropriate level of abstraction to be shown by the images. As Appleyard (1977) argues, all simulations are abstracted representations of reality to the extent that some elements of the real world – e.g. motion, depth, colour, odour, and so on – are lost in the translation to a still image or animation. However some simulations clearly represent greater levels of abstraction from reality than others, as shown by Figure 5.1, which generally affect the interpreter’s ability to make clear and unbiased judgements (Sheppard, 1989: 112; Oh, 1994; in addition, see the discussion in subsection 4.3.3).

There are two basic questions that need to be address at this point. First, should abstract simulations, such as the wireframe shown in Figure 5.1 be used at all? Abstract simulations possess the obvious advantage of requiring a significantly smaller commitment of time and money to prepare because they are inherently simpler than more realistic models (e.g. surface model and photomontage). However, the research presented in subsection 4.2.2 confirms that
respondents have much greater difficulty recognising landscapes depicted by abstract simulations. Moreover, abstract simulations tend to elicit perceptions with relatively low response equivalence (Shafer and Richards, 1974; Zube et al., 1975; Daniel and Boster, 1976; Ward & Russell, 1981; Bishop and Hull, 1991; Oh, 1994; Bergen et al., 1995; see subsection 5.2.2 for a definition and discussion of response equivalence). Less abstract simulations are clearly better alternatives if (according to the third objective of this research), the ultimate aim is to elicit responses from interview participants which would be as similar as possible to their views of the actual scene.

The next question involves determining how realistic or precise the simulations are to be. Sheppard defines a precise simulation as an image:

"... that shows the complexities of a scene in a manner similar to the way the eye sees the world; a realistic (though not necessarily accurate) simulation that contains most or all of the image elements" (1989: 204).

In turn, image elements generally comprise the scale, shape, colour and position of objects within a scene (Sheppard, 1989: 79). The more consistent a simulation's image elements are with those of the real scene, the more precise or realistic the simulation is said to be. The advantages of highly realistic simulations in terms of simulation comprehensibility and credibility are obvious. For example, in Figure 5.1, the surface model and photomontage images depict the same landscape with the exception that the photomontage image is a more realistic representation of landscape than the surface model. Both simulation methods require the simulation preparer to match or calibrate the details of lighting, sky and water colour with a photograph of the actual site to create an image that is highly convincing and, in some instances, difficult to distinguish from an unaltered photo. However, the key difference between the two methods resides in the inherent complexity of surface modelling systems that use a large and complex array of settings to adjust simulated landscape conditions. Often these settings are tightly interconnected such that making incremental adjustments to ambient light, for instance, will make noticeable and unacceptable alterations to water or vegetation colour. Thus, creating simulations which are realistic and precise representations of the real environment becomes a complex and frustrating exercise often resulting in a simulation that is convincing but, nonetheless, a noticeably artificial rendition of reality. For reasons that I will describe below, the photomontage method is a more precise and
realistic simulation method, and is frequently used by environmental perception researchers when the goal is to achieve reactions with a high level of response equivalence.

The credibility of a relatively imprecise simulation such as the surface model is likely to be an issue if the image's level of abstraction leads the simulation interpreter to discredit the image, and focus on its apparent flaws to the exclusion of the management scenario as the true subject of interest. Even if the simulation interpreter is compelled to believe the image, their responses will contain a relatively low level of response equivalence simply because the image elements in the surface model are less consistent with reality than the image elements shown in the photomontage. Thus, my decision to pursue precision and realism is based on evidence that precise simulations are more likely to be believed (i.e. have high credibility), are easily understood (i.e. have high clarity) and carry a lower risk of misleading interpreters (i.e. bias) than do simulations which are highly abstract or contain image elements that are conspicuous distortions of reality (Sheppard, 1989: 112; Oh, 1994).

Based on the need to create simulations with low abstraction and high precision, I chose a visualisation procedure that combines three-dimensional surface modelling with a photomontage technique using conventional photo-imaging software. As a hybrid simulation technique, this approach represents a common method of relatively accurate and precise landscape simulation using commercially available software employed by practitioners throughout North America (McGaughey, 1998; Sheppard and Lewis, 1999). As such, my decision to use this method is representative of current practice in landscape visualisation, and represents an industry tested and affordable method.

In their current manifestation, most surface modelling technologies are workstation based computer programs that create and display perspective full-colour images of landscapes ranging in size from a forest harvest unit to the multiple watershed level (i.e. 10 to 8000 ha). Surface modelling packages are capable of displaying ground models, or terrain represented by a digital terrain model (DTM), forest stands, and generic line information representing roads, harvest unit boundaries and so on. The more sophisticated applications are capable of manipulating tree stands to simulate various operational or landscape planning alternatives. The surface modelling package selected to build the simulations for this research, World Construction Set (WCS), is currently the preferred landscape or surface modelling application by the BC Ministry of Forests
(MOF) and several landscape planning consultants throughout British Columbia (Sheppard, 1999). Its current status as the preferred modelling software by government and industry is premised on the application's ability to generate accurate and realistic simulations which, in turn, draw on the following capabilities:

- Accurate ground surfaces can be constructed from digital topographical files obtainable from the BC Ministry of Environment, Lands and Parks;
- Forest stand data can be imported from MOF inventories. Visible stand characteristics such as species composition, stand height and stand density can also be built into the simulation from MOF data;
- Tree libraries can be built from photographs of trees and understory vegetation to replicate vegetation characteristics of colour, composition, and texture;
- Ephemeral conditions such as sunlight intensity, ambient light, atmospheric blur, fog and cloud cover can be calibrated to site photographs;
- Disturbance conditions such as harvest cutblocks, fire patches and plantings can be imported as polygon boundaries from a geographic information system (GIS).

The second half of the simulation method uses photomontage, an image manipulation technique that involves taking a precise rendering of a proposed landscape alteration and superimposing it onto a base photograph of the existing landscape (Figure 5.7). When the simulated image is placed onto the photograph, the preparer uses standard photo retouching software such as Adobe Photoshop to blend the two images into a seamless and highly convincing composite image.

![Figure 5.7: The Photomontage Process](image)

A simplified photomontage technique involving the overlay of sketched trees onto a base photograph. Adapted from Sheppard, 1989: 152.

The benefits of photomontage as a simulation technique stem from two factors. First, photomontage requires much less time to prepare than a fully precise surface model since there is no need to simulate the project surroundings (Sheppard, 1989: 119). This essentially frees the simulation preparer to focus exclusively on the part of the scene that would be altered by the
project. Second, the technique is capable of producing highly realistic and, therefore, very
credible simulations. This is generally because the simulation preparer is virtually forced to match
the particulars of colour, texture, lighting and other image element qualities in the simulation to the
base photo in order to achieve the most realistic and convincing image possible (Sheppard, 1989:
119).

5.4.4 Simulation Process
The process followed to prepare and present the simulations is somewhat complicated
and could conceivably fill an entire chapter. However, the standard of defensibility described in
section 4.3.2 posits that the credibility of a simulation can be questioned unless the preparer
provides detailed documentation of how the simulations were produced – i.e. description of data
sources, assumptions, margins of error, graphic evidence demonstrating the accuracy of the
simulations, and so forth. To this end, I have prepared a Technical Appendix to this chapter
(Appendix D1), which provides a relatively exhaustive account of the simulation process for both
viewpoints and for both media types – i.e. planimetric maps and WCS simulations. However, for
the present discussion, I have chosen to provide a generalised account of the procedures
followed to create the hybrid surface model/photomontage simulations for a single viewpoint, in
this instance, viewpoint two. This is intended to provide readers with little concern for the
minutiae of landscape simulation (such as the size of the DTM, or how colour values are
calibrated with photographs) with a concise but more or less complete framework for the
simulation process.

Figure 5.8 (following page) is a simplified version of the flowchart presented in the
Technical Appendix (Appendix D1). The procedure is heavily reliant on the surface modelling
software, as the bulk of modelling operations occur in WCS in steps one through four. The first
step involves creating a digital terrain model (DTM) from a digital topographic map of the Cheam-
Rosedale area. A 1:20,000 map (20 metre contour interval) was obtained from the BC Ministry of
the Environment, Lands and Parks from a provincial topographic dataset known as TRIM - Terrain
Resources Information Mapping. The digital map was imported into WCS where the contour lines
were converted into a series of spot elevations, or control points, with real world latitude, longitude
and elevation co-ordinates based on the Universal Transverse Mercator (UTM) co-ordinate
system. From this data, WCS is able to generate a three-dimensional representation of the
Cheam-Rosedale area by interpolating elevations between the control points to create a lattice model of the ground surface.

**Figure 5.8: The Landscape Simulation Process**

**Step 1:**
Generate a Digital Terrain Model (DTM).

**Step 2:**
Drape riparian buffers onto DTM.

**Step 3:**
Populate buffers with vegetation.

**Step 4:**
Isolate vegetation from DTM.

**Step 5:**
Layer vegetation onto photo.
Based as it is on a topographic model of the earth's surface, the DTM will contain some inaccuracies. Contour lines represent sampled and, therefore, known points of elevation on the ground. By implication, the intervening spaces between contour lines are unsampled and therefore represent areas of unknown or uncertain elevation. Precisely how much variability occurs between contour lines is a function of the distance between the lines. In other words, contour maps with a 10 metre interval have more ground sample points and, therefore, a lower margin of uncertainty than a map with a coarser interval of 20 metres. Based on a contour interval of 20 metres, a significant amount of topographic variation can occur between contour lines in a 1:20,000 TRIM dataset, thus calling into question the accuracy of surface models based on TRIM data (Sheppard and Lewis, 1999). Estimates of the margin of error in TRIM datasets vary between five and ten metres (Sheppard and Lewis, 1999), however, precisely how much variation can occur is a matter of some speculation given that the vertical accuracy of terrain models constructed from TRIM data has never been systematically tested.

However, in defence of the DTM created from the TRIM dataset, two points need to be made. First, TRIM data is currently the best available topographic dataset for the Rosedale-Cheam area. A second and more refined series of TRIM data (TRIM 2) based on a 10 metre contour interval is currently available from the BC government based but was unavailable for the Rosedale-Cheam area when the simulations were prepared in the autumn of 1999. Second, the simulations produced for this research are intended to be hypothetical models intended solely for academic purposes. Higher standards of model accuracy and precision typically apply in professional planning practice where discrepancies between a simulated project and its post-construction appearance will provoke considerable frustration, anger and, ultimately, cost. By contrast, hypothetical research scenarios based on surface models with largely imperceptible inaccuracies are unlikely to arouse any suspicion or questions about their credibility.

The second step involves superimposing or "draping" a set of riparian buffers onto the DTM. The riparian buffers are first created in a GIS by offsetting the stream vectors contained in the base map dataset by a distance 50 and 15 metres to represent the best case and current best practice scenarios, respectively. Since the terrain model and the GIS database both use the same geographic co-ordinate system (i.e. UTM) to position objects on the landscape, the stream vectors and the associated riparian buffers can be imported into the World Construction Set.
model and draped onto the DTM at their correct geographic location. With this step completed, World Construction Set's camera can be repositioned to stand at the stream vector looking towards the riparian buffers to replicate, as closely as possible, the viewing direction and angle shown in the photograph of the existing condition (Figure 5.5).

The third step involves populating the riparian buffers with vegetation to create what WCS loosely refers to as an ecosystem. World Construction Set uses the term ecosystem somewhat inappropriately to refer to a unit of vegetation with certain visible characteristics that are limited to species composition, density, height, colour, and so on. The first task in building an ecosystem is to construct a plant list that is representative of the species found in riparian systems in the upper Fraser Valley. With the advice of Dr. Scott Hinch and Matt Foy, I assembled a species list that comprised three coniferous tree species (western red cedar, hemlock and douglas fir), two deciduous species (cottonwood, and willow), and two understory species (alder and hawthorne). To begin the process of populating the riparian buffers, I created a photographic tree library of the species represented on the plant list. The photos were taken with a digital 35mm camera (50mm lens) from various locations in the Rosedale-Cheam area, and the University of British Columbia Endowment Lands throughout the summer of 1999. Individual tree stems were isolated and extracted from the photographs using Adobe Photoshop and imported into a customised tree library created in WCS. World Construction Set was then instructed to create the riparian ecosystem by placing the flat tree images on the surface of the DTM within the confines of the buffer zones, and according to the height and density parameters that I directed the program to use. When the completed images were rendered in World Construction Set, the resulting riparian ecosystems shown in steps 3 and 4 display all the natural roughness, colour and variety that can realistically be expected from a true riparian ecosystem.

A key advantage of the photomontage method is that the preparer can virtually ignore the project surroundings and focus their efforts on simulating only those parts of a scene that will be altered by a project. In the case of viewpoint two, the only part of the scene that will be affected by the management scenarios is the stream course and the 15 to 50 metres that are immediately adjacent to it. By default WCS will simulate a project and all of its surrounding context including ground surface and sky as seen in the image shown in step three. However, as step four indicates, it is possible to "isolate" the riparian ecosystem from its context by directing the
program to omit everything but the riparian vegetation from the simulated image. For obvious reasons, the task of placing the simulated riparian cover onto the base photograph (i.e. step 5) is made easier without having the clutter of the surrounding ground surface and sky. Omitting these extraneous elements does not mean that the terrain model is removed from the simulation; it is merely hidden by the program and continues to be used as the foundation from which the riparian ecosystem is constructed.

In step five, the simulated riparian vegetation is exported from WCS and superimposed onto the base photograph in Adobe Photoshop. Three tasks remain in step five before the simulation can be considered complete. First, the WCS image must be aligned and accurately positioned within the base photo. Under ideal circumstances, precise measurements are taken with survey instruments to record where the photographer is standing, the view height and view direction (compass bearing), and the vertical angle of the camera axis with the horizon. For these simulations, the position of the photographer and the camera focal length were used to register the WCS image with the photograph. A more precise method was not used for two basic reasons. The first involves the difficulty of positioning survey markers within fenced, private property without committing trespass. Second, the coarseness of the underlying TRIM data used to build the surface model means that the DTM will itself possess limited accuracy, thereby precluding precise registration of the WCS image to the photo. Once the perspective image and the base photo were registered, blending of the two images was performed in Photoshop to give the simulation a relatively seamless appearance. A suite of paintbrush tools was used to make the simulated riparian cover fit the surrounding context as much as possible. Finally, the stream itself was added to the completed photomontage by extracting samples of water from other

Figure 5.9: Completed Simulation (Viewpoint Two: 50m Riparian Buffer)
photographs, which were then modified to suit the lighting and shadow conditions that could be expected in a water body surrounded by a thick stand of mature vegetation. The completed simulation for viewpoint two based on a fifty metre buffer is shown in Figure 5.9 (previous page), and the completed interview presentation panel is displayed in Figure 5.10.

Since the source data used to construct the visualisations originated from a digital GIS dataset, the accompanying set of maps for viewpoint two were created using ArcView GIS (release 3.1); a relatively affordable geographic information system that is currently in wide use by government agencies as well as First Nation bands and tribal councils. The cartographic panels that were presented to the participants are shown in Appendices B1 and B2; and Figure 5.11 on the following page provides an enlarged view of one of the maps. The ostensible purpose of the mapping information was to present land management scenarios to the participants using a technology and graphic format that is representative of resource maps that are commonly prepared by government agencies such as the Ministry of Forests, and presented to First Nations for their review and comments.
The graphic qualities that I had hoped to achieve in the map images included simplicity and, wherever possible, some opportunity for the participants to orient themselves within the maps. Simplicity was achieved by using only standard cartographic symbols to represent landscape features such as lines for roads and polygons for buildings and vegetation patches. Graphic techniques in cartography have advanced considerably in terms of aesthetic appeal and sophistication in recent years. However, I chose not to include any embellishing or stylised elements within the maps to ensure that the interpreter's attention is not distracted away from the essential message, thereby minimising the positive or negative impact of the maps. Moreover, an objective of this research is to evaluate the relative effectiveness of different visual media as planning and land-use communication tools with First Nation communities. Since graphic or artistic embellishments are atypical for government resource maps, my hope was that the simple or minimalist approach to producing the interview maps would be representative of the government's cartographic style. The few graphic devices that are shown in the maps such as labels and legends are common orientation devices that most interpreters require in order to read and apprehend the map's basic message. Overall, I believe that the maps prepared for the interviews achieve a high degree of clarity, and are representative of the maps commonly
presented to First Nations by agencies such as the Ministry of Forests or the Department of Fisheries and Oceans.

5.4.5 Medium and Format for Presentation

Although a collection of simulations can be presented in several different ways, I wanted to achieve three qualities in the final images and presentation panels (Figure 5.10). First, I wanted to ensure that each image was produced with a representative and realistic field-of-view. As described in section 4.3.3, a realistic field-of-view that captures the full lateral dimension of human sight is approximately 40 to 50 degrees. Research has demonstrated that this field-of-view will provide the best approximation of human vision without de-emphasising the project in a simulation, or causing it to dominate a scene (Sheppard, 1989: 67). To this end, the images shown in Figure 5.10 represent a 50 degree field-of-view.

Second, the size of the image when it is printed and displayed on a hard copy panel is a crucial presentation issue. Even if the image itself is displayed with a sufficient field-of-view, the size of the image itself may be too small or too large to provide a representative view of the scene. Thus, depending on the observer's distance from the image, if the image is too large it will occupy a larger portion of the observer's field-of-view than if he/she were standing at the actual scene. The consequence will be that the project will appear closer to the observer than it would in reality. Sheppard (1989: 185) has published a simple formula to determine the correct image size based on assumptions of a fixed viewing distance and field-of-view:

Correct Image Size = 2 x viewing distance x tangent of \( \frac{1}{2} \) viewing angle

At a viewing angle of 50 degrees, the only variable to work out for this equation is the approximate viewing distance between the observer and the image. As I had originally envisioned the interview sessions, the participants would examine the simulations from two basic viewing angles and positions. The image panels would be placed on tabletops immediately in front of the participants or, alternatively, they would be placed on an easel if the participant chose to stand during the interview. Realistically, however, I expected that the informal interview settings and style of questioning would contribute to an equally informal use of the image panels as participants would wish to hold the panels or approach the easels in order to examine the images more closely. Whether directly in hand, on a tabletop, or closely scrutinised from an easel, I assumed that the panels would typically be at arm's length or a yard (36") from the
interview participant. Using the above formula, I can substitute values into the equation to derive an image size of approximately 34 inches:

\[ y = 2 \times 36 \times \tan 25^\circ = 33.57' \text{ (width)} \]

The images shown on the display panel in Figure 5.10 are an even 34 inches wide. Both the pre-test interviews and the interviews confirmed my viewing distance assumptions as the participants chose either to hold the panels or examine them at very close quarters, in some instances, at a viewing distance that was considerably less than 36 inches.

The third quality that I sought for the image panels was clarity. In effect, I wanted to keep the panels as simple and uncluttered as possible to eliminate the problems of confusion and interpreter uncertainty described in section 4.3.1. The design for the panel in Figure 5.10 is very basic with the management scenarios arrayed in order from the “Existing Condition,” to the mid-range scenario labelled as “Current Best Practices,” and ending at the bottom of the panel with the scientific optimum scenario called “Modified Plan.” With the exception of these relatively simple, descriptive labels, there are no other labels, arrows, leaders, or text printed on the simulations themselves which may distract the interview participant’s attention and lead to problems of clarity and bias. In effect, the message that the presentation panels present is inherent in the simulations and, as such, the panels achieve a high degree of visual clarity and comprehensibility.

The pre-tests were instrumental as a means of assessing the clarity and effectiveness of the presentation panels in two other ways. First, they helped identify any scenario labels that may have confused or misled interview participants. For instance, during the pre-tests, interview participants were asked to identify any qualities or characteristics of the presentation panels (including the images themselves) that they found confusing or difficult to interpret. During both pre-tests, the participants indicated that they had difficulty understanding the term “Modified Prescription,” the original label for the best case scenario where the term “Prescription” was intended to refer to a resource management plan. “Modified Prescription” was subsequently changed to “Modified Plan,” a label which the pre-test participants believed that they and other members of their community could understand. Second, the pre-test participants were asked to comment on the quality of the images or, in other words, to indicate whether they found the images too dark, blurred, overly stylised, and so on. The participants generally felt that the
images were very clear and did not appear to be stylised in any sense, however comments about image quality centred on the darkness of the image panels. In effect, the pre-test participants felt that the images were very dark which made it difficult to distinguish features within the scenes. This problem was rectified in the lab by printing additional copies of the panels at successively greater levels of brightness and image contrast. Colleagues were asked to review iterations of the panels in conjunction with the site photographs to select images that bore the closest correspondence to the photos.

5.5 Chapter Summary

In general, I believe that a combination of careful planning, frequent meetings with my supervisor and Cheam Band contacts, and judicious use of colleagues and pre-test interviews has resulted in good simulations that are clear, comprehensible, credible and free of bias. In turn, I believe that the quality of these simulations has contributed to the rich quality of perceptual data elicited from the interviews.

Throughout this chapter, I have alluded to the potential benefits of "good simulations" in professional planning and academic practice. As the research findings in Chapters 6 and 7 posit, landscape visualisation using photo-realistic imagery may prove to be a very helpful tool for communicating perceptions, preferences and, with First Nation communities in mind, cultural knowledge in resource management processes involving landscapes and the people that inhabit them. However, as the recommendations in Chapter 7 argue, there is a need for caution on the part of those who use simulations, either in the context of land-use planning or academic research. Simulation interpreters will continue to encounter problems of bias as long as simulation preparers continue to practice in the absence of professionally accepted standards and artistic license is tolerated (McQuillan, 1998; Sheppard, 1989). Thus, the recommendations for simulation use in planning processes involving First Nations are presented in the final chapter of this thesis with some explicit caveats in mind.
6.1 Introduction

In Chapter 3, I explored the Sto:lo conception of place and endeavoured to portray it as a tangible physical reality rather than as a complicated metaphysical abstraction. In the Sto:lo worldview, spaces and landforms are experienced as the locus of legends and spirit beings whose presence gives meaning and sacredness to a person's perception of the land. The purpose of this chapter is to report on the research results in order to develop a deeper understanding of the cultural values that challenge natural resource managers as they struggle to adopt the land management ethics and techniques that are necessary to implement the philosophy of integrated resource management in a First Nations context. Specifically, I examine several dimensions of land-based cultural and spiritual values as they have been articulated by members of the Cheam Indian Band in response to simulated forest and stream management scenarios. Although evidence for this chapter has been obtained from a variety of sources including recent newspaper articles and ethnographic accounts with the Sto:lo people, the discussion of results will draw largely from interviews with the Cheam participants, as well as field notes compiled over the course of the last year and a half.

In essence, this chapter examines the "human ecology" of alternative land management approaches, with human ecology defined as the study of relations between aboriginal people and their environment. Ultimately, these relations are determined by how people value and perceive their environment. Sections 6.2 and 6.3 will explore the stated values and perceptions of the Cheam participants in the context of the forest and stream management scenarios, respectively. Each section will begin with a relatively brief examination of the participants' landscape management preferences. In effect, the participants were first asked in the interviews to identify the scenarios that were more or less compatible with their conceptions of how the land ought to be managed. A combination of numeric tables and statements that have been culled from the interview transcripts will be used to describe the constellation of Cheam environmental preferences. Following this more descriptive overview of what the participants preferred, sections 6.2 and 6.3 will go on to examine their responses to a series of open-ended questions that were intended to gauge the participants' perceptions of how the scenarios affected the land's ecological
health, beauty, sacredness, and so on. Four common themes, or conceptual categories, emerged from the participants’ responses to these questions:

- Physical Sustenance
- Social Cohesion
- Cultural Identity
- Spirituality

These categories resulted largely from recurrent examinations of the interview transcripts and discussions with key Cheam contacts, as well as from a thorough review of the literature that addresses First Nations’ environmental values and perceptions.

The final section of the chapter (6.4) will examine the effectiveness of the visual media that was used to solicit the participants’ reactions to the management plans. I wanted to learn from the participants whether factors of image clarity (i.e. both maps and simulations), credibility and, to a limited extent, bias affected their ability to respond to the scenarios. Accordingly, I present both qualitative and quantitative evidence that documents the participants’ relative comprehension and facility with the GIS maps and the photo-realistic landscape simulations.

6.2 Forest Management Scenarios – Viewpoint One
   6.2.1 Scenario Preferences
   After posing a number of general place recognition questions in Part A of the interview (See Appendix A3), Part B began with a series of questions that were designed to elicit the participants’ preferences for or against the management scenarios depicted by the maps and the landscape simulations – e.g. “Do any of the pictures that you see reflect Sto:lo or, more specifically, Cheam landscape management values?” or “Of the management alternatives that you see, are any of these suitable or appropriate ways of managing the land?” or “Which of these alternatives do you prefer?” Participant responses to the preference questions were grouped into one of two categories, namely “Compatible” and “Incompatible.” After reviewing the interview transcripts several times, I found that it was difficult to place participant responses into the more straightforward polar categories of “like/dislike” or “prefer/reject.” Although several comments could be accommodated within these latter categories, I found that the participants’ reactions occasionally demonstrated an ambivalent acceptance of particular scenarios. In essence, some comments unequivocally supported the underlying management premise of a scenario – e.g. partial cutting – but questioned some of the particulars that were depicted in the imagery – e.g. 75% v. 50% removal. To capture responses that accepted a scenario with certain modifications, I
felt that the less absolute categories of "Compatible" and "Incompatible" would be a more appropriate classification scheme.

Overall, reactions from the participants in all age cohorts characterised the clearcut scenario as a destructive and disrespectful form of forest management — e.g. "...our people ... always believed that we don't destroy or clearcut anything like that there." Of the three scenarios, the partial cut scenario garnered a modest but relatively favourable response from the interview participants perhaps suggesting that, even when presented with the option of preserving the Cheam foothills in their existing condition, the participants favour a limited form of timber harvesting.

Table 6.1 presents the results from these initial preference-based questions in greater detail. In general, the results demonstrate that participant reactions to the timber scenarios are

<table>
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<th>Table 6.1 - Timber Model Preferences</th>
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<tr>
<td><strong>Existing Condition</strong></td>
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<td><strong>Age Cohort</strong></td>
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<td><strong>P</strong></td>
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<td><strong>Partial Cut</strong></td>
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<td><strong>Age Cohort</strong></td>
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<td><strong>TOTAL RESPONSES</strong></td>
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<td><strong>Notes:</strong></td>
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<td>&quot;N&quot; refers to the number of participants in the interview sample by age</td>
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<td>&quot;P&quot; is the number of discrete or individual participants that have response within each preference category - i.e. compatible or</td>
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<td>&quot;Count&quot; refers to the number of</td>
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more or less dichotomous. On the one hand, there is a relatively weak but unified perception that the existing scenario is the most appropriate condition for the Cheam foothills:

John: Do any of these plans offer an acceptable measure or protection for wildlife or for culture?
Will (Young Adult): This one.
John: The existing condition?
Will (Young Adult): Yeah.
John: Which of these options do you think is a better alternative – looking at all three?
Dan (Adult): Well, I don't know, I'd just as soon leave it.
Joy (Adult): I don't believe in cutting timber unless it's an absolute necessity.

At approximately 7 percent of the total number of responses, it is tempting to dismiss these reactions as insignificant outliers, or at the very least to treat them as opinions that are clearly in the minority. However, given the pervasiveness of conservation interests and the express desire of some First Nations for outright expulsion of timber corporations and the Ministry of Forests from their traditional lands (Nathan, 1993: 138), it is difficult for me to dismiss these statements as idiosyncratic reactions to the timber scenarios. As such, it may be more appropriate to treat these reactions as irregular but, nonetheless, relevant opinions that may cast some light on the pattern of environmental perceptions discussed in section 6.2.2.

By contrast, 50 percent of the responses characterise clearcutting as the least preferred of the three management alternatives. As the numbers in Table 6.1 clearly reflect, contrary reactions to the scenario are consistent across the participant sample, but the considerations that underlie these responses vary considerably:

Darryl (Young Adult): Well, the clear-cuts just. Oh, jeez, well you see this creek here and this creek here, there's places up here that are used for spiritual cleansing and a clear-cut even a partial-cut wouldn't be suitable for those particular uses, for spirituality reasons. We need to cleanse the soul and cleanse your body through our cultural ways to live, to carry on in your spiritual way.

George (Elder): Our people never, like they always believed, that we don't destroy or clear-cut anything like that there, because as you are well aware that the Cedar trees are sacred trees. And we use everything part of, we use the cedar boughs for our smudging, our when we, our people used to go down to the river, our people used to go to the river all the time to cleanse themselves and wash themselves with a Cedar bough.

Len (Young Adult): You could still hunt if it was clear-cut, but it would make it a little too easy for hunting. People look for clear-cuts when they're hunting, the animals come into, they want to get the animals into a nice opening so you can see far away. But the clear-cutting doesn't sit right, sure it's nice to have a big place to hunt but how many years, you need the cover for the animals to protect them too, I think it's still wrong.

Henry (Adult): And that's clear-cut? Yeah, that'll be bad. It just about doesn't matter how big of a green zone you leave along the creek if they even do that anymore. It's going to fill up the creek with debris and it'll all go down the hill at the first melt, and down the mountain it goes and creates a mess down there. I know it's, it'll, if there's any gravel and stuff down here after all that silt runs off it's going to pile up on top of the gravel. And it'll eventually wash away I guess after a few years but all this soil is not going to come back in a few years like, when it's gone, it's gone. It's taken a few years to build up the soil and it only takes one good snow-melt to take it away. Clear-cut is really a poor way to log.

Mary (Adult): And right now we're battling with too much gravel in the river, you know it's eroding our, sides of our banks and stuff like that. And a lot of it's from that clearcutting and logging. There's no protection.
The breadth of Cheam concerns with clearcutting is reflected to some extent in these statements, and hints at the diversity of issues that First Nations bring to discussions with government and industry concerning the most appropriate way to harvest trees. As the first two statements posit, the forest is a place of spirituality, a place of refuge where young people and elders alike retreat to cleanse their mind and body, and to rediscover cultural meaning and identity. However, at the same time, the forest is a habitat for the wild animals and plant life that traditionally sustain and provide nourishment for First Nation people. The concept of mass-scale use of forest resources, with the associated waste and devastation involved with clearcutting, is simply alien to Sto:lo cultural tenets. Legends and ceremonies alone reflect a tradition of spiritual interconnection with the forest and material dependency on it. These tenets invariably demand a more holistic, balanced approach to forest management which recognises the modern economic imperatives of harvesting timber wealth with the concomitant need to preserve other uses that require living forests in order to persist (e.g. hunting, fishing, ritual traditions, etc.).

There were several comments (i.e. 29 of 88, 33%) that identified the partial cut scenario as a better approach to timber management and, furthermore, suggest that the participants may prefer a partial cut management approach over the existing condition:

Len (Young Adult): It might work with the partial cut system, it might. I could probably see it working with the partial cut system. But I'm one person and there's a lot of other people that live around here in our community, it might, of course this would protect it.

Henry (Adult): Yeah this is, this is a good way to log.
John: Why is that?
Henry (Adult): Well for one thing it provides the shade, the moisture retention, pleasing to the eye too, besides forestry does worry about that you know.
John: Why do you think that looks better?
Henry (Adult): There's a, trees here; it wouldn't be, these here trees will hold some of the run-off. Plus you can easily plant you know the, some of these trees I would imagine they're going to be different species and this might be all Fir – it looks kind of rocky there, but there's bound to be a couple of Cedars in there, it's sure to been.

George (Elder): Where it's not so clear, yes. And we've had people come over, I think Darwin got some of his, from the Island, Comox, except that, and this fellow came and tried to talk about selective logging. And if, if that what is supposed to be done, that's the approach we'd like to see, not any clear-cutting or, just could happen which could cut a hole here.

James (Elder): Logging it couldn't do it any harm if it was replanted, and if it wasn't just logged and not replanted then we would just have stumps and blackberry bush.

However, the numbers in Table 6.1 also attest to the lack of consensus among the participants concerning partial cut harvesting. The handful of dissenting opinions (9 of 88, 10%) expressed
their concern with the option in terms of one fundamental consideration; the extent of timber removal represented by the scenario (i.e. 75%) is too extreme:

Mary (Adult): Well, I think to a certain degree there should be some economic value in the mountain or in the trees. But I guess in between this and the top one there would be it. I think 75 percent probably would be a little too much. I would say 50 percent. Even at 50 percent, rather than 75 percent removal. I mean I would like to see what it would look like at 50 percent.

Frank (Adult): Maybe 50 percent might be safe, I know 75 percent may be leaving the other trees that are standing at risk, I think.

Other comments were not nearly as direct in terms of suggesting alternative cutting percentages (i.e. 50% v 75% removal), however other comments carried the same essential meaning through their concern with the extent of timber removal:

Darryl (Young Adult): Partial-cut, selective. I don't know if 75% is. ...you won't have your full spiritual relationship with this if you do this partial-cut but your gonna retain some of it, and I would imagine that's what our band would do is attempt to retain it and carry on and participate in, in the western, in the western, like economy type, you know.

Dan (Adult): 75% would leave a little bit of protection, the clear-cut wouldn't. I'm not too sure, looking at the slope, a lot of our wildlife might not even be on that slope, they might like a more gradual slope to travel. But that is a steep section that you're looking at on this one part.

It is conceivable that if the partial cut scenario had been based on a management approach comprising 50% removal and 50% retention, that participant reactions would have been unanimous in their endorsement of the scenario. As such, it would appear that the participants favour a scenario that involves some limited form of logging over a management approach that preserves the mountainside in its existing condition. In part, this may reflect the growing interest of First Nation communities in the forest economy for the survival of their people. As Chief Francis Frank of the Tla-o-qui-aht Nation asserts, logging represents a critical means of rebuilding communities that have been dislocated through development or economic upheaval.

Our people are not naive. We are changing with the times along with everyone else. And that means some economic development and logging. There are definitely areas we want to preserve. But we don't support the idea of complete preservation (Victoria Times Colonist, May 2nd 1992).

In effect, while most First Nation communities remain fundamentally opposed to 'business as usual' forest practices in their traditional territories (i.e. clearcutting), they have remained wary of the notion that these lands should be preserved in standard park designations. In order to understand the participants’ reactions to the management scenarios in greater depth, the
following discussion examines the other category of responses elicited from the interviews (i.e. participant perceptions).

6.2.2 Conceptual Categories
Having described what they prefer, the remaining questions in Part B of the interview protocol were designed to probe the participants for additional information regarding their perceptions of the management scenarios. In essence, I wanted to shift the interview from a simple exploration of which scenarios the participants liked (or disliked) to a deeper examination of the underlying cognitive factors for why they chose particular management alternatives over others (See Chapter 5, section 5.2.1 – Approaches to Environmental Perception Research). This was intended to elucidate the personal and cultural meanings that the participants associate with their landscape and landscape condition (i.e. Research Objective 1). The responses that are presented in the following discussion, and in the accompanying tables, were made by the participants in reply to these additional probing questions.

One general comment should be made before proceeding with the discussion of the conceptual categories. For reasons that should become apparent in section 6.4, the responses that were used to develop the conceptual categories were based on reactions to the landscape simulations. In several instances, particularly from the elders and adult participants, the resource maps failed to elicit responses to the management conditions shown. This would often be reflected in comments that ignored the interview questions and addressed other topics of interest to the participant, or simply expressed their frustration with a medium that they found difficult to interpret:

John: ...Do you recognise the area here on this map?
Mary (Adult): Well, I'm not real good with maps. ... not on the map I can't.

On other occasions, the maps generated responses that were clearly erroneous (refer to the discussion of the elders' use of the maps in section 6.4). Thus, I found that the maps and responses to the mapping information could not be trusted as a valid basis from which to develop the conceptual categories.

A common thread that permeates many of the conceptual categories is the notion that First Nations derive considerable material and cultural benefits from the use of forest resources. While some of these uses involve the removal of timber and other plant materials for local consumption, concurrent with these consumptive needs are other activities and values that
require a “respectful” form of land management. According to the Cheam participants, these values include:

**Physical Sustenance:** An appreciation for the land as an abundant economic resource as well as an important source of traditional “country” foods – e.g. wild game, fish, medicinal and food plants, etc.

**Social Cohesion:** A value that results from the cultivation of social relationships through the sharing of resource wealth and the co-operative nature of traditional resource harvesting activities – e.g. hunting, fishing and plant gathering.

**Cultural Identity:** The feeling of belonging to or association with a larger community that is often rooted in a shared history or symbolic association and, in a more material sense, in the activities that are a traditional source of knowledge and material wealth.

**Spirituality:** A more profound sense of the land as the locus of spiritual or metaphysical beings as well as a place for transcendent experiences, ritual cleansing and meditation.

*Physical Sustenance*

The Cheam regard themselves as custodians of the land, which is for their use during their lifetime, and which must be passed on to their children and their children’s children after them (personal communication). Without the land, the community would feel adrift; with the land they have a home. As such, the land is something that they cherish and protect, and something that they can go back to for support and sustenance. The importance of the land as a source of physical or material sustenance was a central theme in my conversations with the Cheam participants. Whether sustenance includes such activities as harvesting medicinal or food plants, hunting wild game, or harvesting timbers for commercial sale or building projects on the reserve, the Cheam participants often characterised their traditional lands as an abundant material resource and source of bodily nourishment. Physical sustenance values in relation to forest resources were expressed during the interviews in two general ways:

1. Economic or pecuniary value,
2. Material and dietary value.

First, statements from the participants emphasised the importance of the forest as an economic resource, as a means of providing revenue and employment for the community:

James (Elder): Logging it couldn’t do it any harm if it was replanted ... In fact it would benefit some of the members to get off welfare and work for short periods. So I see no problem with logging portions of it.

Frank (Adult): ...in the future it may be of economic value to our own people. Right now, what’s happening around that, I’m not saying that we shouldn’t take some of the logs out of there or the trees but, um, some of it has to be left there for our people when we get to that point. Right now we don’t benefit economically from anything surrounding us.
Len (Young Adult): Well to tell you the honest truth is that the condition, the condition may change a little we may you know, we may look at an area and say maybe we could do some selective harvesting or something. We all need to; we've always utilised our resources to provide ourselves with healthy lifestyles. If you want to say economic, we've always utilised the resources for economic purposes whether it's trading whether it's using them for whatever. So there is a possibility that we would look at this area for some selective logging.

In effect, the commercial use and sale of timber can contribute to the economic development of the Cheam reserve by providing jobs and revenue. With one exception, the interview participants were somewhat vague about the type of economic ventures that they felt would be most appropriate for the community. However, based on his experience as a logger in the 1930s and '40s, one elder described his vision of harvesting and replanting the foothills with cottonwood trees to supply the Scott Paper mills in New Westminster with pulpwood:

James (Elder): I don't attend Band, Band meetings but that, that would be something that provides some labour, especially Cottonwood I imagine, fast growth and turnover, ... there's already a market for it like pulp and it's labour intensive when you harvest it, it's very labour intensive. ...If we had a plan to start off with, I would suggest cottonwood in the logged over areas. It grows fast and in ten to fifteen years you could harvest the whole thing. And as I said Scott Paper in New Westminster is always looking for cottonwood.

However, most comments were less particular about the commercial potential of the timber resources on Mount Cheam. Statements generally characterised timber harvesting as an essential part of the community's economic future:

Frank (Adult): And the basic idea is what you look at, is that we borrowed it ... it's going to grow back and we realise that. But the economic, you can never ever overlook the economics of your resource, and how you sustain off them.

Mary (Adult): It's traditional, and probably in the future it may be of economic value to our own people. Right now, what's happening around that, I'm not saying that we shouldn't take some of the logs out of there or the trees but, um, some of it has to be left there for our people when we get to that point. Right now we don't benefit economically from anything surrounding us.

Larry (Adult): But I think that as far as we're talking about logging you know the resource itself, we're very interested, I know I am very interested in utilising that to provide for our future generations.

These comments may account for the favourable basis of support for the partial cut scenario demonstrated in Table 6.1. On the one hand, commercial logging provides very clear and measurable economic benefits for the Cheam band in the form of jobs for community members and, more broadly, revenue to finance community programs (Darwin Douglas, personal communication). In this respect, preserving the Cheam foothills in their existing condition will prevent the community from realising any pecuniary benefits from the forests. However, as the
following statements suggest, removing large stands of timber through clearcutting will
compromise other sustenance activities that occur on the mountain. In effect, partial cutting was
perceived as a better harvesting option because it retains enough habitat for the fish, wild game
and plants upon which the Cheam traditionally subsist:

Len (Young Adult): I mean there's some cases where maybe we get into the, more of an
economic venture, you know that we might have to get into a little larger scale of volume.
But I think that basically the underlying principles of leaving enough there for other animals
and whatnot to survive is still there. Even if, I know there are different methods of logging
... you know like partial cut like you have here, you know to look at it and even it out so it's
not just a big gaping wound on the landscape after that. ...we want to keep the area alive
and functioning and the ecosystem healthy, we take into those considerations first. So it
may change a little, so maybe something like that, a partial cut.

Will (Young Adult): ...you don't want to take everything out of there, you want to leave
something to regenerate. ... I guess personally to go into an area I look at where I can
take without totally destroying the ecosystem there; what you can take so that is still
continues to, the area continues to function and provide a shelter and habitat for wildlife.

Mary (Adult): I think to a certain degree there should be some economic value in the
mountain or in the trees. But I guess in between this and the top one there would be it. I
think 75 percent probably would be a little too much. I would say 50 percent.

The sustenance activities implicit in these statements are based on a traditional Cheam lifestyle of
living from the material abundance that the land provides. Hunting wild game in the forests is one
crucial part of that subsistence relationship with the mountain, however the interview participants
also described fish as a critical part of the Cheam diet:

George (Elder): And, so a lot of it is, is if it's taken away, like, it's not only for us its more,
like we survived on the game ... did Art mentioned that the certain the places he'd go up
near Popcum up the mountain to hunt deer? So I mean if the place was clear-cut then
that's gone.

Henry (Adult): ...some of our members here don't have anything else to supplement the
welfare system, they don't have a job, they've got fishing, they've got hunting. ...the fishing
is very important of course. We fight hard for them rights. We're not there to fish them out
and we control ourselves and fish only, most times that we have our own openings we fish
two days and that's it, so there's five days of conservation in there, but the same goes with
the timber.

John: Wildlife is important to people here to?
Mary (Adult): Very. I mean it's part of our culture as well, our livelihood.
John: Like a subsistence livelihood?
Mary (Adult): Yeah. I mean that's all we live on in the wintertime, wildlife and fish.

Len (Young Adult): ...But we would have to take into consideration, like we have taken it a
hell of a lot more seriously than the Ministry of Forest on our concerns anyway with the
hunting and the spiritual use or whatever uses there are. There are other uses ... people
go up there and collect, maybe cedar-bark. So you know we'd have to take those more
seriously than the Ministry of Forests would...

Similarly, the mountain is valued for the medicinal and food plants that grow on its slopes:
George (Elder): Yes a lot of different things too like gathering of our, we used to have lots of wild vegetables even down here and up towards the mountains and of course the berries and, in our medicine. Our people still go up the mountain to get their different types of medicine, though they can't, not available down here maybe.

Joy (Adult): Oh yes, there's probably a lot of vegetation in there that's used for medicinal purposes or tea, there's swamp tea in there too.

Will (Young Adult): ...harvested strawberries. I know there is an area in behind the peak where there was a salt mine that our fishermen used to go and mine salt for smoking and curing fish prior to contact.

In general, the foothills of Mount Cheam were described as an abundant provider of nourishment and material sustenance for the Cheam people:

Darryl (Young Adult): ...they call it [the lower slope of Mount Cheam] the foothills. And in our language, there was a, there was a word for foothills. It's not steep mountain, it's just kind of a wavy lower hills on the mountainside that would provide for our people.

Thus, whether they choose to describe the mountain as their provider, "supermarket," or "pharmacy," (Len, personal communication) the essential relationship that the Cheam have with their land is predicated upon two forms of material subsistence that require a balanced approach to managing forest resources. On the one hand, the more traditional activities of hunting and plant gathering require a certain land base. In effect, plant and animal life are attached to a forest habitat that sustains them and, in turn the community that consumes them. However, concurrent with these basic sustenance uses is the potential commercial or economic value of the forest as a means of providing employment and financial support for local development programs. When considered together, both of these uses presume that the foothills can be logged, but only to the extent that enough timber is left behind to continue supporting vital plant and wildlife communities. According to the participants, clearcutting is irreconcilable with these opposing uses of the forest because it is an unbalanced approach that will entail a considerable loss of habitat:

Henry (Adult): Well for one thing it makes a big mess, and destroys all the habitat below it, below a logged clear-cut. It snows and then it runs off and all of that mud and everything comes down and gets into the streams and there into the river - the boulders come down and the gravel and sand come down and they all end up going up the river.

Will (Young Adult): It's really destructive to fish habitat. Again I'm talking about the erosion, you get that erosion in there and it goes in there and it just gets laden with the silt and the, and the spawning beds and it makes them useless. It smothers the spawning beds with silt. You just take the Hope slough and look at what, what agriculture and progress has done to that. It was once the Hope River. Now it's just a stagnant body of water and that's how you kill habitat.

Darryl (Young Adult): ...you impact some of these particular plants, like this is only one plant, there's other types of plants that are used, for the most intrinsic aspects of our life. But if they're not there, if they have been rolled over by logs or if they, or if roads were cut
through them, or if it changes the ecosystem so they can’t grow anymore, it again takes away.

My final observation about physical resource values pertains to the distribution of responses within the participant sample. According to Table 6.2, the adult cohort represents

<table>
<thead>
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<th>Physical</th>
<th>N</th>
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<td>Adult</td>
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<td>28</td>
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</tr>
<tr>
<td>Young Adult</td>
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<td>9</td>
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</tr>
<tr>
<td>Subtotal</td>
<td>11</td>
<td>48</td>
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more than half of the responses in the physical category, perhaps suggesting that the adult generation may have a stronger association with the forests as a source of economic livelihood and provider of material commodities. I believe that this pattern of response may reflect the unique employment history of the adult generation. In the 1940s, the provincial government passed legislation that restricted Native involvement in selected industrial sectors (Carlson, 1999: 122). For example, racial exclusion codes that had been negotiated between labour unions and industries, prevented First Nation people from participating in jobs that they had long dominated – e.g. commercial fishing and the railway industry (Carlson, 1999). Furthermore, two-tiered pay scales compensated people of European descent at a higher rate than Asian or First Nation people for the same work. The only industrial sectors that were not affected by these changes were primarily seasonal in nature and included crop picking and industrial forestry. Given the seasonal nature of the former, and in a period when welfare was non-existent, logging was the primary means for many Sto:lo families to provide for their families (Bierwert, 1999; O’Neill, 1998: 22).

Statements from the Cheam participants largely confirmed this experience. One participant in particular described the consequences for Sto:lo men associated with seeking employment in legislated industrial sectors:

John: A lot of people in your family worked in the logging industry?
Larry (Adult): Oh yeah, yeah we did.
John: Why the timber industry in particular...
Larry (Adult): It was something that was available. The fishing, fishing was illegal for us, to gain a livelihood off it, but we could go and log and not be subject to incarceration.

Others adults simply stated that for themselves and their parents logging provided the basic necessities of life:
Frank (Adult): ...my dad was a logger and I can remember going way up to the end of the Skagit on the American side when they took the logs out of there when I was a kid in 1948, '47, you know they were hauling them big truck loads down. As a kid I used to ride up there with my dad to the camp out there and then in the '50s it was the same thing. But we always knew when my dad had a job; we had stuff to eat on the table.

James (Elder): I'd gather up the boys from around here, my neighbour, Mike Victor's long passed, Charlie Douglas, Johnny Victor, we cut pulp right down on the edge of the slough there in the long winter of '48 I guess it was or '47. ...it's hard tedious work and, but I did put the potatoes and put a few goods on the table.

That the older generations appreciate the value of the forest in terms of its ability to provide for the Cheam people, even in terms of fairly basic requirements such as food and shelter, is clear. In the absence of employment in the timber industry, many of these people would have experienced considerable material hardship. By contrast, young Cheam adults do not have to deal with the legal employment constraints that their parents and grandparents once confronted. Thus, because younger band members can provide for their families from a much broader range of employment opportunities, the forest may not retain the same degree of economic or sustenance value for the young adults that it has for the older generations. Future research should explore the relationship between First Nation employment opportunities and environmental perceptions more systematically in order to confirm (or challenge) this finding.

The employment constraints that I have described affected people of the adult and elder generations alike, and yet it is interesting to note that the elders appear to be as weak in their expressions of physical value as the young adults (see Table 6.2). Once again, I can only speculate about the probable basis for this discrepancy, but the explanation that I can marshal does make considerable sense. Of the two elders that were interviewed, only one (James) worked for the timber industry from the inception of his working life to retirement. The other elder (George), currently holds a senior position with the Sto:lo Nation, and has spent much of his working life as an educator and director of the Coqualeetza residential school (following the transfer of that institution from the Roman Catholic Church to the Sto:lo Nation in the early 1970s). Thus, the basis for the discrepancy in Table 6.2 appears to be arithmetic. With only one retired logger in the elder cohort, compared to five adults who have worked as loggers, it is hardly surprising that elder expressions of physical value in relation to the Cheam foothills are not as prevalent as the adult participants'.
Social Cohesion

Having discussed the physical value of the forests, I subsequently asked the participants to explain why traditional subsistence activities such as berry gathering, hunting and fishing remain so important to the Cheam community. Beyond the provision of nourishment and shelter, I wanted to explore the importance that "country foods" retain for a semi-rural Indian band that has access to grocery stores and other retail establishments. My curiosity stemmed from two sources. First, during my brief overnight visit to the Cheam reserve, the meals that I received consisted at various times of either salmon or deer meet. However, interspersed throughout the week was the occasional meal that included the typical assortment of store bought produce and meats (personal communication). Second, Bierwert describes the traditional sustenance activities that are associated with hunting and plant gathering as a small, and perhaps declining proportion of the Sto:lo diet. Citing evidence from a survey of 1,335 Sto:lo households on fourteen reserves, Bierwert indicates that 83.5 percent had purchased food from stores to eat at home (1999: 34). In addition, 65.2 percent indicated that "some" or "half" of the meat that they consumed came from hunting and fishing. In the absence of longitudinal data, it is difficult to determine whether the traditional Sto:lo diet is becoming more or less widespread in reserve communities. However, as one interview participant maintained the activities of hunting, fishing and plant gathering are much more than simply a means of feeding and providing for a family:

Mary (Adult): There are some of them that don't go out and hunt and fish, but the rest of us that do would probably really feel the impact. Not just as, I guess not just as you know as a sustenance, a need, but as a way of life for us.

A defining aspect of the Sto:lo way-of-life is the cultivation of social relationships through traditional resource harvesting activities; most importantly through the sharing of resource wealth. Not only are essential items, such as food, shared within a community, but also most elements of the environment including the land, which in turn, are shared with all other beings. As the following table illustrates, elders, adults and young adults alike expressed the social importance of

| Table 6.3: Number of Comments, Timber Scenario |
|-----------------|-----|-----|-----|
| Social          | N   | Count | Percent |
| Elder           | 2   | 6    | 35%    |
| Adult           | 6   | 6    | 35%    |
| Young Adult     | 3   | 5    | 29%    |
| Subtotal        | 11  | 17   | 100%   |
timber management, perhaps reflecting the pivotal role that sharing plays in the Cheam way-of-life.

Patterns of sharing material wealth are typically associated with Cheam culture, and may manifest themselves in several ways. First, sharing may involve the pooling of resources and contributing to the care and sustenance of dependants, whether they are elders, children, or disabled adults:

George (Elder): ...it was our belief, we always shared especially our food, and whatever we had, game, and some of the people to this day, my godson and my nephews they always come over and said we'll give you, some deer meat to our elders or to our relations.

This is considered to be a part of "Indian ways," in contrast to a perceived absence of shared caring in non-aboriginal society (Carlson, 1999: 5; Suttles, 1987). Second, sharing is a key facet of Sto:lo ritual and ceremonial practice where guests at a potlatch or longhouse ceremony are hosted and fed large quantities of salmon and wild game (Carlson, 1999: 98; Mohs, 1987; Suttles, 1987).

Dan (Adult): ...it's the same as the fishing. A lot of times a lot of the wild game we'll, you know, we'll go out for a specific ceremony that we're going to be feeding a lot of people...

Traditionally, this form of sharing served as a demonstration of wealth and high status within a community through access to abundant and highly productive fishing and hunting sites. Guests were expected to repay the host's generosity at a future feast or potlatch and, in this manner, the sharing and redistribution of material wealth became a key facet of Sto:lo trade and culture (Carslon, 1999: 97). This form of sharing in ceremonial practice has an almost religious significance. Fishers make prayers and have dreams that help them in their fishing. However, when the first catch of the season is made, the first salmon will be shared among family members, with an offering of special thanks for the coming run (Carlson, 1999).

George (Elder): ...we still do the First Salmon Ceremony, my nephew here, Isaac, you know he's a great fisherman he always has the first salmon in the, Spring Salmon in maybe March, April and then June for the Sockeye. So we'd have a, catch one and make a big pot of soup of salmon and dump in some potatoes in there and then we'd invite as many people to come, or either that he'd cut it up and share it with other people.

Finally, the activities of hunting and fishing are shared as well as men set and pick nets, and women clean fish, or large hunting parties venture into the forest to find deer or elk meet for the coming winter (Mohs, 1987: 75; Suttles, 1987):

Frank (Adult): ...And they go anytime they like hunting. And it's not so much just the killing of the animal, it's the supplying of food for everybody, everybody gets a share of it. Three nephews that went out about two weeks ago, they took a whole entourage, about forty, all
my family. We’re from a huge family, eh? I had six brothers and ten sisters, you know that’s just our immediate family. So, there’s about thirty of them, about thirty of them I guess now. Anyhow, I had a good time. They shot five animals, but I mean every one of our family just about got a share out of it. So it takes that many to spread around in a family that big.

Thus, whether it is acquiring salmon or deer meat for a specific ceremony, providing food for elders, or simply venturing out in large numbers as a family to hunt, these different modes of sharing possess a common ability to orchestrate and reinforce a larger sense of community (Mohs, 1987: 76). The following participant comments on the sort of conviviality associated with sharing work and the wealth of the land:

Frank (Adult): ...you know, that’s the social part of it. Some parts of it. And I was really surprised, some parts of our family that’s sort of in a feud really, a feud type of thing in our family, well they all went out together and came back really in good spirits.

The way-of-life that these people describe has a spiritual foundation as well. The spiritual basis of sharing is rooted in the conception that nothing on this earth has been created for the exclusive use and enjoyment of any single person or community. This right of use and access comes directly from the Great Spirit or Chichelh Siya:m:

George (Elder): ...we don't own the land it belongs to the people of Chichelh Siya:m, the Great Spirit or mother-earth and we're just using it, and you have to learn to make the best use of the, your own territory and if necessary share with it, maybe not only with your own family but with other people, ...

Joy (Adult): ...we shared, which is given to us by the Creator, we have to share and anything you get, anything that is provided you have to share and that.

Len (Young Adult): ...we pride ourselves here and always asserting our rights for carrying on, what we know we have been given the right to do ... by the Creator to go out and celebrate. To go out there and harvest and maintain our connection to the fish and to utilise them and we don't just take, take, take.

Furthermore, the consequences associated with greedy behaviour are rooted in Sto:lo oral tradition where the physical, social and moral ramifications are spelled out for someone who wishes to "just take, take, take."

Darryl (Young Adult): ...there's bad consequences in terms of, like this one story, ... just like this waterway here and up here was a fishtrap and down here was a fishtrap, and these are two different families. Well this family who had a fishtrap, they could, they both had fishtraps, they could take, they could cut this, the access of fish to their spawning grounds off, so down here ... the teaching was always to make sure that the fish could get through, that you're not always distracting them. So you have your trap there and you take what you need and let your trap go. And the fish would go up. So this was happening and these people would do the same thing here. But then one time these people down here at the lower part of the river kept their trap in, they thought well jeez, you know if we, if we can, this one family says if we can take all the fish, you know we can put it all away, we can smoke and have stacks of fish and we can have fish for everybody and people would have to come to us for fish. Well in the meantime, while they're, while they're trying to do that, these, these people up here starved, they, they are famished, they, the fish didn't get to
their spawning grounds. That, that cycle of fish in that year was harmed. And, and meanwhile so, so what had happened was these people here suffered and they, they, they needed to, they had to go down and, and tell these people what they were doing. So we need to ask, well one, one group not following the teachings you know, that's, that's what happens. ... Actually the elders telling you these things, these happened in the past. You know these people came down and the warriors were trying to keep their, keep their trap open and this person had to sneak in and open up the trap and the fish would come through. And then these people, 'hey our trap’s open' and then they’d close them again. And, and so this went on and finally the, somebody found out that this person was opening and chased them off and then there was a fight, there was a war going on over, over this. But once these people found out what they were doing wrong after they had to meet because of the fighting, things were settled, they brought them back into, into this, the teachings of hey you know you can’t, it’s not all for you, it’s, it’s for everybody, it’s for themselves. The fish is for themselves too.

Thus, from the perspective of a culture where the land and its resources are created for the use and sustenance of every living creature, people suffer and stable social networks break down when gluttony and self-interest become guiding principles.

However, the key question at this point is what impact, if any, will timber harvesting have on the Cheam’s capacity to maintain this important aspect of their way-of-life? In terms of the direct impact that forestry has on the social values associated with the forest, the clearcut scenario was characterised by the participants as a threat to the viability of salmon habitat and, by extension, the ability of members of the Cheam community to fish for social gatherings. Although there is considerable debate about this subject in the resource management and eco-science literature, a common problem associated with decreasing salmon stocks has been attributed to the loss of salmon habitat due to poor forest management in B.C. Whether clearcuts create large scale erosion which contributes to the degradation of water quality through the introduction of sediments to stream systems, or nutrient rich riparian areas are damaged or obliterated, the impacts of forestry on fish and fish habitat are significant (Carlson, 1999: 156). According to one participant, habitat loss associated with clearcutting has direct and measurable impacts on the Cheam’s traditional practice of sharing salmon during large ceremonial gatherings:

Dan (Adult): ...you’re really in steep country right here, and I’m sure it would make quite an effect on this swamp area below.
John: It would? What kind of an effect would you expect?
Dan (Adult): Ah, sediment run-off. ...right now they’re just going to restock the Coho that are coming back into these creeks that are returning. Any sediment in there would just kill the, kill the reproduction process again.
John: And Coho is an important resource?
Dan (Adult): Yeah it is, like a, in, in many aspects like, it’s not only important to us, it’s important to other fish recyclers you know. If we don’t have the Coho coming back that means, they’re going to cut back on other parts of our fishing that coincide with their Coho time, their running time. And that already has affected some of our, because of the local returns, they don’t want us fishing at certain times. It eliminates our aboriginal practices of supplying food for the rest of the, the winter. ... A lot of the fish that we cure during the,
during the Coho salmon run time, like the Chum may start coming up here too. We use the Chum for smoking and, a lot of our ceremonial gatherings for the winter when we have big crowds of visitors coming from other areas, that's what we feed our visitors when they come.

Ensuring the vitality of forest and salmon habitat guarantees that there will be enough clean water and food for the longhouse gatherings that take place each fall and winter. In effect, feeding large gatherings of people from the abundance of a healthy environment sustains an important social event that is, at the same time, central to Cheam spiritual life:

Henry (Adult): And we feed them pretty good ... lots of deer meat and smoked fish and canned fish. When you have the [sniltha] ceremony you aren't supposed to have anything that comes from the supermarket just that have come from mother nature - all natural. ... That brings up the fact that we need these habitat places for our wild game, we have to have access to game, and waterways for our fish...

Similar impacts were described in relation to hunting. In effect, the large openings in the forest canopy created by clearcuts would make it much easier for aboriginal and non-aboriginal hunters alike to track deer and elk. This, they believe, would ultimately place considerable pressure on the local deer population and, by extension, on the Cheam's capacity to share the resource at ceremonial gatherings:

Dan (Adult): ...it [the clearcut] may have an affect on the deer because it would expose them to, to more hunting.

John: Is hunting something that people of Cheam do?

Dan (Adult): Yeah, we do. But a, but it's the same as the fishing, a lot of times a lot of the wild game we'll you know, we'll go out for a specific ceremony that we're going to be feeding a lot of people...

Although the partial cut model was never specifically identified as a better alternative for preserving social events and cultural institutions, the scenario was nevertheless identified as a much better way of retaining the critical habitats that fish and wild game rely upon:

Len (Young Adult): I think that basically the underlying principles of leaving enough there for other animals and whatnot to survive it's still there. Even if, I know there are different methods of logging and other selective - you know like partial cut like you have here...

Darryl (Young Adult): ...if you do this partial cut ... your gonna retain some of it. ... I'm saying it could be done as long as it’s, as long as it’s done with the full understanding of what’s going to be there in the end in terms of social reasons or due to spiritual reasons or stuff.

Will (Young Adult): I look at where I can take without totally destroying the ecosystem there, what you can take so that is still continues to, the area continues to function and provide a shelter and habitat for wildlife.

With the exception of Darryl's reference to the "social reasons" that underlie the benefits of partial cut harvesting, social considerations did not appear to be an explicit basis for the participants' preference for the partial cut scenario. However, I cannot dismiss this possibility without testing it.
more directly. Future research will have to explore the connections between partial cut timber management and Cheam social values since the evidence that I have presented thus far suggests that such a relationship exists, but it remains at best inconclusive.

**Cultural Identity**

Identity and an orientation to community both deeply affect the Cheam. Identity asserts a person's place in the world, and a sense of cultural identity creates a secure base from which a person can attempt to deal with the pressures of the surrounding world. Identity has perhaps suffered the most from government policies for First Nations, and it is a sense of identity that many hope to reassert in the search for traditional ways:

> Identity is a fundamental and dynamic factor in the cultural configuration of a group that it allows for historical reconstructions as well for future projections. Conceptually, identity establishes a link between different ethnic communities belonging to the same "racial" stock even though dissimilar ethnic traditions have led to important cultural differences (Tremblay in Simon, J., 1984: 65).

Identity has both physical and abstract dimensions. In its abstract sense, identity is partially formed and takes strength from the symbolic messages that can be read in the natural environment. In effect, places or features of the landscape often serve as tangible symbols or emblems connecting people to historical figures and events. When these symbols are shared, they link people to one another to form a common identity that is rooted in a shared history and symbolic association. The people interviewed often spoke of the sense of identity and security that they experience from Mount Cheam:

> Darryl (Young Adult): ...through them [elders] they talk about what Cheam really means and they see me and say oh your from that area, oh here's something I know, so they pass on little tidbits of information and that individual self-exploratoring, you know finding out who I am. And this is me right, all this knowledge about Lhilheqey ... that is me, that's who I've learnt to become, so that, the onus is on the individual, is on the youth, is on the adult to learn about who they are.

> Len (Young Adult): Like this whole mountain here is, carries the spirit and that spirit is of a woman and this spirit here is for all the people in the Fraser Valley. She overlooks, she looks after the people, her name is Lhilheqey, that story, there's a lot to it, there isn't just one story that's told. Through her lifetime before her spirit was put into this mountain to help the people, she had done a whole, a lot, so she spent time travelling all through the different communities and healing people, bringing medicines to them, and helping them. She was just always helping people, going from community to community where ever she was called upon she would go and help. And when she got too old, she missed that ability to help and that saddened her so much that her spirit was placed in this mountain, so people they can still call upon her.

> Will (Young Adult): Yeah it definitely has, when you go back there, it brings things back to mind, things might have heard or what not. So it sort of gives you that connection to that place, that story...
The legend that is associated with the mountain is described in some detail in Chapters 2 and 3. These statements demonstrate that the legends that are associated with landscape features have the enduring power to affect people through their retelling and, over time, to become cultural monuments (Bienwert, 1999: 271). They retain this ability through the ongoing oral tradition referenced by the above speakers, and through their presence as tangible referents on the landscape. Mount Cheam’s grandeur as a feature that so visibly dominates the sky of the upper Fraser Valley, combined with the timelessness of the oral traditions of Lhilheqey, produces a grandeur that becomes embedded in the mountain. In effect, the mountain becomes an emblem of the Cheam people. The importance of the stories associated with Lhilheqey as a part of Cheam history and identity are reflected in the following statement:

Len (Young Adult): Well I mean if you forget your history you lose your whole sense of identity and connection to the land basically your identity, what makes you what – Sto:lo or a Xwelitem [i.e. white] person – you don’t have a sense of history you don’t know who you are really.

Statements such as these were relatively commonplace during the interviews. However, of the 20 identity based responses recorded in Table 6.4, 14 of these statements addressed the abstract, symbolic importance of the mountain to Cheam identity. In addition, it is interesting to note that young adults expressed all 14 statements. This raises interesting questions about the possibility of additional generation differences beyond the dissimilar employment experiences summarised in my earlier examination of physical sustenance.

<p>| Table 6.4: Number of Comments, Timber Scenario |</p>
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<th>Identity</th>
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<td>5%</td>
</tr>
<tr>
<td>Adult</td>
<td>6</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>Young Adult</td>
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<td>15</td>
<td>75%</td>
</tr>
<tr>
<td>Subtotal</td>
<td>11</td>
<td>20</td>
<td>100%</td>
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The fact that elders and adults fail to make similar expressions of symbolic identity may be due, in part, to the process of acculturation that many people of these generations experienced as a result of residential schools and/or government policies prohibiting First Nation religious practices prior to the 1960s. When asked to comment on whether the mountain carries any special meaning, or even if they are aware of any stories and legends associated with the mountain, several elders and adults declared their cultural ignorance:

James (Elder): I went to the residential school and they took a lot of that away from us, to try to make, wouldn't permit us to speak our own language and we lost a lot of that, we
never grew up with it. ...the men with the residential school were concerned with, with their
religion, and get the Indian out of us I guess. They made a mess of some of the kids' lives.
They went home and didn't seem to fit on the reserve because they could read and write,
and they couldn't find their place in white society.

Mary (Adult): I don't really know. A lot of out ceremonies were banned when we were,
when I was growing up. So a lot of it was done quietly if we had any...

Darryl (Young Adult): We forgot about her [Lhilheqey], our people did. ... And my mom and
all her cousins and her parents, my grandparents they all got sent to residential school for
the majority of their youth life, and they came back and they missed the teachings that
come with this mountain. They missed that relationship that came with it.

These comments point to several years of assimilation policies, primarily through
residential schooling, as the basis for lost cultural knowledge. Residential schools were part of a
system that was designed to strip First Nation children of their traditional culture by removing
them from the supposedly "harmful" influences of their parents and extended families. Christian
missionaries viewed the Sto:lo as innocent children of the forest who had been debauched by
generations of pagan beliefs and, most recently, by the most immoral representatives of
European society. Missionaries anticipated that by removing Sto:lo children from these corrupting
influences that they could be saved by replacing traditional Sto:lo spirituality with Catholic religion
and European culture. The best way to accomplish this they believed was to establish residential
schools where First Nation children could be institutionalised 10 months of the year, and
supervised 24 hours a day.

The cultural and psychological effects of this system are well documented. Generations
of children grew up in institutional settings that deprived them of their language and traditions and,
most importantly, the opportunity to develop healthy family relationships. However, if generations
of people who are now adults and elders were raised in an environment which forced them to
forget their cultural and spiritual heritage; how is it that the young people interviewed today are
able to articulate and express deep personal attachment to such knowledge? According to the
interview participants, many people within the younger generation have taken a deeper interest in
their heritage by actively seeking cultural knowledge from the remaining Cheam elders:

George (Elder): I think what we're trying to do right now, and we have been trying to do it
for some time is to get not only our people, like our own Ernie [Young Adult] and some of
our other people to become more aware of our sacredness to the land so that we can make
best use of it...

Stephen: You mentioned that the smoke house ceremony, the fact that more youngster's
are getting involved in that, is that still a small proportion of that generation in the Cheam,
or is it becoming a majority of youngsters that get involved in that?

Henry (Adult): It went from one to, old man Charlie to, ... two, to how many about 30? It
must be 20 to 30 now and probably 10 years from now it'll be almost doubled again, which does nothing but good for our community.

Darryl (Young Adult): ...the young people are taking a more active role and, and, and in asserting their cultural knowledge, whether it’s onto management practices like this or whether it’s in the fishing, or whether it’s in their daily routine of getting up in the morning.

The rebirth or "revival" of cultural knowledge and ceremonial life, including the smilha or longhouse ceremonial, began in the early 1970s, coincident with the birth of the Red Power Movement in the United States (Jilek, 1982; Mohs, 1987: 83). The Sto:lo cultural revival that has occurred in the past 30 years has witnessed several young Cheam people (i.e. mid-teens to early forties) undergo extended periods of training within and/or in close proximity to the great longhouses of their ancestors (Jilek, 1982). That they are able to reinvigorate traditional practices is, in part, due to the dismantling of residential schools and the abandonment of government legislation prohibiting Native ritual and religious activities. However, it is also due to the persistence of a handful of elders who, in their youth, preserved vestiges of Cheam culture by seeking traditional knowledge from their elders and secretly performing nocturnal Sto:lo ceremonies away from the eyes of the Canadian authorities. The legends and traditions of the Cheam’s ancestors have been bequeathed to today’s generation of youth and, according to the adult in the preceding set of quotations, the Cheam cultural revival shows no signs of abating.

In its physical sense, identity often involves finding meaning through the things that we do in a setting and, in Chapter 2, I provided a series of arguments to demonstrate how the activity of labour is capable of forging deep, intimate bonds between people and place. In effect, people who have historically been rooted to and derived their livelihood from the land will often characterise their relationship with the land in terms of — "The earth is part of us!” or “We are the land, and the land is us.” This theme was prevalent in our discussions of the timber scenarios, but was commonly made in reference to salmon and aquatic habitat as the crucial sources of Cheam identity:

George (Elder): So, and of course as you are well aware too, our people, the river, Sto:lo is the river, we survived, that’s our main source of survival is the river and salmon and all types of salmon...

Larry (Adult): Well, we’re, we’re Sto:lo, we’re part of the Sto:lo people and Sto:lo means people of the river. So just based on that one can appreciate what the waters and the water systems provide for us.

Will (Young Adult): It’s part of who we are again, I mean it feeds the Fraser River and it’s a fish bearing habitat, I mean that’s who we are. Archaeologists and that have proven that our diets consisted of 70% - 80% of fish, I mean that’s who we are as a people.
Cheam heritage is intimately tied to the river and, as Will asserts, the salmon resource is a substantial part of the Cheam diet. In casual conversation with Cheam and other Sto:lo people, this special relationship is often expressed in the common saying – “our bones are made of salmon” (Larry, personal communication). The importance of salmon fishing to the people of Cheam cannot be underestimated. The productive capacity of the Fraser River, its tributaries and sloughs, and the resources of the land are well known to the Cheam today, as they were to their ancestors. Prior to contact, there was an abundant wealth of salmon resources. In its dried and smoked forms, salmon was stockpiled in enormous quantities (Duff, 1952; Smith, 1947; Ware, 1983). In its dried form, salmon was a valuable trading commodity (ibid) and a staple food during the winter dance ceremonial. As one participant pointed out to me, it takes a lot of salmon to feed 500 people for one evening of spirit dancing. Including events such as marriages, burnings, funerary feasts, cultural gatherings, and so on, the quantity of salmon that is consumed over a four to five month period (i.e. November to March) is enormous. In this regard, the importance of the fishery to the Sto:lo has been noted by Wilson Duff:

To the Stalo (sic), with their great wealth of fish resources, fishing was the most important economic activity. In the main river or its tributaries they caught the five species of salmon, as well as sturgeon, eulachons, trout, and other fish. They used many methods and devices - dip nets, bag nets, harpoons, weirs, traps, hooks. Although fresh fish was procurable the year around, they dried or smoked large amounts during the late summer for winter use (1952: 62).

Bierwert affirms contemporary Sto:lo identity from the salmon fishery in the face of continuing pressure from encroaching urban and agricultural land uses (i.e. agriculture and urbanisation) and competing ways of life:

...they [i.e. Sto:lo people] continued – almost without exception – to fish for salmon in the Fraser and its tributaries. This litany of land and resource takeover, surrounding continued Native utilisation of a traditional subsistence base closely associated with their identity as well as independent livelihoods, is a scenario matched in many rural reservation areas of Canada and the United States (1996: 20; emphasis added).

In terms of the perceived impacts that timber harvesting will have on the salmon fishery, and in turn Cheam cultural identity, most participants felt that the clearcut scenario would pose the greatest threat to the viability of waterways in their traditional territory. Perhaps the most succinct explanation of this connection was made by one of the young adults:

Will (Young Adult): Then we lose another part of who we are, you start, one thing affects another. Like I said they do the clear-cutting ... then the erosion takes place, we lose part of our fish, our, just a part of who we are again, so it slowly kills us.
The result is similar to the impacts that clearcutting will have on the social relationships described in the preceding section. In effect, clearcutting is believed to compromise the viability of salmon bearing streams by depositing enormous quantities of silt and coarse woody debris into the sensitive channels. Across the landscape such impacts place tremendous pressure on severely diminished fish stocks which, in turn, translate into further reductions in the already minuscule annual salmon quota allocated by the Department of Fisheries and Oceans to the First Nations fishery. Realistically, the salmon resource is not expected to disappear entirely from the landscape of the Fraser Valley. However, there are expectations that smaller salmon quotas and more infrequent “open” days as a result of poor forest practices and fisheries management will have devastating effects on fishing as a uniquely Cheam way-of-life:

Len (Young Adult): ...I don't think it would ever get to the situation where there was no fish at all, but then just our whole lifestyle, ...you would lose a sense of identity, so who's to say what's going to happen in a hundred years or whatnot. The way we're going now, who's to say what's going to happen in within a hundred or two hundred years, the first thing would be; the [fish] numbers seem to be going down fairly quickly year after year, even in the last ten years when I started here.

Frank (Adult): ...I think the heart would be taken out of the community.

Rooted as it is in a physical use of the environment, the potential for large-scale forest disturbances such as clearcutting to disrupt identity-based resources such as the salmon fishery is relatively clear to the Cheam. However, less evident is how timber harvesting affects the abstract side of identity which is predicated on an intangible or symbolic spatial ordering of the landscape. The logic of western resource management typically asserts that if both the mountain and the legends that are associated with it remain intact, the Cheam should retain some semblance of cultural identity from the mountain, even in the face of the most destructive forms of clearcutting. However, I believe that the answer to this question is implicit in the following statements:

Darryl (Young Adult): Like this whole mountain here is, carries the spirit and that spirit is of a woman and this spirit here is for all the people in the Fraser Valley. ... She was just always helping people, going from community to community where ever she was called upon she would go and help. And when she got too old, she missed that ability to help and that saddened her so much that her spirit was placed in this mountain. So people they can still call upon her to please her spirit to help, they ask her to ... we have a relationship that exists with the spirit.

Darryl goes on to spell out this relationship in more explicit detail:

Darryl (Young Adult): And my mom and all her cousins and her parents, my grandparents they all got sent to residential school for the majority of their youth life and they came back
and they missed the teachings that come with this mountain. They missed that relationship that came with it, and that. So there was a time where these people lived here and forgot to pay respect to what is here, whether it’s, by coming and giving thanks and giving offerings or just a sincere acknowledgement when your in that place.

Embedded in both of these statements is the notion that, as the Xa:ls stories remind them, features such as the mountain are the dwelling places for other beings; in this case the spirit of a benevolent woman. In the sense that the mountain and the spirit that dwells within it are part of the Cheam’s historic, oral and social tradition, the mountain can be seen as a key piece of Cheam cultural identity. However, these statements also posit that the mountain is home to an animate, living spirit with which the Cheam are capable of having a personal “relationship.” Such a relationship involves much more than a passive acknowledgement and reflection on Lhilheqey’s presence, it requires paying respect and offering thanks to the spirit that has watched over the Sto:lo people for generations (Mohs, 1987, 1992: 281). These practices involve generations of Cheam people ritually communicating with the mountain by bathing and praying in its streams, and visiting the old growth cedar on its slopes; thereby finding physical connection – i.e. relationship – with the mountain and its resident spirit. Therefore, in the sense that the stories and rituals that are associated with the mountain are part of Cheam social tradition, it appears that Cheam identity is partly rooted in their spiritual traditions as well.

In the following section, I will explore the insights into Cheam spirituality that were discussed during the interviews. With the limited evidence that I have I believe that, as with most religions and forms of spiritual expression, the abstract dimension of Cheam spirituality is rooted in physical, ritual performances that will invariably be disturbed in the wake of intense timber harvesting activities. Associated with the potential loss of rituals that are an integral part of Cheam cultural tradition, there is the risk that a key piece of Cheam cultural identity will be compromised as well.

**Spirituality**

Aboriginal expressions and experiences of place are infused with mythic themes and expressions of sacred time. Sacred places and mythic themes are experienced through landmarks such as a mountain, a rock, a grove, or a spring. Each element being a part of nature, every landform is experienced through sacred or spiritual traditions and teachings as the “locus of qualitatively differentiated spirit beings” (Brown, 1982). In this way, the land and the lives of the people are made meaningful since they cannot imagine themselves apart from the land.
Expressions of mythic or spiritual themes were relatively prevalent during the interviews (Table 6.5); many of which are deeply rooted in legend and oral tradition. According to the Xa:ls legends, creatures and places were given to the Sto:lo by Xa:ls, the creator and great Transformer, specifically for their benefit and use. For instance, the Xa:ls legends describe Mount Cheam as the repository for the spirit (shxwelí or life force) of a deeply caring woman who was entrusted by the Transformer to be the eternal guardian of the Sto:lo people (See also Chapter 3, Section 3.3.1):

Dan (Adult): ... the one, the small peak and Cheam peak is believed to be a lady watching over our people, she was a, the wife of, Mount Baker was the male part of the, the family. She had travelled back to the river to watch over her people and the small, she had two daughters, and the dog followed her back, and the dog is the next mountain behind Cheam. You can see the figure from a distance, and the small peak in front was her youngest daughter.

Darryl (Young Adult): Like this whole mountain here is, carries the spirit and that spirit is of a woman and this spirit here is for all the people in the Fraser Valley. She overlooks, she looks after the people, her name is Lhilheqey, that story, there's a lot to it, there isn't just one story that's told. Through her lifetime before her spirit was put into this mountain to help the people, she had done a whole, a lot, so she spent time travelling all through the different communities and healing people, bringing medicines to them, and helping them. She was just always helping people, going from community to community where ever she was called upon she would go and help. And when she got too old, she missed that ability to help and that saddened her so much that her spirit was placed in this mountain, so people they can still call upon her to please her spirit to help. They ask her to ... we have a relationship that exists with the spirit.

Other references to the Xa:ls legends during the interviews described the relationship that the Cheam have to the cedar tree as a living relative. The story describes how the cedar was once a living person who demonstrated such considerable generosity and goodwill that Xa:ls transformed him into a cedar tree so that he may continue to provide for his people. The legend resonates with some truth for generations of contemporary Sto:lo because they have traditionally derived considerable material wealth from cedar forests including food, clothing, building materials, and so forth. However, beyond the provision of material goods, the Xa:ls legends affirm that the cedar tree had once been a human being and, therefore, a distant ancestor of contemporary Sto:lo:

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<tr>
<th>Spiritual</th>
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<th>Count</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Elder</td>
<td>2</td>
<td>8</td>
<td>17%</td>
</tr>
<tr>
<td>Adult</td>
<td>6</td>
<td>16</td>
<td>35%</td>
</tr>
<tr>
<td>Young Adult</td>
<td>3</td>
<td>22</td>
<td>48%</td>
</tr>
<tr>
<td>Subtotal</td>
<td>11</td>
<td>46</td>
<td>100%</td>
</tr>
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</table>
Joy (Adult): As a spiritual person they're [i.e. cedar trees] our relatives. We don't take anything unless we need it.

Len (Young Adult): When you get right down to it and look at it the land itself, the water, I mean everything here has got a certain sacredness to it. There's stories about how different trees and whatnot were come about on the land, you know makes them sacred to us and we believe that these things are our relatives in a way and we got to take care of them and live on the earth with them, and we need them to survive, and that way they're sacred, because without them we couldn't go on.

Implicit in these statements is the understanding that the land and its creatures have been purposefully created for the benefit and sustenance of the Cheam. For this reason, land is a central theme for the Cheam community. Without the land, the community would feel adrift; with the land they have a home. As such, the land is something that they must cherish and protect, something that they can return to for sustenance both physically and spiritually:

George (Elder): ...our people are really spiritual and think that mother-earth is, is a beautiful, it's land and, including all the mountains, the water, the trees, the plants, the game, the ones that fly, the ones that crawl and everything, are part, are very sacred to us because that's; let's just say the Great Spirit put it there for everyone. And everything, the land, the trees, and everything doesn't belong to anybody, it's for the use of our people, and we don't want to see it destroyed in any way...

The spiritual relationship that the Cheam have with their environment through the Creator involves a special responsibility and obligation to use the land with care and respect. To say that aboriginal people utilise resources in a respectful manner is a fairly common but poorly understood concept. Notions of respect are often used by contemporary environmental writers to describe a pristine existence before contact with European settlers which frequently involved First Nation people treading lightly on the land and living with their environment in a deeply worshipful, and sometimes mystical relationship (Martinez, 1997; Slater, 1996; DiChiro, 1996). Although respect is predicated on a highly abstract, spiritual foundation, a respectful use of the land involves some very specific land-use opportunities and constraints:

George (Elder): So, we know now that, it can't be completely left as is because of encroachment of people, buildings, even houses right up into the mountains. But, if something like this [timber harvesting] is to be done it should be done in a very sacred and special way and some, maybe some of this logging can, taking some of the resources away...but still leaving a lot behind...

Frank (Adult): Well the way I think about it now is because I got more involved, I quit logging and got really, really involved in the biology of the fishing and this type of thing. ...I just started paying more attention to the replenishing of resources than I did of depleting them because of the fishing, and my responsibility to community. ...I think it's just like anything else, you have to respect the resources and the ground itself, because if you don't respect it, it doesn't respect you.

Len (Young Adult): I mean there's some cases where maybe we get into the, more of an economic venture, you know, that we might have to get into a little larger scale of volume.
But I think that basically the underlying principles of leaving enough there for other animals and whatnot to survive it's still there. Even if, I know there are different methods of logging and other selective, you know like partial cut like you have here, you know to look at it and even it out so it's not just a big gaping wound on the landscape after that.

In my earlier exploration of the physical or sustenance values that the Cheam participants described, I argued that their preference for partial cutting was based on their perception that the scenario retains enough standing timber to sustain critical plant and wildlife habitats. In this manner, the Cheam stated that partial cut logging would preserve the plants and animals that they traditionally rely upon for nourishment and medicinal uses. According to the preceding statements, using resources respectfully and in a "sacred and special way" involves leaving enough timber behind for other living communities to survive. In this sense, choices of how to use the physical resources of the forest are motivated by considerations that have their basis in Cheam spirituality.

However, there are other uses beyond physical sustenance values that necessitate a respectful treatment of Mount Cheam's forests. The interview participants identified two related activities that make the forests a focal point in Cheam spiritual life. First, some participants described the forest as a place of spiritual cleansing and renewal:

George (Elder): Oh yes, our people never, like they always believed that we don't destroy or clear-cut anything like that there, because as you are well aware that the Cedar trees are sacred trees. And we use everything part of, we use the cedar boughs for our smudging, our when we, our people used to go down to the river, our people used to go to the river all the time to cleanse themselves and wash themselves with a Cedar bough.

Mary (Adult): Well, some people do, some people just go for the brush I guess. To brush off walking through the woods. ...And our people also do fasting. And they'll go up into the mountains and do that.

Darryl (Young Adult): So in terms of spirituality, like I can see a partial-cut you can still walk through the forest in areas and still acquire a certain taste to that cleansing experience you need to participate in. A clear-cut wouldn't work, you couldn't achieve your goals, your spiritual goals, social or ceremonial goals from a clear-cutted area.

The mountain and the cedar trees receive the prayers of the grieving and those asking for help. According to the following participant, talking to the trees is a spiritual practice, a cleansing prayerful act. Talking to cedar trees lifts the weight from one's heart, and helps instil a feeling of balance and renewal:

Frank (Adult): And the same thing with forestry, if you want something out of the forest then you have to go and talk to it.
John: How do you talk to it?
Frank (Adult): It's just a, and I've asked that same question with my grandfather, how do you talk to it, he says you just go and talk to it. You just start talking back to it. That's all I
can say. That's why we say, we go up there to, it's sort of spiritual, even going up there is spiritual to talk to the forest, and you start realising the beauty of it. And feeling it.

Second, cleansing also takes place in a more ritualised form through the practice of bathing in cold mountain streams. Those undergoing training as spirit doctors or winter spirit dancers endure extended periods of isolation in the Cheam highlands, and continue to bathe daily in the streams during the winter months (November to March) as part of a ritual practice of cleansing the body and spirit:

George (Elder): ...to this day, we have our spiritual dancing which is just starting now. And more often than not a lot of the people, the spiritual people were bathing everyday in the creeks, and the, where they go right now is up past Bridal Falls, past Bridal Falls there, past the slides, 'cause there's a creek that's coming down the mountain. There's a really nice pool there, and that's where they go real early in the morning or late at night they go for a swim, and they still do that in the winter time.

Dan (Adult): ...some of these creeks that we're lookin' at, we use them during the winter, the winter season for traditional purposes. I'm not too sure. This one, like these two here, this one here looks like it's above the Popcum Reserve, a few of our people use that for a, bathing in the winter season. It's a sort of, ceremonial conditioning that they use them for, and it would be very touchy if they clearcut around there.

Darryl (Young Adult): I would imagine they would see, well if they're from our reserve or something, then they are going to look at this and think jeez, I wonder if my swimming hole is going to be still there? ...You know if they see a clear-cut they're probably going to say, oh god, you know I doubt it's going to be there and they're gonna go somewhere else. So they're actually pushing our own people away from our traditional lands...

For spirit dancers, daily life during the four to five months of the winter spirit season is understood to be permeated and moved by spirits (syowen) among those who believe. The streams on Mount Cheam where ritual cleansing takes place, like other sacred places, carry away burdens. Such practices are not completely rational in Western terms, but they are entirely in accord with the rationality of a spiritual existence as the Cheam see it.

As a forest management practice, the clearcut scenario was perceived as completely antithetical to the spiritual practices that take place on the mountain. For many participants, the sediments that are washed into the streams will make the ultimate purpose of ritual bathing impossible:

Will (Young Adult): Well, if you start, trees and that start getting blown into it and you get the silt building up in it. I mean every time it rains and anything, any movement in it, it raises the sediment in there and it just defeats the purpose of cleansing again.

Clearcutting also raises the possibility of exposing the people who perform these ritual activities to the public and, more importantly, a public that is ignorant and frequently unreceptive to aboriginal spiritual practices:
Dan (Adult): ...they'd be overexposed, they, they don't like to be exposed right out to, when they're in the woods; it's, it's private.

George (Elder): ...people don't broadcast the, it's our lifestyle, we don't tell everybody what we're doing, just doing this, doing that or tell everybody what type of ceremony we do in the mountains other than food gathering. So, it's very special and even to this day we go to the mountain.

Larry (Adult): I guess one of the things is, you know when they are travelling in there, in the woods, they don't like to, especially if they're in their, their new regalia, they don't like to come upon, they, people who don't know what they're, what their situation is. A lot of people they, they, see, see a new dancer at one time and they'll want to take pictures and that, and that's one thing that we don't allow is tourists, so we don't like to be exposed to where people can catch you off-guard.

The secrecy that surrounds these activities is reflected to some extent in the responses to my frequent inquiries into the nuances of the longhouse society, ritual cleansing and Cheam spiritual life in general:

Frank (Adult): ...that was where a lot of our spiritual stuff took place, up in that area. And basically that's as far as I'll go on that. These are sacred areas; there's a few other areas on Mount Cheam there. ... I mean anybody that wants to go up there you know we feel, you know you get peace of mind when you go up in certain areas of that mountain up there, there's a few areas there where we go.

Will (Young Adult): I don't think I can add a whole lot more, I mean some of the spiritual stuff I really don't want to get into deeper, I mean but it is significant to us and natural and we need the habitat to keep it that way.

From the perspective of Western resource management, the possibility remains that some of these activities can be temporarily displaced in the wake of timber harvesting. In other words, as long as there are cedar groves and cold water streams elsewhere in Cheam territory, spirit dancers should simply be able to relocate to other areas while the vegetation in their traditional areas of spiritual activity regenerate. Future research should explore this issue in further detail. As such, I cannot definitively argue whether or not Cheam ritual bathing is a relatively mobile activity to the extent that it can be performed in any stream as long as it is sufficiently isolated and free of pollutants. However, some limited evidence does exist which suggests that there are particular streams and bathing pools that the Cheam must access in order to fulfil their spiritual lives:

George (Elder): ...to this day, we have our spiritual dancing which is just starting now. And more often than not a lot of the people, the spiritual people were bathing everyday in the creeks, and the, where they go right now is up past Bridal Falls, past Bridal Falls there, past the slides, 'cause there's a creek that's coming down the mountain. There's a really nice pool there, and that's where they go real early in the morning or late at night they go for a swim, and they still do that in the winter time.

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bathing in the winter season. It’s a sort of, ceremonial conditioning that they use them for, 
and it would be very touchy if they clear-cut around there.

Darryl (Young Adult): Well, the clear-cuts just. Oh, jeez, well you see this creek here and 
this creek here, there’s places up here that are used for spiritual cleansing and a clear-cut 
... wouldn’t be suitable for those particular uses, for spirituality reasons. We need to 
cleanse the soul and cleanse your body through our cultural ways to live, to carry on in our 
spiritual way.

As cultural traditions, such practices represent a connection with the place in which they 
occur and, more importantly, with the past. In effect, when they are passed on to present 
generations, ritual performances have the power to reconnect people with their ancestors and, in 
turn, with the places where those rituals are performed according to tradition or culturally 
prescribed tenets. Embedded as it is in a traditional form of spiritual practice, ritual cleansing 
becomes a part of cultural identity as well:

I think they’re [spiritual places] important for a number of reasons. Lots of people 
in my generation don’t even know they’re there. When you learn about them they 
become important. It’s like what AC was saying the other day in the Research 
Centre: ‘Indians are returning back to their spirituality.’ This is good because it’ll 
help in pulling our Indian people together ... These sites are part of my Indian 
identity and these sites are an important aspect of our spirituality (Sto:lo 

Changing the mountain’s face and the flow of streams, as happens when large forest 
stands are obliterated, will invariably disrupt the religious practice that takes place on Mount 
Cheam. Thus, I can state with complete certainty that there are spiritual or ritual based activities 
that will be disturbed or temporarily displaced by forest management activities such as 
clearcutting. However, I am less confident in making the argument that Cheam spirituality will be 
threatened by landscape disturbances that are typically associated with clearcut timber 
harvesting. Although the preceding set of statements suggest that there are streams on Mount 
Cheam that have traditionally been used by spirit dancers for ritual cleansing, I am lacking any 
additional evidence which affirms that Cheam tradition prohibits longhouse members from using 
other secluded mountain streams. However, given the limited evidence that I do have, I do not 
want to preclude the possibility that such traditions do proscribe where the Cheam may practice 
their spiritual traditions and, at the same time, restrict where timber harvesting may occur.

Future research with the Cheam or other First Nation communities will have to explore 
this issue in further detail as a testable research hypothesis. Such research may further 
demonstrate how people intimately experience and rely upon particular places, not only for
meditation and renewal, but as crucial sources of cultural identity as well. In effect, because I
cannot definitively establish the Cheam's traditional occupation and connection with particular
mountain streams, additional research will have to explore the connection between spiritual
practice and cultural identity that was suggested in my earlier examination of Cheam identity.
These questions and hypotheses for future research are explored in greater detail in Chapter 7.

6.3 Stream Management Scenarios – Viewpoint Two

6.3.1 Scenario Preferences

When it appeared that the interview participants had expended their reactions to the
timber management alternatives – either by declaration from the participants themselves, or from
the silence that began to pervade our conversation – the focus of the discussion was shifted to a
consideration of the stream scenarios. The preference questions asked at the outset of the
timber management portion of the interview (e.g. “Which of these alternatives do you prefer?”
etc.) were repeated, and the participants provided their assessment of the management
alternatives. Reactions to the two extreme options (i.e. the existing condition and modified plan)
are relatively straightforward as participants in all age cohorts characterised the existing scenario

<table>
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<th>Table 6.6 - Stream Model Preferences</th>
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<td>Age Cohort</td>
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<td>Elder</td>
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<td>Adult</td>
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<td>Young Adult</td>
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<td>Total</td>
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<th><strong>Best Practice</strong></th>
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<tbody>
<tr>
<td>Age Cohort</td>
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<td>Elder</td>
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<td>Young Adult</td>
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<td>Total</td>
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<tr>
<th><strong>Modified Plan</strong></th>
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<tr>
<td>Age Cohort</td>
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<td>Young Adult</td>
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<td>Total</td>
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TOTAL RESPONSES
Compatible & Incompatible 91 100%

Notes: *"N" refers to the number of participants in the interview sample by age
"P" is the number of discrete or individual participants that have
response within each preference category - i.e. compatible or
"Count" refers to the number of
as an unacceptable and largely irresponsible form of stream management – e.g. "...Mukslow just gets away with murder." By contrast, the modified plan garnered a unanimous and significant expression of support (73%) from the interview participants suggesting that the larger, more heavily vegetated riparian condition is the preferred alternative of the three possibilities.

Table 6.6 (preceding page) presents the preference results in greater detail. Reactions to the stream scenarios are somewhat polarised as the existing condition and the modified plan both receive unanimous expressions of disapproval and approval, respectively. Although the existing condition did not elicit a large proportion of the responses (i.e. 12 of 91, 13%), participant reactions to the scenario across all age cohorts consistently rejected the status quo as an appropriate form of stream management:

Len (Young Adult): ... it looks a little shabby right now with all the cows and everything, there's a lot of cows running around it, there's no riparian vegetation, there's no trees or anything around the stream for the most part.

Frank (Adult): ... I think that Mukslow just gets away with murder. I mean Christ he's got his whatchamacallit right there, and all that manure, you know it doesn't matter whether it all goes through the cow or not, but I'm sure there's stuff that goes in there that's killing that run of fish that goes in there.

James (Elder): No, it would have been - if the land wasn't settled it would still be in its natural wooded state. You call it progress I guess. People have moved in here and without thought cleared everything right out and let the leeching and peat moss and whatnot go right into the stream and that's poisonous too. Maybe not so much where they, close to the mouth of the creek, because they, generally fish don't live there...

According to the participants, there are two key problems that are currently plaguing the stream. First, they generally felt that the absence of riparian vegetation deprives the stream of thermal protection and the nutrients that are needed to sustain a healthy population of fish. Beyond this, however, the lack of vegetation also provides the cattle that grazes on the property with unfettered access to the stream; thereby polluting the water with excrement and disturbing gravel beds where salmon eggs are deposited.

With over two-thirds of the total number of responses (i.e. 66 of 91, 73%), the modified plan elicited an overwhelming and consistently favourable reaction from the interview participants. In contrast with the existing condition, all of the participants expressed a preference for the modified model and felt that a thick stand of mature vegetation would be the consummate restoration plan. At times, reactions to the image reflected a deep sense of personal relief and emotion over the riparian condition depicted by the scenario:
Len (Young Adult): Yeah definitely, it makes me feel a lot better to see it like this, than like this. You sort of like, you can feel at peace when it’s like this. You know a sense of, in a way a sense of peace. We see this, like for me anyway it’s, I get a sort of a real uneasy, in a way a bit of a guilty feeling, why are we, it shouldn’t really be like that. When we see it like this it makes you feel at little bit more at peace. Yeah okay, it looks good, things are being taken of, it’s healthy. This looks like a sick stream, it needs help.

Darryl (Young Adult): I mean, it looks good like this to me, I mean definitely it’s going to help the more, with the larger buffer it would protect the stream and bring some life, some life back to it.

Frank (Adult): Well this is the way we would do it?
John: Ok, the modified plan.
Frank (Adult): ... It does look nice. I don’t know if you’ve ever been up the Lillooet river, you know the way the trees come right to the river, you know, they’re sort of right in the river. You’ve seen that, I don’t know if you’ve ever seen that, but it’s the most beautiful sight there is, it’s untouched, it sort of looks untouched. That’s beautiful, a beautiful sight.

James (Elder): This here would be the ideal habitat for fish, all treed, heavily treed. ... And wide enough here to keep the stream cool. That would be the ideal, the ideal situation really.

The young adults provided the most intense reactions to the image. While some felt that the modified plan left them virtually tongue-tied, others pronounced an unusual sense of personal commitment to the stream and feeling of fulfilment from the healthier, more natural condition depicted in the scenario:

Darryl (Young Adult): Well, well my first impression is, is probably doesn’t come from a, like I’m thinking. Oh jeez there’s a lot of things coming out. It kind of makes me speechless eh, I mean I, I, I’m thinkin’ I can’t wait until we get this treaty settled and we’ll buy this land and fix it back up like this.

Len (Young Adult): Yeah definitely, it makes me feel a lot better to see it like this, than like this. You sort of like, you can feel at peace when it’s like this. You know a sense of, in a way a sense of peace. We see this, like for me anyway it’s, I get a sort of a real uneasy, in a way a bit of a guilty feeling, why are we, it shouldn’t really be like that. When we see it like this it makes you feel at little bit more at peace. Yeah okay, it looks good, things are being taken of, it’s healthy. This looks like a sick stream, it needs help.

Will (Young Adult): Well I guess there’s a certain responsibility that we feel we have to the land around here. And whether it’s on a guy’s private property or whether it’s in some forest company’s licensed area, I mean the responsibility doesn’t leave right. So I guess to look at it, you know why aren’t we doing something about it, as far as the fish that come up that stream there’s another obligation to them too.

I cannot fully account for the level of emotion and personal responsibility expressed by the young adults without entering into an exploration of their value premises and cultural expectations. However, I believe that it is an interesting observation, and is one that I will revisit in the upcoming discussion of Cheam spirituality.

Participant reactions to the best practice scenario were not nearly as prevalent as the modified plan (i.e. 8 and 5 of 91, 14%), and were marked with considerable ambivalence.
Expressions of steadfast support for the best practice model were made by one elder who praised the use of fencing in the scenario, and frequently commented that he had seen a similar technique in a television documentary:

James (Elder): I'd recommend they put in a fence like the middle photo there. Keep stock from eroding the bank and you break down Willow, Willow and everything when they, they freely roam through it. ...the documentary I watched, they had a good idea there they had it fenced, right across the creek. And a gate on both ends, both sides of the creek to keep the stock out of there, because they didn't want them.

Two individuals provided the more irresolute expressions of support for the model. The first indicated that he would choose the best practice alternative because a fifteen-metre buffer (compared to a fifty metre buffer) would allow the feedlot owner to retain more grazing land for his cattle:

Larry (Adult): I'd take the middle one. This part, just for the sake of the landholders in the area there because you're taking, I don't know what the overall square footage would be but that's pasture land that they probably rely on for livestock. However, when Larry was asked to place the owner's interest aside and evaluate the scenarios based entirely on considerations of habitat integrity, he unambiguously indicated that the modified plan would be the ideal solution:

Larry (Adult): I guess ultimately if it meant greater viability of the waterway then I'd go with the best scenario.

The other supporter of the best practice scenario was noticeably unenthusiastic in his appraisal of the image. In effect, he conceded that the scenario would provide at least a satisfactory level of improvement over the existing condition:

George (Elder): ... I would say it's adequate to, compared to this here (pointing to the existing condition), you know it's almost nothing there.

In effect, George indicated throughout the interview that some stream enhancement is really better than no restoration at all. However, his perspective on what is optimal for the stream clearly points to the more ambitious modified plan:

George (Elder): ... down here [pointing at the modified plan] you want to have more trees and everything instead of having this [pointing to the existing condition]. This is where the runoff, or whatever you want to call it's going into the water and then people won't be able to drink the water. I remember one of the elders up the Interior, up the river, up through Shuswap Lake, you know talking about the same we're taking about today and what, you know the salmon can't survive in a sewer. ... Again this all looks better to me.

John: The modified plan?
George (Elder): Mmhmm.

Only a handful of comments (i.e. 5 of 91, 5.5%) described the drawbacks associated with the best practice model. Two of the participants felt that 15 metres of riparian vegetation would
be insufficient to ensure the recovery of the stream. The larger fifty metre buffer was seen as more in keeping with the natural, undisturbed condition of the stream, and ultimately more conducive to a greater diversity of bird and wildlife:

Will (Young Adult): It's just not enough to protect it. I mean this here, I mean you get a heavy storm it can wash it out in no time. I mean if you've got 25 metres of, this isn't 20 I know, how much did you say that was, 5 right?

John: 15.

Will (Young Adult): 15, you get 50 and it stabilises it with all natural things, I mean that's the way it grew. I mean natural is always optimum as far as protecting habitat.

Len (Young Adult): ...I don't think wildlife would hang out in a 15 metre buffer. Well some wildlife would, small birds and whatnot, but it would provide a good, if nothing else a good area, a good travelling route for different wildlife for deer and everything. It's not as good, 50 metres . . .

Other comments appeared to be more concerned with the social implications of fencing the stream. In particular, one participant felt that the fencing depicted in the best practice scenario would compromise traditional Cheam patterns of resource sharing, both with their non-aboriginal neighbours and amongst themselves:

Joy (Adult): Yeah. You know I was just reflecting back - we had no boundaries, we had shared territories, and respected each other's territory, we didn't intrude without permission before we went into someone else's territory. And then I went down to Fort Langley, there was a meeting down there and I've seen pictures of the Fort itself but when I went and got there and I looked at it and I was thinking of our ancestors how they must have felt about that. What are they, blocking, I mean what are they fencing out or fencing in, what's the purpose, are they afraid of us? Meanwhile we had taken them in and provided, we shared, which is given to us by the Creator, we have to share and anything you get, anything that is provided you have to share and that. And we shared everything and then they built this thing around them and they'd like to, claiming it or blocking us out or closing themselves in with and it didn't even make sense to me.

The traditional basis and social benefits that derive from resource sharing have been described at some length in my earlier evaluation of the timber models and, according to that discussion, the Cheam place considerable importance upon shared access to (and use of) forest resources. Although the cultural value of sharing was only alluded to twice during the interviews as a basis from which to criticise the best practice scenario, the significance of sharing the land and its resources while at the same time providing sufficient riparian habitat for fish and wildlife was very prevalent. As the following discussion in section 6.3.2 will demonstrate, sharing the stream and its resources is not only a pivotal concern for the Cheam, but it is complicated by the fact that the land that surrounds it is privately owned.

Before I proceed into the next section, I would like to make two observations about the general pattern of Cheam stream management preferences. First, my observation that the
modified plan is the preferred scenario is augmented by the weak and often ambiguous expressions of support for the best practice scenario. On the one hand, favourable reactions to the best practice model amounted to a relatively insignificant 9% of the total number of responses. In addition, only one elder provided his unequivocal support for the scenario. Two other participants indicated that the best practice model is a satisfactory but less than ideal solution to the existing condition, or that they would recommend the modified plan given the right set of circumstances. In either case, support for the best practice model is neither remarkable nor unconditional, and is clearly overshadowed by statements of preference for the modified plan.

My second observation is more a caveat about the possible influence of bias in the participants’ reaction to the best practice scenario. In essence, there is the possibility that the participants’ judgement had been swayed against the best practice model because it was seen as a standard Department of Fisheries and Oceans (DFO) prescription for riparian management. In essence, the participants’ judgement could have been motivated by a political agenda that has very little to do with the perceived ecological or cultural appropriateness of the scenario. To avoid this possibility, the participants were informed during the interviews that the conditions for the best practice scenario were based on the advice of “professional and academic practitioners” of habitat restoration. Only after the interviews had been completed were the participants advised that input to the scenarios had been solicited from an aquatic scientist at UBC (i.e. Dr. Scott Hinch) as well as habitat biologists with the DFO (See Chapter 5, Section 5.4.2, Scope of the Simulations).

6.3.2 Conceptual Categories

Physical Sustenance

The first set of responses to the stream scenarios is the most basic and needs little explanation in light of the discussion provided in the timber management section. When asked to describe or characterise their perceptions of the images, the interview participants often began by describing the physical benefits of healthy streams. Although expressions of resource wealth as a substantive economic opportunity were prevalent in my discussion of the timber models, only two participants described salmon and other aquatic resources as tradable, economic commodities:

Larry (Adult): Well I think the salmon are paramount, you know they are the most significant part of any improvement that I would see happening the salmon would be the most significant ... personally that's how I make my living buying and selling fish. You know the more fish we have access to the better we're going to be.
Len (Young Adult): ...there's an economic component to this too. We depend on the fish to, for economic purposes. It's a fact and it's always been a fact, we've always traded our fish.

Two factors may account for this relatively weak expression of economic value. First, the legal right to sell fish has not existed for the Sto:lo and other B.C. First Nations since the first decades of the twentieth century. Curtailment of this right has been based on the principle that First Nation fishers, as "Indians," should be limited to fishing for "subsistence" (Carlson, 1999: 146). Between 1911 and 1917, First Nation fishing rights were curtailed through a series of legislative measures designed to restrict harvesting to food fishing, and only according to strictly proscribed time limits and license requirements that prohibited the commercial sale of their catch. As recently as 1992 a B.C. justice ruled that the Sto:lo in particular did not have the right to sell fish as an inherent aboriginal right, citing anthropological documentation that precontact social forms were more egalitarian, and that the forms of trade that did exist were essentially precapitalist (Carlson, 1999: 147). However, immediately following the 1992 court decision the Sto:lo were granted the long anticipated freedom to sell fish on the open market, when federal officials agreed to designate three of the Native regional administration areas in British Columbia as pilot locations for First Nation run fishery authorities. The recent history of this pilot program has been very turbulent and demonstrated varying levels of success. However, it is conceivable that several years of legal restraint on fishing as an economic activity may have, in part, suppressed Native perceptions of the resource as an economic interest.

An alternative and perhaps more plausible explanation may be that the stream shown in the images is a relatively small watercourse and is unlikely to be the locus of any fishing activity with commercial potential. In effect, the stream's value as a source of fish may be limited to the occasional "Sunday outing" with grandchildren:

John: Is this place where you would want to be?
Henry (Adult): Yep.
John: Why? Which of these would be a place where you'd want to go and why would you want to be there?
Henry (Adult): The bottom one here. It looks like a good place to even take my grandchildren out, throw the line in and see if we can catch a trout, right behind here, behind this boat here. That's what it looks like to me, a Sunday outing

Nevertheless, this does not lessen the fact that streams of the sort illustrated by the simulations provide valuable rearing habitat for juvenile salmon stocks. The importance of clean, healthy
salmon habitat and its contribution to the physical sustenance of the Cheam community was a common theme among the interview participants:

James (Elder): No we are, we get all our fish from the main Fraser - all that we need anyway. That's been our main staple from day one I guess. We can fish from the Fraser and, growing up, deer used to hang around the orchard around, beside the house. Well it not only affects us it affects the chain reaction right down the line ... the habitat is very important for life, for fish.

Henry (Adult): ... so that's, that brings up the fact that we need these habitat places for our wild game, we have to have access game, and waterways for our fish and we probably need more and more. Enhance what we got. Like that's enhanced nice, eh? I can't see nothing wrong with that.

Frank (Adult): ...this plus other streams all put together build up our resources, our fish resources, cause I know of other creeks where people older than I am said that there's been more fish there than there used to be fish there, not only the Chum and Coho stocks but also Sockeye and Spring Salmon stocks.

These statements not only reflect the importance of salmon as a staple commodity, but they also point to the benefits associated with stream channels that are restored to a natural, more heavily vegetated state. Vegetation shades the stream to keep it cool, and provides leafy debris from which juvenile fish sustain themselves. In aggregate, every restored stream provides additional salmon to the total population that enters the Fraser River and returns annually from the Pacific during the spawning runs. However, some restoration schemes are clearly more effective than others for re-establishing fish habitat:

Len (Young Adult): I mean that one is, that one [best practice scenario] is better than nothing I guess better than it is right now, but it's still a little skimpy on the protection and whatnot.

John: 15 isn't good enough?

Len (Young Adult): 15's better than nothing and in some cases maybe that's all you would be able to do is 15 for different reasons like I would say shooting for more like 50 and then, it's definitely better I think.

John: Why is 50 better?

Len (Young Adult): Just more, I think, more protection you know for the stream and it's not just that. Not just like a row of hedges next to the stream something that provides a bit of, for things to function more naturally or whatnot. If we're talking about fish it's going to give all that much more protection and suitability for fish.

Mary (Adult): Well, I guess I think myself that the wider the riparian buffer the better. You know in any creek or stream I guess ... I still strongly believe that it has a lot to do with the temperature of the river which really affects the fish. The bigger the buffer the better...

Will (Young Adult): It's just not enough to protect it. I mean this here, I mean you get a heavy storm it can wash it out in no time. I mean if you've got 25 metres of, this isn't 20 I know, how much did you say that was, 5 right?

John: 15.

Will (Young Adult): 15, you get 50 and it stabilises it with all natural things, I mean that's the way it grew. I mean natural is always optimum as far as protecting habitat.

Henry (Adult): Well this looks good [pointing to modified plan].

John: It does?
Henry (Adult): Yup.
John: What’s good about it?
Henry (Adult): It shades in the stream.
John: Is it better than number 2, the middle one [i.e. best practice scenario]?
Henry (Adult): Yeah, way better.

In fact, the best practice model was never characterised as the preferred or ideal means of restoring riparian habitat. Rather, most participants either conceded that a 15 metre riparian buffer is better than nothing, and is perhaps the most plausible option, or they simply denounced the scenario as inadequate compared to the solution presented by the Modified Plan.

Nevertheless, while most participants affirmed the relative merits of the modified plan over the current practice scenario, some notable differences do occur within the participant sample. As the numbers in Table 6.7 demonstrate, expressions of physical or sustenance value from aquatic resources is more prevalent among adult participants than it is with either the elders or the young adults. That there are more adults than elders who express the sustenance value of aquatic resources may reflect the recent history of the salmon fishery as a subsistence activity for Sto:lo communities. As the legal constraints on salmon fishing tightened in the first decades of the twentieth century, Sto:lo people continued to fish on the Fraser River while, at the same, providing the primary source of labour during the peak summertime harvest weeks in the Fraser Valley. However, from the 1920s through the 1950s more profitable seasonal wage labour replaced most subsistence occupations, including salmon fishing, for First Nations in British Columbia (Carlson, 1999: 122). Natives of the Fraser Valley worked in the timber industry and in canneries, and they also worked in the expanding agricultural industry on lands reclaimed from and irrigated by their former watershed tributaries. Summer work camps, especially at hopyards, are fondly recalled by contemporary Sto:lo elders as a time of gathering, like the canyon fishery recalled by previous generations. The Fraser River fishery continued on a much smaller scale than it had in the past or would be again in future decades. A handful of families continued to wind-dry in the canyon, but Sto:lo ethnographers in the 1940s and ‘50s found few people harvesting and cutting fish (Carlson, 1999: 176; Duff, 1952). Contemporary Cheam elders describe the importance of

<table>
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<th>Table 6.7: Number of Comments, Stream Scenario</th>
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<tr>
<td>Physical</td>
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<td>Elder</td>
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logging and other seasonal wage opportunities as a crucial source of income in the first half of the century. By contrast, fishing is rarely described as either a source of income, due largely to the commercial fishery prohibitions at that time, or as a key part of the Sto:lo diet:

James (Elder): We used to do that before I was married in the winter, cut, cut cottonwood around here.
John: You say we, would that would be you and...?
James (Elder): I'd gather up the boys from around here, my neighbour, Mike Victor's long passed, Charlie Douglas, Johnny Victor, we cut pulp right down on the edge of the slough there in the long winter of '48 I guess it was or '47.
John: And that would help pay for or support your family?
James (Elder): Well it's hard tedious work and, but I did put the potatoes and put a few goods on the table.
John: What was the best way of supporting your family at that time?
James (Elder): We, I myself was logging out, out of the reserve.
John: Was there anything else available to Native men, in those days?
James (Elder): There wasn't too much there, there was some farm labour. When I was in my earlier teens I, I, I'd take jobs and my first job was weeding corn from the, I guess there was other stuff. It was for $0.25 an hour, and as I grew older I was pitching hay, putting up hay for farmers in Agassiz, around Agassiz for $0.50 an hour and then in the Fall we were hired to pick corn.

Despite the minor role that the river fishery played in the first half of the twentieth century, it has grown in recent decades. There was a dramatic upsurge in the food fishery catch in the period from the mid 1950s to the early 90s, a transformation that coincided with the collapse of summer seasonal wage earning opportunities for Natives in the region (Carlson, 1999: 159). With the exception of the still vibrant timber industry, the hopyards and berry farms that had provided summer occupation and residences since the 1920s were mechanising by the 1950s, and farm labour was no longer available to local populations. During this period, the Sto:lo catch increased eightfold, a difference which is attributed to the lack of alternative employment in the Fraser valley and the attendant need to supplement a meagre income from the welfare system (Carlson, 1999: 160):

Henry (Adult): On fishing it would be about, some people that's all they have, some of our members here don't have anything else to supplement the welfare system, they don't have a job, they've got fishing, they've got hunting. ... We fight hard for them rights. We're not there to fish them out and we control ourselves and fish only, most times that we have our own openings we fish two days and that's it, so there's five days of conservation in there...

Mary (Adult): I think some of the, some of our people would go pretty hungry. There are some of them that don't go out and hunt and fish, but the rest of us that do would probably really feel the impact.

Frank (Adult): People live off the fishing here, and that's why you had to wait fifteen minutes, I had to go down and get my smoked fish ... Salmon's always a part of our life, you know. Of course what we feel is the first salmon is the early Spring because there's a time frame from January to the end February that we don't catch any fish with the exception of the odd Steelhead. As a rule people don't eat Steelhead that much.
John: ...why are fish important to people of Cheam, for what reason?
Dan (Adult): Ah well it's been one of our main, main foods.

Thus, I would contend that fishing as a subsistence activity has been more common among the Cheam adults than the elders for whom seasonal wage opportunities – i.e. timber, agriculture, etc. – provided the primary means of supporting a family.

For the young adults that were interviewed, salmon fishing is less a matter of providing sustenance or, at the very worst, fending off starvation. For this generation, fishing has become an act of cultural affirmation:

Len (Young Adult): Well, I mean fish has been one of our main resources for, we depend on them for a lot of things. They're a large part of our life, lifestyle, our culture I guess you could say. Our well being, I mean if they're not here, I mean a lot of things change, our lifestyle, our culture, it would change drastically.

Darryl (Young Adult): ... the fish and the salmon have been a part of our lifestyle for thousands and thousands and thousands of years and I mean it continues on until today.

Will (Young Adult): Then being people of the river we depend on that river for, or we did depend on it for who we were as a people before and we still do to a great extent now. I mean, we'll fight every year to get out there and fish and there ain't nobody gonna tell us that we can't.

Conversations with young adults in the Cheam band and other parts of the Sto:lo Nation affirm the right to take food directly as a matter of privacy between the people and their land. Supervision and regulation by non-aboriginal authorities (i.e. the Department of Fisheries and Oceans) is viewed as tantamount to cultural subversion, and the recent proliferation of “protest fisheries” throughout the Sto:lo Nation, but particularly with the Cheam band, are expressions of group solidarity in the face of colonial pressure.

The basis for the young adults’ expression of a unique cultural relationship with the salmon fishery may reside in two factors. On the one hand, it may be due to expanded employment opportunities that have freed younger people from the subsistence livelihood of their parents’ generation. Alternatively, these perceptions may be a consequence of political activism and cultural resurgence over the last thirty years in which traditional subsistence activities are more an expression of a unique way-of-life than they are a means of physical survival. For lack of evidence, I cannot demonstrate conclusively how shifting employment patterns within Sto:lo communities have affected both patterns and perceptions of resource use. However, I can postulate about the symbolic connections between Cheam young adults and their natural environment and will attempt to do so in the upcoming examination of Cheam identity.
Social Cohesion
The social value of sharing the land and nature\'s abundance was clearly expressed in connection with the stream scenarios. As Table 6.8 illustrates, the social dimension of stream management was discussed as often as the physical conceptual category, with some variation across the age cohorts. However, when compared with the timber management scenarios, the importance of resource sharing as a social value was noticeably more prevalent during discussions of the stream scenarios (27 statements) than the timber models (17 statements). It is possible that expressions of social value are more common with the stream simply because it involves other vested interests with which the Cheam must contend. In effect, while the participants acknowledged the presence of other users on the mountain – i.e. hikers, hunters, timber companies – their use was characterised as too infrequent and irregular to be considered a joint stake in Mount Cheam. Therefore, to a large extent, the benefits that flow from the shared use of the mountain remain largely within the Cheam community.

By contrast, the stream scenario involves a more continuous and permanent interest. Essentially, the stream flows through a property that is privately owned and used exclusively as a cattle feedlot. Since the feedlot establishes a consistent presence, the participants are compelled to consider much more than simply how they intend to distribute the benefits of a healthy salmon population within their own community. For instance, the interview participants expressed a clear preference for the modified plan; however, their enthusiasm for the scheme was tempered by the understanding that the lot owner\'s co-operation would have to be obtained as well:

Larry (Adult): I guess ultimately if it meant greater viability of the waterway then I\'d go with the best scenario. Always in the back of my mind would be how it\'s going to affect the current landowner.

Henry (Adult): Well I think he should have some input I guess, he\'s the landowner.

Will (Young Adult): Oh yeah. I mean if we just went and did it I mean, we would be no better than that Colonial mentality, we\’d be neo-Colonial you know and it\’s, reverse racism or whatever, we wouldn\’t do that.

One elder expressed the need for a shared approach to managing the stream more concisely:

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<th>Social</th>
<th>N</th>
<th>Count</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Elder</td>
<td>2</td>
<td>5</td>
<td>19%</td>
</tr>
<tr>
<td>Adult</td>
<td>6</td>
<td>12</td>
<td>44%</td>
</tr>
<tr>
<td>Young Adult</td>
<td>3</td>
<td>10</td>
<td>37%</td>
</tr>
<tr>
<td>Subtotal</td>
<td>11</td>
<td>27</td>
<td>100%</td>
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In addition, most of the people interviewed believed that the co-operation and agreement of the feedlot owner to the modified plan would be relatively straightforward and simple to obtain. As some of the following reactions to the modified plan indicate, the benefits that flow from the management scheme are shared by a wide spectrum of interests:

James (Elder): I'm always in favour of something like that. Everyone benefits from it not only us natives that is, sports fisherman, the commercial fishermen. Everyone benefits from the good clean environment, well looked after. There are too many areas that, along, especially along creeks there like this there that they've cleared right to the creek edge.

Larry (Adult): ...there's not just Neal Munro there's the feedlot there, they should have the information, have input and I'm sure they would work with us, not against us.

Darryl (Young Adult): ...we're definitely not going to plant this whole area with trees that's just not feasible, we have other people living here and you've got to respect their lands too. This, I think this is a reasonable, it's a reasonable way to doing some good and a way to protect our environment ... and our uses with it too.

Len (Young Adult): Oh yeah, I think, I mean, we wouldn't be able to just go in there and do this. We've always shared our land. We respect other people and lives, but it would definitely be worthwhile to work with them on this. I think this is totally reasonable for him, ... he's needs some areas, he's got a dairy farm up there and he would need some area for his livestock to graze and whatever. But I think it's reasonable for this, in order to protect other people's values, and streams...

Why the feedlot owner would naturally acquiesce to or, at the very least, consider the merits of any restoration plan for the stream is uncertain. It may be that the Cheam believe that any management scheme that shares the benefits of stream restoration across a broad spectrum of users, without compromising the feedlot owner's ability to run his business, is a just and more productive solution. In effect, the modified plan creates something analogous to a public good in the sense that it contributes to a healthier environment for spawning and juvenile salmon which ultimately is of considerable benefit to commercial, recreational and First Nation fishing interests. Although the feedlot operator will bear the loss of forfeiting some pasture to the riparian buffer, it is unlikely that such a cost will undermine his business. This is clearly preferable to the present situation where the land has been cleared to satisfy the requirements of one user without considering the possibility of other concurrent uses. In effect, if the consequence of land management is such that it creates a landscape that is capable, at once, of supporting a healthy salmon population, wildlife and cattle; such an environment is clearly more beneficial and productive than a solution that only satisfies the requirements of cattle ranching:
George (Elder): ...if the land wasn't settled it would still be in its natural wooded state. You call it progress I guess. People have moved in here and without thought cleared everything right out...

Dan (Adult): ...even though it's private property now but if it were still wooded, I may have thought of different ways of clearing it so that it's still a productive place.

Larry (Adult): ...there's still a lot of hope that it could be restored to some productive degree ... in terms of salmon.

Other comments reflected the importance of sharing aquatic resources within the Cheam community and, in particular, echoed the spiritual foundation of sharing salmon that was discussed in my earlier review of the timber scenarios. According to Mohs (1987: 41), the spiritual relationship that the Sto:lo have with salmon is deeply rooted in legend and oral tradition. According to legend, salmon was given to the Sto:lo by Xa:ls, who instructed the people on how to catch, prepare, and respect this gift:

Long ago Transformer [Xa:ls] was travelling over this world. He was carrying some little salmon bones in his hands. He came to a river and dropped in one of the bones. 'You shall become the humpback and there shall be many of you.' Next Transformer came to the great river [the Fraser] and travelled far up its course, dropping salmon bones in many streams and small rivers. 'And you shall be the Sockeye,' he said. He then dropped bones in other lakes and creeks and they became the suckers, the trout and all the other fish (Adamson in Ware, 1983: i).

The spiritual relationship between people and salmon is also reflected in the remarks of Frank Malloway, manager of the Coqualeetza cultural centre:

A long time ago, the salmon ceremony, the first salmon was taken to the chief of the village. He cooked it, called all of the people together and he divided the salmon; as long as each person in the village got a piece of that salmon. All the bones were picked up, carried back to the river and sent back to the salmon people. We had to do this to please the salmon people that sent their children up to us. If we didn't do this they wouldn't send any more because we didn't respect, we didn't thank them the right way (Frank Malloway in 'The River is Our Home,' 1984).

Among the Sto:lo today, the salmon ceremony is not as elaborate as it was in the past due, in large part, to the influence of the Church and Christian Missionaries. However, the tradition of sharing the first fish, collecting and sending the bones back to the river, is still practised by some Cheam families:

George (Elder): And we still do the First Salmon Ceremony, my nephew here, Isaac, you know he's a great fisherman he always has the first salmon in the, Spring Salmon in maybe March, April and then June for the Sockeye. So we'd have a, catch one and make a big pot of soup of salmon and dump in some potatoes in there and then we'd invite as many people to come, or either that he'd cut it up and share it with other people.

Dan (Adult): Well we used to have the, with the, with the first gatherings amongst our people, our first catch of the season, the person that caught the fish he wouldn't participate,
he'd, he'd share the fish through the village so that, and then they'd, they'd have their, where they gather people together to have their dinner. Like we still do, different family groups still have their, when they have their first spring salmon, in the spring they'll all get together and have their big dinners.

Darryl (Young Adult): ...there's stories about, about fish and ensuring that you take the, when you do take your first fish from this water, you take the bones and you bring all the bones back and that, and that ensures that the fish are going to come back here again. So you share your fish with all the community. Now that, that itself is applicable to this, to ensure that we get fish back here all the time. So the way you treat that fish is important, right from the taking of it to the actual return of the bones.

These rituals are small in scale, but they are of tremendous significance to the people that practice them and deeply rooted in legend and spiritual tradition.

Adding a glimpse into the social and ritual basis of the Sto:lo fishery, Barb Cranmer, a Namgis filmmaker from Alert Bay on Vancouver Island, produced a film in 1995 on Native fishing practices entitled Laxwesa Wa – Strength of the River. In the film, three Sto:lo fishers (a husband, wife and their son) pull a net into their boat by hand, and upon seeing a hefty salmon snagged in the mesh call out, "Here's supper!" In a voice over narration, one of the fishermen describes his respect for the fish, telling the viewer how his family handles the first fish of the season ceremonially, giving thanks and sharing it with other members of his community. The film not only serves to demonstrate the importance of river fishing as a family enterprise, but also portrays it as a cultural practice of serious veneration and respect.

Cultural Identity

Two points are worth noting in relation to expressions of cultural identity and the stream management scenarios. First, in my evaluation of the timber scenarios, I noted how identity was often expressed in terms of the symbolic or emblematic characteristics of the mountain. In effect, the mountain conjures stories about events and legends that carry a potent symbolic quality for the Cheam. However, in the context of timber management, I also described the importance of healthy mountain streams and a vibrant fishery as crucial sources of identity for the Cheam people. Several interview participants reiterated this theme in the context of our discussion of the stream scenarios:

Len (Young Adult): Well, I mean fish has been one of our main resources for, we depend on them for a lot of things. They're a large part of our life, lifestyle, our culture I guess you could say. Our well being, I mean if they're not here, I mean a lot of things change, our lifestyle, our culture, it would change drastically.

Darryl (Young Adult): ... the fish and the salmon have been a part of our lifestyle for thousands and thousands and thousands of years and I mean it continues on until today.
Will (Young Adult): Well this here, there's aquatic and the fish again, we got to always keep going back to who we are as Sto:lo people. Then being people of the river we depend on that river for, or we did depend on it for who we were as a people before and we still do to a great extent now.

A healthy stream that is capable of sustaining a viable salmon population contributes to Cheam identity because the fish and the environment that it inhabits are integral parts of the Cheam way-of-life. The discussion of Sto:lo river fishing in Chapter 2 (Section 2.4.1) provides some background into fishing as a cultural activity and, in particular, as a source of cultural identity. As a staple of their existence, the Cheam smoke freshly caught salmon beside alder fires on upright cedar skewers; and they preserve it by salting it, canning it in jars, wind drying, freezing or smoking the meat. Home canned salmon lasts easily through the winter, and is the dietary crux of the winter smilha or longhouse ceremonies.

Furthermore, even though the Cheam are unlikely to harvest large quantities of salmon from the stream depicted in the simulations, its value as habitat and a contributor to the population of fish that enters the Fraser River every year is considerable:

Henry (Adult): We need these habitat places ... and waterways for our fish and we probably need more and more. Enhance what we got. Like that's enhanced nice, eh. I can't see nothing wrong with that [pointing to the modified plan].

In effect, the stream is connected to a larger web of salmon habitat that supports an annual surge of activity which literally permeates Cheam daily life. Salmon fishing in Sto:lo communities is a seasonally based, highly demanding activity requiring intense harvesting interspersed with attention to the details of cutting fish, mending nets, tuning motors, and preserving the catch (Will, personal communication). Thus, to the extent that salmon fishing physically sustains the community, demands seasonal shifts in temporal and spatial rhythms, and comprises a body of technical knowledge that has been transmitted over several generations, the salmon fishery is an activity that has shaped and defined the Cheam as a people.

My second observation about cultural identity in relation to the stream scenarios is based on the distribution of responses in Table 6.9 where statements of identity are expressed.

<table>
<thead>
<tr>
<th>Identity</th>
<th>N</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elder</td>
<td>2</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Adult</td>
<td>6</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>Young Adult</td>
<td>3</td>
<td>15</td>
<td>94%</td>
</tr>
<tr>
<td>Subtotal</td>
<td>11</td>
<td>16</td>
<td>100%</td>
</tr>
</tbody>
</table>
disproportionately by the young adults. During the interviews, I inquired about any legends or important cultural events that could provide a symbolic foundation for Cheam identity that the elders and adults may have lost due to their residential school experience. Most of the participants generally affirmed that the stream is relatively insignificant as a symbol or icon of Cheam culture. In effect, there are no legends or recent historical events associated with the stream that gives it the same symbolic meaning that landmarks such as Mount Cheam retain for the Sto:lo people. However, despite the paucity of legends and stories that are directly connected with the stream, there appears to be an abstract form of cultural identity associated with the stream that is rooted in Sto:lo spirituality:

Darryl (Young Adult): ...there is a way of life that, that is directly related to this area, and it goes back to, to like ... Xa:ls, was this person who was teaching us how to live with the land, teaching us how to survive with the land, and have a, what do you call it, like an ecological relationship with the land...

In effect, there are no legends that specifically describe the stream as a place with resident spirit beings, or as a tangible symbol of legendary people and events. However, there is a body of teaching that has come down to contemporary Cheam people that is based largely in the Xa:ls legends of Sto:lo mythology and instructs them in the appropriate and respectful treatment of the environment and its resources:

In the compact made by Xa:ls on behalf of the Indians and the salmon chief, the Indians are pledged to treat the salmon according to the instructions of this chief (Hill-Tout in Mohs, 1987: 42).

The following discussion will attempt to explore the spiritual foundation for Cheam identity in greater depth. Although there is a considerable body of evidence from Sto:lo ethnographic accounts to suggest that such a foundation does exist, the evidence that I can marshal may only point to the need for further research.

**Spirituality**

As a factor in the participants' appraisal of the stream scenarios, spirituality clearly plays a significant role relative to the other conceptual categories (Table 6.10). During the interviews,

<table>
<thead>
<tr>
<th>Stream Scenario</th>
<th>Elder</th>
<th>Adult</th>
<th>Young Adult</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elder</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Adult</td>
<td>4</td>
<td>14</td>
<td>14</td>
<td>32</td>
</tr>
<tr>
<td>Percent</td>
<td>13%</td>
<td>44%</td>
<td>44%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 6.10: Number of Comments, Stream Scenario
spiritual themes generally assumed two forms. The first described the potential physical uses of
the stream and the restorative benefits of a more natural environment in which the Cheam people
can meditate and find spiritual renewal. Comments of this sort were prevalent with all three
cohorts, and were frequently expressed in reference to the modified plan:

George (Elder): ...like our elders say a long time ago if you're feeling sad and something's
bothering you is, just, to go walk through the forest and let the branches and things brush
against you to take away your bad feelings and things like that. And be by yourself so that
you be able to meditate, if you want, and do some praying to the Great Spirit to help you in
whatever is bothering you...

Mary (Adult): I think they would still have the, be able to go in there and find a spot where
its clear to go and bathe or whatever. Or even do some fasting or whatever.

Dan (Adult): ...the third, the third scenario would ... you'd be able to spend time along the
stream and meditate.

Joy (Adult): ...what did you refer to this as, 50 feet of vegetation. The texture is quite high
and it's, talking about the spirituality of this, where if you're troubled, if things are getting
stressful, if you walk through, Mother Nature brushes you, takes some of the negative
away.

Darryl (Young Adult): ...if I'm going to be part of a ceremony and I need to, to get into
something like that, that can offer me a, a, form of balancing, like a holistic balancing like to
ease my mind, and to cleanse my spirit you know. I think that something like that [pointing
to modified plan] would be able to provide it. ...it would be the brushing you know...

These statements are consistent with my findings from the timber scenarios, as well as
other ethnographic accounts of Sto:lo spirituality that describe the use of forests and thick stands
of vegetation as places of refuge and spiritual cleansing. Thus, whether it is privately fasting and
bathing in secluded streams, cleansing with cedar branches or simply finding a quiet place to
meditate and contemplate life, several participants described the modified plan as a particularly
suitable place for mental and spiritual renewal. However, it is interesting to note that the
underlying basis for the participants' choice of the modified plan over the best practice model
suggests that the physical condition of their environment and, in some instances, considerations
of aesthetics are significant for spiritual or ritual based activities. For instance, two participants
characterised privacy and the relative thickness of the buffer vegetation as key factors
determining their use of a stream for ritual bathing and meditation:

Mary (Adult): I think they would still have the, be able to go in there and find a spot where
its clear to go and bathe or whatever. Or even do some fasting or whatever.
John: Could they do that here [pointing to best practice scenario]?
Mary (Adult): No not really, just a little too open.

John: Why couldn't they do that here [pointing to best practice scenario]?
Dan (Adult): You could but then you'd still, I don't know, you'd still be, ah, you know 15
metres, you're not that far ... from either side of the, outside of the brush area.
Future research will have to examine the importance of privacy as a factor affecting the use of natural settings by First Nations for spiritual or ritual based activities. Specifically, the importance of visual and auditory privacy deserves to be investigated with an emphasis on identifying the particular spatial cues that Native ritualists use in their appraisal of a landscape setting for spiritual activities. This avenue for further research is discussed in greater detail in the concluding section of Chapter 7.

Other statements were noticeably more esoteric in their appraisal of the scenarios. In one instance, a participant described the modified plan as being more in keeping with the rough beauty of a natural stream channel. Judging from the tone of his statement, an "untouched" stream is a deeply meaningful experience:

Frank (Adult): It does like nice [looking at the modified plan]. I don't know if you've ever been up the Lillooet river, you know the way the trees come right to the river, you know, they're sort of right in the river. You've seen that, I don't know if you've ever seen that, but it's the most beautiful sight there is, it's untouched, it sort of looks untouched. That's beautiful, a beautiful sight.

Other participants described the human sensations that flow from a thicker, more natural environment as a by-product of "life spirit" interactions:

Darryl (Young Adult): ... the bottom one being the best in terms of more sacredness here because there's more life. More, you know interaction of different life spirits - you know there's the trees, there's the different plants in here, some of these plants will only grow because these trees cover them there, and, so you know there is, there's more, and that's sacred...

George (Elder): Again this all looks better to me.
John: The modified plan?
George (Elder): Mmmmm. it seems like when you're in this area like this, it almost feels that like somebody or something, or a Spirit is right beside you. I don't know how to explain it but, that you're, it feels like something is ... with you, or protecting you, watching over you, with, something close by.

The idea that human beings can fulfil their spiritual and aesthetic senses from nature in its most natural, sublime condition is something that Western culture has only recently rediscovered. The eco-tourism industry in British Columbia and elsewhere is founded on the principle that people derive considerable pleasure and, on occasion, spiritual fulfilment from observing plant and animal life in their so-called "pristine" condition. My purpose here is not to equate Cheam ritualists with eco-tourists, but merely to posit that the Cheam derive significant aesthetic and spiritual enjoyment from environments that are teeming with a variety of plant and wildlife; a pleasure which many people in Western culture share in-kind.
If the business of managing the physical qualities of the environment to enhance the human experience of place is fundamentally the domain of environmental planning and design then, based on the above statements, I believe that aesthetic or design considerations do matter in a First Nations’ appraisal of environmental conditions. In particular, the participants’ comments suggest that thicker, more natural environments are valued as places of refuge, aesthetic inspiration, and as environments that are deeply transcendental. This has significant implications for stream restoration and design practice in the traditional territories of First Nation communities where the scope of relevant planning and design issues moves beyond questions of habitat integrity to include considerations of aesthetics and spirituality. I will address the prospects for a spiritually sensitive approach to landscape design in greater depth in Chapter 7.

Other comments used more abstract, mythic themes to describe their relationship to the stream (and the rest of the natural world). One participant characterised the use that the Cheam make of the land as a right that flows directly from the Creator:

Len (Young Adult): ...we know we have been given the right to do, not by the Supreme Court of Canada, but by the Creator to go out and celebrate, to go out there and harvest and maintain our connection to the fish and to utilise them...

The oral tradition surrounding Xaːls affirms this relationship and, in particular, the Xaːls legends compel the Cheam to make use of their environment without compromising the land’s productive potential. In essence, these legends not only establish the Cheam’s right to make productive use of their environment, but they clearly circumscribe those rights as well:

Darryl (Young Adult): ...there’s stories about, about fish and ensuring that you take the, when you do take your first fish from this water, you take the bones and you bring all the bones back and that, and that ensures that the fish are going to come back here again .... Now there’s stories about plants being, being able to talk and, and deer, there’s stories about deer being able to talk and how humans could never catch the deer. You know then they would, so then Xaːls, was this person who was teaching us how to live with the land, teaching us how to survive with the land, and have a, what do you call it, like an ecological relationship with the land, Xaːls taught us that.

Will (Young Adult): When you have taken the plant, the same thing with the cedar trees, now in here, I don’t know if, there is no cedars in this area, maybe there’s a couple, but when you take the bark or the roots or the boughs off that cedar tree you’ve got to leave something there, you’ve got to leave something of value to, to, that of you to, to that tree. You’ve got to say well jeez, thank you for taking us, and you’ve got to talk to that tree, like it was a long time ago when they could talk to you and you could understand what they were saying.

Beyond the fact that the land’s productive capacity has been diminished, the consequences of falling astray from these teachings and failing to respect the land have deeply personal and spiritual ramifications. The spiritual consequences of disrespectful land
management were particularly evident in the participants' appraisal of the existing condition. In this instance, there were intense reactions of guilt and responsibility which suggested that the Cheam had failed in their commitment to the Creator and Xa:ls:

Will (Young Adult): ...it's been destroyed and as mother nature, as what mother nature and Creator provided for us was destroyed and now we as mortals have to replace it - the damage that was done - have to restore the naturalness and it's not going to be natural.

Len (Young Adult): Yeah definitely, it makes me feel a lot better to see it like this [modified plan], than like this [existing condition]. You sort of like, you can feel at peace when it's like this. You know a sense of, in a way a sense of peace. We see this, like for me anyway it's, I get a sort of a real uneasy, in a way a bit of a guilty feeling, why are we, it shouldn't really be like that. When we see it like this it makes you feel at little bit more at peace. Yeah okay, it looks good, things are being taken of, it's healthy.

Darryl (Young Adult): Well I guess there's a certain responsibility that we feel we have to the land around here. And whether it's on a guy's private property or whether it's in some forest company's licensed area, I mean the responsibility doesn't leave right. So I guess to look at it, you know why aren't we doing something about it, as far as the fish that come up that stream there's another obligation to them too. Without them we're only, if we don't protect the stream and the fish that are coming up now, down the road they're just going to keep getting less and less and by the time, a hundred years down the road or whatever maybe there's going to be no fish. And then what does that do to us. It does a lot to us.

Thus, the relationship that the Cheam have with their environment involves a responsibility to utilise and protect the resources that have been given to them by the Creator and Xa:ls. This has significant implications for the stream that is shown in the simulations because, even though the stream is not considered to be a living ancestor or a place of legendary significance (i.e. no historical or legendary events are commemorated there), an apparently unremarkable stream possesses deep sacred significance:

Len (Young Adult): When you get right down to it and look at it the land itself, the water, I mean everything here has got a certain sacredness to it. ...we've got to take care of them and live on the earth with them, and we need them to survive, and that way they're sacred, because without them we couldn't go on.

In effect the stream and everything that surrounds it have been created by spiritual beings – the Creator and Xa:ls – where humans are an integral part of that creation, not set apart from it (McCormack, 1996: 27). As Len and others suggest (see quotation below), being an integral part of that natural order, the Cheam and their Sto:lo neighbours have the right to utilise crucial resources with the associated responsibility to treat them with respect:

We have a powerful spiritual life and we worship the Great Spirit. Our way is the spiritual way, and it's important that we don't forget this. It's important to respect our old ways and what is important to us. If we don't, our grandchildren, their grandchildren, the future generations will have no culture. ... Generation to generation has got to learn now, or we will never learn our culture. It's like cedar trees get hurt when you break their branches. So, you have to apologise for that when you take from it. Then the cedar tree understands what it is you're going to
do. My grandmother used to do that. When she'd take cedar root for baskets, she'd get up early and thank the tree. These ways are our ways. Indian spirituality is based on respect. Without it we get into trouble. So it's important to identify Indian spirituality for ourselves, to live our life by our spirit, by our spiritual feeling (Sto:lo elder quoted in Mohs, 1991: 191; emphasis added).

The question remains, are these legends, the teachings that they impart, and the unique relationship that they create between the Cheam and their environment the basis for cultural identity as suggested in the preceding section of this chapter (Cultural Identity) and by the Sto:lo elder above? Whether sceptical Western outsiders accept traditional Cheam teachings or not, the fundamental truth inherent in these beliefs is that they have been cultivated and transmitted through successive generations of Cheam (and Sto:lo) society. Because these teachings are an inheritance from Cheam ancestors, they represent a connection with the past and form a key piece of Cheam social and cultural tradition. In theory at least, such teachings should be an important foundation for Cheam identity. However, I am lacking any statements that are as transparent in making this connection as the statement made by the Sto:lo elder quoted above by Gordon Mohs. Once again, I believe that I cannot dismiss the possibility of such a connection based on the impressions that I have acquired from my own research and the work conducted by other investigators in Sto:lo territory. Although the evidence is suggestive, it is inconclusive. As such, I wish to explore the nexus between First Nation spirituality and cultural identity as a subject for investigation in future research.

6.4 Maps & Simulations – Effectiveness of the Media

6.4.1 Qualitative Responses

A key component of this research is determining the relative effectiveness of different visualisation media – i.e. planimetric maps and landscape simulations – in eliciting land-based cultural information. The primary yardstick that I have selected to conduct this assessment is visual clarity, which is defined as:

The degree to which the detail, parts, and overall content of the simulation can be clearly distinguished and recognised (Sheppard, 1989: 63).

In Chapter 5, I described issues of simulation clarity in the context of planning practice and argued that if simulations are visually unclear, consequently generating confused and biased interpretations of the message, the images will lead to incorrect interpretations and poor planning decisions or, in some instances, no decisions at all. In the context of social science research, confused or incorrect interpretations of visual media invariably lead to questionable and invalid results. The work of Frank Duerden (1993) and others (e.g. Brody, 1988; Crerar, 1999; Nantel,
1999) provides some interesting insights into the gap between cartographic depictions and aboriginal perceptions of the landscape. However, nowhere in the planning literature is the relative clarity of visual media with differing levels of abstraction (i.e. 2D, planimetric maps and 3D, photo-realistic landscape visualisations) systematically tested with First Nation research participants.

In an effort to fill this gap from my work with the Cheam participants, I initially looked for patterns of visual clarity in two ways; first by examining what the participants said in response to the media and, second, by looking at their tactile interactions with the imagery – i.e. how the media were used. First, I began the interview sessions with some basic place recognition questions from Part A of the interview protocol such as, "do you recognise the place shown in this map/image?" or "Can you point out any features that are significant or of interest to you?" In addition to providing a convenient way of opening a dialogue with the participants, these introductory questions allowed me to determine how capable and certain the participants were in their interpretations of the media.

I found that the elders provided the most interesting insights into the relative clarity of the media. On one occasion, an elder responded to the place recognition questions by earnestly studying and pointing to various features on the maps. Once he felt that he had an adequate grasp of the layout of the land, he spent considerable time describing his family's history of settlement in the Cheam area by pointing to locations where his family had homesteaded. His comfort and ease with the maps initially led me to believe that this elder possessed considerable familiarity with topographic maps. However, as the following dialogue illustrates, the elder's confidence and enthusiasm belied his understanding of the information:

George (Elder): See the land that, this is the river here, the last boundary of land here was what we called Uncle Jack, Jack George, it's a narrow, narrower piece, where the new subdivision is, and is goes right back to the lake here.
John: To which lake?
George (Elder): Cheam Lake, and his property ran up from the river right back, this is, we, a long time ago.
John: Actually Mount Cheam is right here. So Cheam Lake is down, is here somewhere.
George (Elder): Down here?
John: Yeah, this is actually the flood plain down right in here, and is the new subdivision that you're talking about out here, because Neil Munro's place is right there and Cheam Lake is in here somewhere isn't it?
George (Elder): So this is not...
John: That's the mountain.
George (Elder): Mountain here, okay, okay, it's a little different then, let's see. This is Cheam Lake, so actually then this is our territory right here?
John: Yeah, the purple line is the Cheam Reserve.
George (Elder): Mmmhmm, okay, and this is the river here.
John: That’s right.
George (Elder): What I was talking about, this part here, if you divide it up to the, this used to be Jack George, Uncle Jack’s property and it goes to the river and this is the boundary line of the Reserve and it goes right back to the lake. And through here to here was like Art and Ike’s property and it’s wider...

George began by describing the location of his family’s homestead with reference to the two major landmarks on the Cheam landscape, Mount Cheam and Cheam Lake. My first indication that the map was creating some confusion was that, in spite of the legend which colour coded water bodies in blue, the elder pointed to several areas to mark the location of Cheam Lake other than its true position. In addition, George pointed to a place near the summit of Mount Cheam to show the location of his family’s original homestead. At this point, it seemed appropriate to interrupt the conversation and point out for George the correct locations of these features. Other moments of confusion were relatively common during our use of the mapping information, but seemed conspicuously absent when George was presented with the simulation images. Thus, it became very clear to me that the media was a significant factor in George’s understanding of the information.

The second elder (James) differed from the first only in terms of his enthusiasm for reading the maps. Initially, this interview progressed slowly, as James appeared to be more interested in discussing the market value of fuel-wood for steamships (or the hazards of manual timber falling, etc.) than the forest management conditions depicted in the maps. In effect, the maps did not appear to concern James in the slightest degree. However, James’ level of interest changed when he was told that the maps would be substituted for a set of pictures:

John: Can I, can I show you some pictures of this same place?
James (Elder): Yes, I’d relate to it better.

In fact James related so well to the visual media that his replies to my questions about the scenarios were noticeably less general and off topic. Quite often, James would respond directly to the management conditions represented by the images:

James (Elder): This here would be the ideal habitat for fish, all treed, heavily treed.

For the adults and young adults, indicators of media comprehension were more explicit. In several instances, the adult participants would openly comment that they were encountering some difficulty interpreting the maps:

Henry (Adult): It looks like to me this, when it goes down into the, if any of that goes, I can hardly read this map but it looks like this is downhill to the creek, right? And it flows, there
would be a lot of debris going down there I would think. ... It doesn't mean much to me, but like, I don't know if there's a stream there. It's about all you can tell.

Mary (Adult): They all look the same. You look at one map of the mountain and another. They can pretty well look the same...

Joy (Adult): One map looks the same to me. I'm not really good with maps.

By contrast, the young adults proved to be very adept at map interpretation and, at times, expressed considerable frustration with questions that they knew were designed to gauge their map reading capabilities:

John: ...Can you describe this place, can you describe the area...?
Darryl (Young Adult): I see pretty steep slopes, a number of seasonal creeks, I see. Like what do I see in the map or based on my knowledge of...
John: No just what you see there.
Darryl (Young Adult): I see a lake, I see the Trans-Canada highway, I see an outflow creek from the lake, I see, I think that’s a, that map identifies a marshy area or is that just the top of the hill. ... I can definitely read maps. The watershed boundary, the Cheam Reserve, creeks, trails, logging roads, secondary roads, highways, you get a viewpoint number somewhere in here, it says Cheam Lake. But from the map itself I can see a number of peaks, I can see little, pretty steep slopes above the, south of the highway, I can see the Fraser River.

John: ...do you know where this is?
Len (Young Adult): Yeah ... I know where we’re going here; I know where we’re at.

Comprehension of the media is unlikely to be a problem with the young adults given that EV has formal training in Geographic Information System technology, and DD has accumulated substantial working experience with forest management plans in his capacity as a resource planner for the Sto:lo Nation. However, given their familiarity and skill with mapping information, the young adults were quick to point out a number of the limitations that they've experienced with cartographic media as a means of dialoguing with other members of their community:

Len (Young Adult): I've worked probably quite a bit with maps more than the average person around here and I can read maps fairly well and know what the lines and all that other crap mean. It makes, yeah I'd say it makes a hell of a lot of difference because in a way, for an average person, it's fairly hard relate to a map to a flat piece, with a cut block on it...

Will (Young Adult): ...people they don't understand something like that. It's just, I know lots of people that, that weren't even interested they couldn't even picture the, the heights and everything, unless you're schooled and have a bit of an education on it and a lot of our people don't have Grade 12 education. You know so the topographical map just wouldn't be of something that they could grasp but look at a landscape and try to deal with it in that sense.

Thus, if maps are inaccessible to a broad segment of the Cheam community, the critical question is whether or not the simulations are a better means of representing the land-use information depicted in the scenarios? My second approach to assessing the visual clarity of the
media was to query the participants directly and ask them to evaluate the images. At the completion of each interview, I asked the participants to consider both the simulations and the maps, and identify which set of images they were better able to comprehend. Their responses unanimously favoured the visualisations.\(^6\)

Henry (Adult): Yeah, they are, I think the visual like that is really good, and these maps didn't help here ... Dougy and Ernie they would make much use of this [i.e. the maps], the younger ones. That there for most of us would be what we'd need, computer images and pictures.

Larry (Adult): ...that [the visualisation] says a whole lot to somebody that only has grade eight or nine education. Ok what, what’s it supposed to do.

Len (Young Adult): Well it’s obviously way easier to relate to the pictures than the maps. I mean looking at a map it just doesn’t, it’s not the same connection. You look at this and yeah okay I know this, and you can just get a way better understanding, almost a feeling and that, so it’s just way easier to relate to.

Will (Young Adult): This is more useful, a 3D image ... it’s more real. If people want to come and deal with First Nations they better come in hand with, with what the place looks like and, and then show them what you want to do to it. ... You know this is what it looks like now, but this is what we’re going to do to it. You know, that’s more real, real to a First Nations person. ...if you’re going out to a people within the community you better go out there with these kind of images on here, better than something like this.

George (Elder): Well to me the pictures were more, I could see it more clearly...

With the possible exception of the now dated research of Frank Duerden (1992, 1993) and the more recent work of Janice Crerar (1999), nowhere in the planning or environmental psychology literature is the relative clarity and comprehensibility of simulation media for First Nation research participants pronounced as plainly as this. More importantly, it points to a fundamental problem in planning and resource consultation processes involving aboriginal communities that rely heavily on two-dimensional cartographic media to express the essential characteristics (i.e. aesthetic, ecological, cultural, economic...) of a development proposal. This finding and the associated need for more effective visual media in resource decision-making processes are addressed at greater length in Chapter 7 (Section 7.4.2).

Thus, if the visualisations generate less confusion and are more transparent than conventional maps, then it would be reasonable to assume that the visualisations will be actively used to a greater extent than the maps to formulate perceptions and judgements. However, this

\(^6\) The number of specific comments relating to media – e.g. "way easier to relate to the pictures than the maps..." – were not counted for this analysis. I believe that it is sufficient to say that of all the particular comments about the media, there was not a single comment that favoured the mapping information over the simulations. In effect, all of the comments relating to media unequivocally favoured the landscape visualisations.
is not intended to suggest that conventional cartography has no place in resource management with First Nation communities. As the following comment suggests, the broader “birds-eye” perspective of planimetric mapping may be a useful complement to the landscape visualisations:

Darryl (Young Adult): ...this picture here is much more useful ... but the maps provide you with a, with an overall perspective.

Research involving the perception of visual media by different cultural groups has tended to focus on comparing relatively discrete classes of imagery – i.e. 2D maps contra 3D simulations – with little emphasis on the visual clarity and overall effectiveness of landscape simulations combined with conventional planimetric views. As the preceding comment suggests, both formats have their respective strengths, and future research should investigate the relative effectiveness of hybrid image formats (i.e. a combination of 3D simulation and 2D cartography) against the discrete image classes of photo-realistic simulations and planimetric mapping. Such research may demonstrate that choosing visual media to maximise visual clarity may not be a simple “either or” decision between different types of imagery. In essence, such a decision may involve a determination of how different media are combined in order to capitalise on their particular benefits.

In the following discussion, I explore two systematic attempts to evaluate the relative clarity of the simulation and the mapping information. Although observations of what the participants said about the media provide important and valuable insights into the relative clarity of the images, I felt that how the media were used would prove to be equally insightful.

6.4.2 Quantitative Responses
I followed two approaches to evaluate the participants’ use of the media. The first method involved combing the interview transcripts for direct, verbal references to the management scenarios. In effect, after reviewing the transcripts several times, I found that there were a number of occasions where the participants’ would articulate an opinion about a management scenario, and their comments clearly indicated that they were looking to (at) the imagery to inform their judgements:

Darryl (Young Adult): Now this will impact the watershed, this clearcut here.

Will (Young Adult): This here is the optimum, I mean the modified.

George (Elder): I don’t really think we, we’re really going to do this type of thing as our people fish mostly in the river, right, and I wouldn’t want to see any big loss or something right close to the slough and ... John: This is in the existing condition, ok.
In addition, because I had provided regular verbal cues throughout the interviews to indicate when the participants were examining the resource maps and, conversely, when they were presented with the simulations, I found that I could easily count the number of references to the media to determine how frequently one was being used relative to another.

Tables 6.11 and 6.12 summarise the results of this elementary analysis. Table 6.11 demonstrates that the landscape simulations were used by the participants (or referred to) more frequently than the map imagery. For the timber scenarios, the frequency of simulation use over the maps increased by a factor of 2, whereas the simulations were used 5 times as often as the maps during our discussion of the stream scenarios. This pattern of use is consistent even for the young adults who adamantly expressed and demonstrated their familiarity with cartographic information. Although I expected some variation in the young adults' pattern of media use, I did not anticipate that it would be as discernible as the numbers in Table 6.11 indicate. It is interesting to note that this pattern remains largely intact when the figures in Table 6.11 are separated by order of presentation (Table 6.12). In effect, regardless of whether the participants

| Table 6.11: Number of Comments Related to a Particular Medium |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Order           | Timber Scenarios | Stream Scenarios |
| Consolidated    | Maps (#) Maps (%) | Maps (#) Maps (%) | Sims (#) Sims (%) | Sims (#) Sims (%) |
| Elder (n=2)     | 3 10.34%         | 11 18.64%        | 0 0.00%          | 18 22.50%        |
| Adult (n=6)     | 13 44.83%        | 29 49.15%        | 6 37.50%         | 39 48.75%        |
| Young Adult (n=3) | 13 44.83%       | 19 32.20%        | 10 62.50%        | 23 28.75%        |
| Total (n=11)    | 29 100.00%       | 59 100.00%       | 16 100.00%       | 80 100.00%       |
| Significance (DF = 2) | \( \chi^2 = 1.77 \) (0.10<P<0.90) | \( \chi^2 = 8.38 \) (0.01<P<0.025) Significant |

| Table 6.12: Number of Comments Related to a Particular Medium by Order of Presentation |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Order           | Timber Scenarios | Stream Scenarios |
| Maps - Simulations | Maps (#) Maps (%) | Sims (#) Sims (%) | Maps (#) Maps (%) | Sims (#) Sims (%) |
| Elder (n=1)     | 2 12.50%         | 1 7.69%         | 0 0.00%         | 9 20.00%         |
| Adult (n=3)     | 6 37.50%         | 12 35.29%       | 1 11.11%        | 19 42.22%        |
| Young Adult (n=2) | 8 50.00%       | 14 41.16%       | 8 88.90%        | 17 37.78%        |
| Total (n=6)     | 16 100.00%       | 34 100.00%      | 9 100.00%       | 45 100.00%       |
| Significance (DF = 2) | \( \chi^2 = 0.87 \) (0.10<P<0.90) | \( \chi^2 = 7.99 \) (0.01<P<0.025) Significant |

| Simulations - Maps | Sims (#) Sims (%) | Maps (#) Maps (%) | Maps (#) Maps (%) |
| Elder (n=1)        | 3 12.00%         | 1 7.69%         | 9 25.71%         | 0 0.00%         |
| Adult (n=3)        | 17 68.00%        | 7 53.85%        | 20 57.14%        | 5 71.43%        |
| Young Adult (n=1)  | 5 20.00%         | 5 38.46%        | 6 17.14%         | 2 28.57%        |
| Total (n=5)        | 25 100.00%       | 13 100.00%      | 35 100.00%       | 7 100.00%       |
| Significance (DF = 2) | \( \chi^2 = 1.53 \) (0.10<P<0.90) | \( \chi^2 = 2.40 \) (0.10<P<0.90) |
are shown the cartographic information or the simulations first, the simulations invariably elicited more responses from the participants.

Both tables raise interesting questions concerning the effectiveness of the different media as elicitation techniques. In the first instance, why are better-trained, map literate young adults responding to and interacting more often with the simulations than with the cartographic information? If the young adults are equally proficient with both media, as their comments in the preceding discussion suggest then the disparity between their use of the simulations and the maps should be significantly reduced. Second, the fact that the simulations are consistently more effective in eliciting verbal responses, despite order of presentation, is perhaps a reflection of basic, inherent differences in the two media. The answer to both questions appears to reside in the relative level of information abstraction presented by the media. In effect, as the young adults themselves explain, the simulations provide more information with greater clarity than the maps, thus supporting the idea that the medium's level of abstraction will affect its perceptual effectiveness (See Chapter 5, Section 5.2.2):

Len (Young Adult): It's just, because you can't really understand what they mean by 75% harvest on the partial cut, you can't really understand it. You look at the boundaries and you think 75% harvested is quite a bit, like they could leave 30% next to the creek maybe, who knows what they mean by that. But I mean, so right away you want to say no it's not going to work, it's just not going to work. Looking at this [the visualisation] you can see the, you can see where it might be workable, or be something people would want a little bit more to talk about. They can see possibly what the end result would look like.

Darryl (Young Adult): [If you] brought that to, to a table, you're going to hear a lot of people talking about their, the way it used to be right, ... it definitely does, something like this brings out the, will bring out little teachings here and there.

Will (Young Adult): If people want to come and deal with First Nations they better come in hand with, with what the place looks like and, and then show them what you want to do to it. You know this is a different scenario, here you're coming and you're saying well this is, what we would like to have, but that's not the normal case – you're going there and saying we want to do this to this land. So if you're going to go there and you really want support for something you should go with it and have this in reverse. You know this is what it looks like now, but this is what we're going to do to it. You know, that's more real to a First Nations person.

Any medium that is capable of reproducing reality in all of its critical aspects – i.e. form, colour, texture, light, etc. – is going to be more effective in generating responses that are similar to perceptions of the real landscape. This is a relatively straightforward finding that is confirmed by a considerable body of environmental psychology research and appears to be a factor in my interviews with the Cheam. In essence, a picture says a great deal more than an abstract and sometimes cryptic assortment of points, lines and polygons (i.e. the geometric language of
planimetric cartography) and, as I have found in this study, will elicit more responses from a research participant independent of their age or the order in which they view media of varying abstraction.

This finding must be stated with two explicit caveats in mind. First, there are different forms of cartographic representation, each possessing dissimilar levels of abstraction – e.g. vector cartography, raster cartography, Landsat imagery, and so on (Crerar, 1999: 433; See Chapter 2, Section 2.5.3). As Crerar (1999) has documented in her research, maps that present more information at greater levels of realism (e.g. Landsat imagery) tend to be better understood by traditional land-based cultures than the conventional vector based cartography currently in use by government resource agencies. Therefore, given the range of mapping media available, I do not want to be dismissive of planimetric mapping as a key resource management and consultation tool with First Nation communities. Second, despite the compelling nature of these findings, the results of a chi-square test of significance shown on the bottom of Tables 6.11 and 6.12 indicate a high probability of the imbalance between the simulations and the maps occurring due to chance (See Appendices C1 and C2 for the chi-square calculations). Operating from a fairly conservative stance, many social scientists assert that a probability greater than five percent is usually considered high (Phillips, 1992: 87; Wilson, 1988: 142). With the exception of the stream scenario results in Tables 6.11 and 6.12 (order of presentation: maps-simulations), the probability that these results is due to chance (or sampling error) is generally greater than 10 percent but less than 90 percent. Although the pattern illustrated by the tables of more frequent simulation use over the maps is supported by the research presented in Chapter 5, and makes considerable intuitive sense, I cannot conclude that these results are statistically significant. In effect, I cannot be confident that the same results would be revealed if a larger sample of similar Cheam residents were interviewed.

At the same time, however, I do not want to dismiss the results in Tables 6.11 and 6.12 altogether. All tests of statistical significance take into account the number of cases or "observations" involved (Phillips, 1992: 25). In essence, confidence in the accuracy of any sample-based estimate will depend on the number of cases or observations. For chi-square calculations, the value of the chi-square goes up or down in direct proportion to the number of observations (Phillips, 1992: 26; Wilson, 1988). In Tables 6.11 and 6.12, my sample size is one
that many social scientists and survey researchers can sometimes only hope to achieve – i.e. 11 of 150, or 7.33% of the total Cheam population. However, with a sample size this large, I have obtained observations as few as 0 and 1, and ranging to a maximum of only 20. According to my understanding of the statistical literature, a good sample that nonetheless generates very few observations will likely produce estimates that are substantially in error (Phillips, 1992: 26; Wilson, 1988). I am cautious in my dismissal of the results from these tables in large part because the few observations that were recorded, particularly for the stream scenario in 6.11, nonetheless generated a chi-square value that is statistically significant. This suggests that the participants' verbal responses may indeed reflect the perceptual effectiveness of the landscape simulations, but that the method used for this component of the analysis did not generate an adequate number of observations. At its root, this may reflect the "emergent" nature of this part of the quantitative analysis. Should I choose to use the technique that produced the numbers for Tables 6.11 and 6.12 in future research, I will have to redesign the method with some careful attention to the number of observations that it will generate.

The second approach to evaluating the participants' use of the media was to record tactile interactions with the imagery. Based on my observations of the pre-test interviews, I suggested in Chapter 4 that the relative frequency of participant interactions (e.g. looking, staring, touching, pointing, etc.) with the different media may reflect varying levels of interest and comprehension. In effect, I hypothesised that if the interpreter generally understands and believes the message depicted by the medium, there is a greater likelihood that they will actively use and interact with the images (i.e. look at, touch, gesture towards...) to inform their judgement. By contrast, if the message is unclear or lacks credibility, then the interpreter is likely to ignore the medium and draw on other sources to inform their judgement (i.e. mental maps, conjecture, etc.). Furthermore, because the young adults have training and experience in map interpretation, I hypothesised that they would interact with the mapping information to a greater extent than their older counterparts who generally lack cartographic training.

With the aid of a research assistant who painstakingly recorded the participants' interactions with the media, I was able to count tactile uses of the imagery and compile the above table, which presents my results by age cohort and order of presentation (Table 6.13). The numbers in Group 1 demonstrate how participants responded when they were presented with the
mapping information before the landscape simulations, and a chi-square test confirms that these results are significant (i.e. a low probability that they are due either to chance or sampling error). My initial expectations were largely confirmed as the young adults (Darryl and Len) demonstrate that they are adept at interpreting either medium, with a relatively greater use of the maps by Len perhaps reflecting his experience as an environmental planner for the Sto:lo Nation. By contrast, adult interactions with the simulations rise dramatically, reflecting the greater difficulty with map comprehension that the adults themselves described in section 6.4.1.

<table>
<thead>
<tr>
<th>Table 6.13: Number of Tactile Uses of the Media</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1</strong></td>
</tr>
<tr>
<td>Participant</td>
</tr>
<tr>
<td>Darryl (Young Adult)</td>
</tr>
<tr>
<td>Len (Young Adult)</td>
</tr>
<tr>
<td>Dan (Adult)</td>
</tr>
<tr>
<td>Mary (Adult)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Group 2</strong></th>
<th>Order of Presentation: Visualisations - Maps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant</td>
<td>Vis.</td>
</tr>
<tr>
<td>Will (Young Adult)</td>
<td>186</td>
</tr>
<tr>
<td>Frank (Adult)</td>
<td>350</td>
</tr>
<tr>
<td>Henry (Adult)</td>
<td>201</td>
</tr>
<tr>
<td>Joy (Adult)</td>
<td>51</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>788</td>
</tr>
</tbody>
</table>

With some notable discrepancies, this pattern is generally consistent for the participants in Group 2 who examined the simulations before the cartographic information. In effect, when the simulations are substituted with maps, the frequency of Will’s tactile interactions with the media declines to a noticeably lesser extent than that of his adult counterparts. However, the first obvious discrepancy from the pattern in Group 1 is that Will interacts with the visualisations more often than his young adult peers. What these numbers may be illustrating is nothing more than the obvious fact that cartographic training and experience clearly affect the capacity to understand and interpret map information. Based on what I know about these three individuals, both Darryl and Len have acquired considerable mapping experience by virtue of their environmental planning work with the Cheam band and the Sto:lo Nation, respectively. By contrast, Will’s work history includes one term (3 years) as band chief, several months as band archivist and, most recently, as a social science student at Malaspina University College. Although I cannot say with complete certainty how much cartographic training and interpretation experience Will possesses, I can assert with some confidence that Will has neither the depth of training, nor the working experience with resource maps that his young adult counterparts retain. While this may account for the fact that the young adults in Group 1 appear to be at ease with both sets of imagery, it also
raises the possibility that order of presentation may indeed have some effect on the relative frequency of the participants' interaction with the media.

The other possible anomaly in Group 2 is Frank because, when compared with others within his own age cohort, he demonstrates an exceptional facility with the mapping information. While most adults vary in their use of the maps from the visualisations by a margin of 78% or greater, the percentage change in Frank's use of the media is a relatively smaller magnitude of 35%. Once again, I find that I can only speculate about the probable basis for this discrepancy by reflecting on the unique work histories of the interview participants. Frank has led an exceptional life relative to his adult peers. He once held the position of Cheam band Chief for over two decades, is currently a hereditary grand chief with the Sto:lo Nation, and has owned a private logging contractor firm with his own field crew and staff of employees. In his capacity as a logging contractor, Frank will have relied extensively on forest development and operational plans in the conduct of his work. Alternatively, in over twenty years as band and tribal Chief, maps demarcating the extent of Cheam traditional territory or comprehensive land claims will have crossed his desk. Given that there is no one else within his age cohort with a comparable level of involvement in resource management or band administration, it is possible that Frank has acquired map-reading skills that are exceptional for his generation.

However, these explanations remain highly speculative. A more definitive set of interpretations could be offered if the participants had been asked to comment during the interviews on the extent to which they have used maps and, in particular, resource management plans in the conduct of their work. With such information in hand I could begin to make some credible inferences about the minor aberrations in Table 6.13, and perhaps deal more conclusively with order of presentation as a variable affecting the participants' use of the media. However, the general pattern of untrained adults demonstrating greater reliance on the simulations than the cartographically trained young adults remains largely intact. While this observation is fairly obvious and perhaps tautological, nevertheless, it does demonstrate that there is a substantial disparity of map interpretation expertise within a First Nation community. Moreover, the chi-square tests of significance indicate that there is a very low probability of the results occurring by chance (i.e. 0.001 or less than one chance in a thousand), and that the same or similar results would be obtained if the entire population of Cheam residents were interviewed.
(See Appendix C3 for the chi-square calculations). In contrast to the chi-square values for Tables 6.11 and 6.12, the same sample in Table 6.13 generated a considerably larger number of observations (cases numbering in the tens for 6.11 and 6.12 contra cases ranging in the hundreds for 6.13) and the resulting chi-square values are substantially greater. A sample of this size producing such a volume of observations is unlikely to produce large sample errors, and therefore I can be confident that these results indicate real differences between age cohorts in terms of their relative comfort and understanding of the different media. Overall, I believe that the findings presented in sections 6.4.1 and 6.4.2 point to the benefits of using less abstract, more realistic visual media when discussing the implications of land management scenarios with First Nation communities. The implications of these findings for forest management and land-use planning practice are discussed in Chapter 7.

6.5 Chapter Summary

Many important insights into the relationship between the Cheam people and their landscape have been raised through my examination of the historical and cultural literature (Chapters 2 and 3) and by the people who participated in my research. Since many of the people interviewed are actively involved in Cheam cultural and/or political life, the interview participants have provided a valuable perspective into aspects of the academic literature that are useful, and those that are not so helpful in appreciating land-based cultural values. The reflections and perspectives documented in this chapter are crucial to the development of a new planning and resource management perspective that recognises the deep cultural meanings and relationships that people possess with their landscape. Although the research findings raised in this chapter can (and perhaps should) be summarised at this point, I have decided to present them in the following chapter where a more comprehensive and concise connection can be made between the research objectives discussed in Chapter 1, the findings and interpretation of results in Chapter 6, and the recommendations made in Chapter 7.
Chapter 7
Synthesis & Conclusions

7.1 Introduction
Tradition has it that Chichelh Siya:m created Mount Cheam, and that Xa:ls the Transformer placed in the mountain the spirit of a distant Sto:lo ancestor. The Sto:lo have for centuries revered the mountain as a sacred site, seeking religious visions there and offering sage and prayer bundles to Chichelh Siya:m. They have difficulty restraining their anger at Mount Cheam’s more recent pilgrims, those who seek the thrill of climbing the mountain’s horn shaped peak, or forest companies seeking the allure of timber wealth, and whose noise and disruptions make it hard for the Cheam to communicate with the spirit of Lhilheqey. These newcomers, in turn, are intrigued with the religious artefacts that they discover at various times on the slopes of the mountain:

Several painted [longhouse] dancers have expressed a concern that repository locations for cedar life-poles and training costumes are not safe from development. Their protection is often at odds with current land-use activities, notably logging operations and recreational activities. For example, during the week of November 12, 1986, loggers brought a cedar life-pole into the Forestry office in Agassiz. It was immediately recognised by a Native employee ... who informed forestry officials of its significance. Smokehouse leaders at Chehalis were contacted and took charge of the pole. Another incident occurred in 1985 when a hunter brought a pole to the Chilliwack Museum. The pole was later returned to where it was found in the Chilliwack River Valley. Not surprisingly, these incidents have upset segments of the Sto:lo Indian community and have confirmed the fears of dancers regarding the sanctity of their repository locations (Mohs, 1987: 121).

Problems such as these are but the tip of the iceberg of a set of resource management conflicts that will increase in frequency in coming years. As once abundant natural resources become more scarce in the face of mounting demands, age-old First Nation values (as well as New Age values) are beginning to clash more often with those given legitimacy in the economic and legislative priorities of turn-of-the-century British Columbia. These disputes are symptomatic of not only the consequences of multiple and competing demands within a limited land base, but also the inadequacies of the planning and resource management processes followed in making resource allocation decisions (Wondolleck, 1988, 1996). Part of the reason such conflicts persist and are so pervasive is that the ways in which resource management decisions are made ignores cultural values simply because they are so difficult to define and incorporate into conventional modes of planning and land-use management. In addition, from the perspective of traditional approaches to resource decision-making, these kinds of conflicts tend to be viewed as
irreconcilable. When resource managers believe that no solution could possibly exist in the face of such conflicts, they have little motivation to try to find them.

Most people would agree that cultural values are qualitatively different from economic or ecological values and consequently do not lend themselves to the same scientific assessment as do the more readily quantifiable resource values. The question that arises, then, is how might these values best be represented in decision-making (i.e. Research Objective 4)? In this chapter, I argue that a different approach to decision-making might better manage these conflicts by more effectively incorporating a greater diversity of cultural values into resource management decisions. I begin by outlining the findings from my research in the Cheam community in Section 7.2, and specifically address the first three objectives of this research, namely:

1. To explore the cultural definitions of place as expressed by the people of Cheam.
2. To explore the connections between land management and culture and, in particular, to identify the ways in which cultural perceptions and uses of the land are affected by resource management activities.
3. To explore the effectiveness of various data and landscape visualisation media as a means of eliciting land-based cultural values from the people of Cheam.

Having discussed the importance of cultural perceptions and uses of the land from the perspective(s) of the Cheam participants, Section 7.3 addresses the fourth research objective (to discuss the implications of land-based cultural values for resource management in British Columbia and examine any barriers to the effective integration of cultural values in BC forest management) and describes the ways in which conventional resource planning processes fail when trying to grapple with complex and hard-to-define cultural values. I then discuss the consequences of these shortcomings and conclude by proposing in Section 7.4 alternative conceptions of how forest managers, or First Nation communities acting on their own behalf, may accommodate more effectively the different expressions of interest in the management of forested lands. The chapter concludes with a brief discussion of the prospects for a culturally sensitive approach to forest management in British Columbia, as well as an examination of future research opportunities (Section 7.5).

7.2 Research Findings

7.2.1 Cultural Definitions of Place (Research Objective 1)

The cultural meaning of landscapes and the sense of "place" that people derive from their environment is talked about far more than it is defined. Cultural geographer Robert Bone recently attempted to do so by suggesting that place and place meaning implies a "local consciousness", 
which is "...an appreciation of local natural features, cultural traits, and economic issues" (Bone, 1992: 3). This limited definition obscures what a profound notion the term 'place' is to First Nation people. The first objective of this research has been to explore the "cultural definitions of place as expressed by the people of Cheam" and, from the people interviewed, I have found that cultural conceptions of place are complex and embody several layers of meaning:

Finding 1: Place meaning for the Cheam participants encompasses their personal and cultural identities, their spirituality, an appreciation for the land as a catalyst for social relationships, and as a source of physical and spiritual sustenance.

In addition to the complex layers of meaning bound up in Cheam conceptions of place, the cultural filters through which a sense of place meaning is developed are varied as well. For instance, individuals invest themselves in the landscape through their work in order to provide for the material well being of themselves and their family, and from that investment, an appreciation for the land as a provider of physical sustenance, source of social unity and identity may ensue. In addition, from their elaborate and ancient oral traditions, the Cheam have imprinted traditional knowledge and legends to particular features of the landscape. The names for geographical features that are contained within the narratives of the Cheam people provide a means of remembering cultural information and reproducing it over time by transmitting it from one generation to the next. Thus, for the people interviewed, place making involves a reciprocal or transactive "relationship" with their environment in which the land is seen through the filters of Cheam culture – i.e. legends, rituals, hunting and gathering activities, etc. – as both a material and spiritual provider.

The following pages summarise what I have learned about the landscape that the Cheam inhabit, and the layers of cultural meaning that it possesses for them. These layers literally progress from the ground up, beginning with the material uses of the land that are essential for human sustenance, and culminating with highly abstract notions of the landscape as a place of spiritual renewal and inspiration.

i. Physical Sustenance

Conversations with the Cheam about the importance of their traditional territory typically began with expressions of the land as a "provider" or a "warehouse," a place that contains crucial resources that are well known to them and, in some instances, an important source of material sustenance. Physical sustenance for a First Nation community typically embodies hunting and
gathering activities such as harvesting medicinal or food plants, or hunting wild game. For the Cheam, this was frequently the first and most essential expression of their relationship with the land. In essence, material sustenance for the Cheam community is based on a traditional lifestyle that several members of the band perpetuate to this day of working the land and living from the material abundance that it provides. Hunting wild game in the forests; harvesting salt, berries and other plants from the highlands behind Mount Cheam and river fishing remain important parts of the Cheam diet and way-of-life.

In addition to the more fundamental, dietary facet of their relationship with the land, the Cheam participants also characterised the land as an important economic resource, as a means of providing revenue and employment for the community. Statements of pecuniary interest in natural resources were particularly prevalent in relation to the forests that surround the Cheam reserve. In this sense, the interview participants echoed the sentiments that have been expressed by First Nations throughout B.C., that harvesting timber is a traditional use of forest resources that has historically taken the form of bark stripping for food and clothing, or logging to construct dwellings, canoes, and works of art. However, First Nation communities also contend that they have the opportunity and right to participate in the contemporary economy by selling the timber resources that they are able to harvest from their traditional territories. In most cases, aboriginal forestry operations are intended to serve a collective social purpose, saving aboriginal cultures that remain on the verge of extinction and employing people who are being forced to shift from traditional fishing, trapping and hunting as a basis for their way-of-life. For the people interviewed, aboriginal forestry would provide an invaluable means of providing revenue for a community that needs to address language, education, cultural and employment needs and, in some instances, to provide programs that will break cycles of social dysfunction.

The physical relationship that the Cheam have with the environment requires a certain land base. In terms of the more traditional values that are associated with working the land through hunting, fishing and gathering; plant, animal and aquatic life are attached to habitat that sustains them and in turn the people that consume them. This may suggest that the Cheam will naturally favour a resource management approach that preserves habitat for traditional sustenance uses. However, human cultures are not static (See Chapter 2, p. 18) and the Cheam acknowledge that they are changing with the times along with other First Nation communities,
which invariably means that they must engage in some economic development in order to support their people. For both of these consumptive activities to coexist, the Cheam recognise that their use of the land must balance the competing needs of traditional hunting, fishing and plant gathering activities that require vigorous natural habitat, with the contemporary requirements of economic development which necessitate some degree of habitat disturbance.

\[ ii. \, Social \, Values \]

In hindsight, it would be an enormous over-generalisation of the Cheam people to contend that the entire community maintains a close physical relationship with the land as a provider of physical nourishment, shelter and/or employment. My own experiences on the reserve provided ample indication that some, if not most community members are able to derive their livelihood independent of the traditional resource harvesting activities described above. Thus, it became clear that the land might be valued for other reasons that may have their basis in less tangible, more esoteric considerations. As I discovered during the interviews, an important benefit that the Cheam people derive from their relationship with the land is the importance of community and the sense of social unity that results when the products of working the land (i.e. hunting, fishing and gathering) are shared.

Sharing is a necessary and integral part of Cheam society. Through sharing, a community remains bonded together for when a gift of salmon or deer meat is given, a relationship is made. A number of social institutions have evolved in Cheam culture, largely predicated on the value of sharing, and include the pooling of resources to care for dependants and the disadvantaged, and sharing food in ritual and ceremonial settings (e.g. the smilha and First Salmon Ceremony). Although the practice of distributing wealth within most First Nation communities has recently been usurped by the welfare state, the community remains largely responsible for the welfare of its members. Responses from the people interviewed demonstrated that the concept of sharing is still very much alive in the Cheam community, and sorely missed when it is absent.

Embodied within the sharing ethic is an attitude towards work. In non-Native society, work is a means to earn money, which is a way of accumulating material wealth. To the Cheam participants, the concept of work differs radically. In essence, work is necessary for physical survival whether for money to provide needed goods and services, or whether it more directly achieves what is needed (e.g. meat from fishing or hunting). However, a scene of contemporary
Cheam village life related by many of the people interviewed as well as from my own experiences on the reserve, would typically find neighbours dropping in and helping with any of the work going on, for example, cleaning fish, hunting, picking plants or setting nets on the river. People expressed the opinion that these occasions of shared labour were not work but a strengthening of community bonds. Thus, in many ways, the labour that is associated with the sustenance activities described above has the ability to orchestrate and reinforce a larger sense of community, and a general sense of conviviality when the work and wealth of the land is shared.

iii. Cultural Identity

An orientation to community and the feeling of identity that is derived from belonging to a larger group are integral parts of Cheam culture. Identity defines a person’s place in the world, and a sense of cultural identity creates a secure base from which the pressures of the surrounding world can be confronted. The Cheam described two ways in which they derive some semblance of cultural identity from the natural world. In its physical sense, identity can be rooted in healthy rivers and streams, and a vibrant salmon fishery. In effect, the productive capacity of the Fraser River, its tributaries and sloughs, contributes to the wealth of salmon resources that have traditionally sustained the Sto:lo people. As a staple of their existence, the Cheam continue to catch and preserve vast quantities of salmon that they use to supplement their diets throughout the winter, and to feed large gatherings during the winter smilha or longhouse ceremonies. The activities that are associated with working the river fishery saturate the daily routine of reserve life from early March to autumn when the duties associated with tending nets and preserving the daily catch invoke an annual shift in the temporal and spatial rhythms that the Cheam have experienced for generations. In this way, Cheam heritage is intimately tied to working in the waterways of the Fraser Valley, a mode of activity that has come to define the Cheam and their Sto:lo neighbours as a people over successive generations of use:

Will (Young Adult): ...we’re part of the Sto:lo people and Sto:lo means people of the river. So just based on that one can appreciate what the waters and the water systems provide for us.

Thus, the integrity of fish habitat is crucial to Cheam cultural identity. Whether the habitat is situated in a farmer’s feedlot or in an upper watershed tributary of the Fraser, healthy aquatic habitat supports a resource that literally permeates the economic, social and ceremonial fabric of Cheam society.
In an abstract sense, identity is partially formed and takes its strength from the symbolic messages that are imprinted in the natural environment. The legends and oral tradition of the Sto:lo people have coloured the landscape of the Fraser Valley with history and meaning. The legacy of Xa:ls to the Sto:lo people resides in his transformation of the world into a more peaceable order by judging, and sometime rewarding people according to a strict moral code. By transforming people of questionable or exemplary moral character into permanent features of the landscape (e.g. Lhilheqey into Mount Cheam), Xa:ls has given to succeeding generations a historical and moral legacy that is literally inscribed in the landscape. These stories and tangible symbols of Cheam mythology possess a form of power for the Cheam because they are shared, they link people to one another to form a cultural identity that is rooted in a common history and symbolic association that is bound up in the landscape. Thus, the stories that are associated with features such as Mount Cheam have the power to affect people through their retelling and, through their presence as tangible referents on the land. Over time, these places and the stories that are associated with them combine to become significant cultural talismans and markers of group identity. N. Scott Momaday (1976: 1) suggests that the human impulse to find identity and meaning from place features has been present in First Nation societies like the Cheam for a very long time:

From the time the Indian first set foot upon this continent, he centred his life in the natural world. He is deeply invested in the earth, committed to it both in his consciousness and in his instinct. The sense of place is paramount. Only in reference to the earth can he persist in his identity.

iv. Spirituality

As a culture that has occupied and sustained themselves from the resources of the land, the Cheam derive not only a sense of identity but a feeling of inward, spiritual security from it as well. For this reason the land is a central theme for the Cheam people. Without the land, the community would feel adrift; with the land they have a home. The land is something the Cheam feel that they must cherish and protect, something that they can return to for support and sustenance both physically and spiritually:

George (Elder): ...the cedar trees are sacred trees. And we use everything ... we use the cedar boughs for our smudging, ... our people go down to the river ... to cleanse themselves and wash themselves with a cedar bough.

Cheam expressions of the land's importance are filled with mythic themes, many of which are deeply rooted in legend and oral tradition. Several of the legends that the Cheam continue to
treasure recount the gift of specific creatures and places by Xa:ls — the creator and great Transformer — to the Sto:lo people for their benefit and use. According to these same narratives, the gift of the land and its abundant resource wealth carries with it the associated responsibility to utilise the land with respect.

There is an extremely strong bond between the Cheam people and their land. Its character and their legends and oral tradition determine to what use certain places are put, and how the land is to be treated respectfully. According to the people interviewed, using resources in a sacred and respectful way often involves leaving enough behind (e.g. timber, fish, berries...) for other creatures and, in particular, other First Nation communities to survive. In this sense resource management decisions are strongly motivated by considerations that have their basis in Cheam spirituality. Therefore, in the planning and management of resources in Cheam territory, care should be taken to facilitate land uses that are appropriate to the beliefs and perceptions of the local community.

Of the uses that demand a respectful treatment of the land's resources, the Cheam participants identified two related activities that are a focal point of Sto:lo spiritual life. First, some participants described dense forest stands as a place of spiritual cleansing and renewal. In essence, places such as Mount Cheam and cedar forests receive the prayers of the grieving and those asking for help. For those who continue to participate in Sto:lo ritual life, meditating in the forest is a spiritually uplifting, cleansing practice. Second, cleansing also takes place in a more ritualised form through the practice of bathing in cold mountain streams. Those undergoing training as spirit doctors or spirit dancers endure extended periods of isolation in the Cheam highlands, and continue to bathe daily during the winter months as part of a ritual practice of cleansing the body and spirit. Although such practices are not completely rational in Western terms, they are entirely in accord with the rationality of a spiritual existence as the Cheam see it. As such, they deserve to be evaluated on an equal basis with the other land-uses (e.g. timber, recreation, preservation, etc.) that are given legitimacy by non-Native policy makers and resource managers.

7.2.2 Land Management & Cheam Culture (Research Objective 2)
Given the complexity of First Nation conceptions of place (i.e. Finding 1), it should not be surprising that they are frustrated by the fact that Western resource managers do not understand their sense of place meaning:
Many [non-Native] decision-makers ... don't accept the idea that such stories make up a proper framework for establishing the significance of these places (Kelley and Francis, 1994: 191-2).

The colonisation and development of First Nation lands that began with the arrival of Europeans to British Columbia and continues to this day (see Chapter 3, Section 3.2.2) has contributed directly to the undermining of indigenous cultural identities because these are tied so directly to the land and concepts of place. However, to most Euro-Canadians, the term ‘wilderness’ is a familiar and typical way of describing natural settings. Landscapes that have not been ‘improved’ by urbanisation or agriculture, and are called culturally significant or sacred by First Nations, are often viewed in Western eyes as wilderness, as so many hectares of uninhabited land that is exploitable for any number of purposes (Martinez, 1998; McCormack, 1998).

As the discussions in Chapters 3 and 6 demonstrate, logging and some landscape restoration activities can potentially interfere with or enhance cultural uses of the mountain and forests. Areas such as Mount Cheam are heavily utilised as places of spiritual refuge and, for spirit dancers, as questing sites for spiritual visions. Cheam people who continue such activities in these and other areas are increasingly disturbed by outsiders. In the most extreme cases, the transformation of the environment by activities such as logging prevents the Cheam from engaging in culturally important activities. The second objective of this thesis is “to explore the connections between land management and culture and, in particular, to identify the ways in which cultural perceptions and uses of the land are affected by resource management activities.”

In response to this objective, I have found that there is a close nexus between Cheam culture, conceptions of place and the land-use changes that continue to alter the face of the Fraser Valley:

*Finding 2:* Western land management activities (logging, agriculture, recreation...) have the potential to disrupt traditional Cheam uses and perceptions of the land as a place of spiritual renewal and physical sustenance, and as a source of cultural identity and social bonding. The Cheam participants believe that they have to use the land “respectfully” to avoid upsetting or compromising these fundamental cultural values.

In addition, I have learned from the participants’ evaluation of the management scenarios that culturally significant places may possess no overt evidence or sign of their importance. In fact, apparently unremarkable settings may retain immense cultural significance:

*Finding 3:* Those who continue to live from the land or know the traditional ways will assert that whole landscapes are sacred, that no one place is more significant than any other place. Frequently, settings with no visible evidence of human use or modification may possess considerable cultural importance.
While this latter finding often frustrates Western resource managers in their efforts to identify and accommodate culturally sensitive areas in their management strategies, nonetheless, there are spatial indicators that planners may use to design and implement more respectful land-use plans:

Finding 4: The Cheam participants have indicated that there are visual or spatial cues that denote how effective particular land-uses are in respecting the bonds that are maintained between humans, animals, fish and the spiritual world.

i. Timber Management
A crucial lesson learned from the Cheam about the cultural impacts of clearcut logging is that it is a disrespectful form of land management. According to the people interviewed, Cheam notions of respect posit that other living communities (i.e. plants, animals and humans) must be considered when resources are used or, most importantly, removed from the land. In essence, respectful land and resource use involves "leaving enough [habitat] behind (George, Elder)" to allow other living communities to survive. Although the potential monetary benefits to the Cheam community from clearcutting could be substantial, the people interviewed described other creatures, uses and environmental values that would be compromised by the mass scale removal of forest habitat. For instance, in terms of the physical or consumptive uses associated with the land, large openings in the forest canopy would make hunting for deer and elk much easier for First Nation and white hunters alike, placing considerable pressure on the local ungulate populations. Moreover, most participants believe that clearcutting would compromise the integrity of salmon habitat, as the lack of tree cover on steep sections of Mount Cheam would contribute to large scale erosion and the degradation of fish stocks in the lower sections of the watershed.

The physical or sustenance values that are impacted by clearcutting are perhaps the most straightforward to comprehend. Protecting the integrity of deer and salmon habitat ensures that there will be enough fish and game for the Cheam households that continue to supplement their diets with traditional foods, and for the longhouse ceremonies that occur throughout the autumn and winter months. However, more difficult to grasp are the esoteric cultural values that are not respected when the mountain is clearcut. On the one hand, the clearcut image was characterised by the participants as a threat to the social values that are associated with sharing wild game for religious and ceremonial events. In effect, gifts of meat and fish are an essential means of establishing and reinforcing social bonds when large gatherings of people assemble for important social occasions. The Cheam participants contend that this practice is undermined
when the supply of traditional foods is insufficient to satisfy the multitude of people that typically
attend Cheam social events. In addition, the socially constructive sentiments of congeniality and
community are threatened when there are fewer opportunities for large groups to venture into the
forests or onto the river to harvest their traditional foods. Cheam identity is threatened also as
clearcutting across the Fraser Valley places tremendous pressure on severely diminished fish
stocks, which ultimately translates into further reductions in the already minuscule salmon quota
allocated to the Sto:lo by the Department of Fisheries and Oceans. In essence, the perception
expressed by the Cheam participants was that more infrequent "open days" as a result of poor
forest management practices across the Fraser Valley would have devastating effects on hunting
and fishing as integral facets of the Cheam way-of-life.

In spiritual terms, clearcutting on Mount Cheam threatens a central part of Sto:lo religious
practice, namely, the tradition of bathing in mountain streams as part of a daily cleansing ritual for
spirit dancers and other Sto:lo ritualists. In effect, the sediments that are washed into the streams
in the wake of a clearcut make the ultimate purpose of ritual bathing impossible. Moreover,
clearcutting raises the possibility of exposing the people who practice forms of Sto:lo spirituality to
the public and, in particular, to a public that is uninformed and unreceptive to aboriginal spiritual
practice. Versions of ritual cleansing are common in many First Nation cultures and, although
they are known by different names they all possess a singular purpose. During these moments,
the participant is generally alone with his or her own prayers and introspection. Privacy is of the
utmost importance as distractions of any sort can defeat the ultimate goal of communicating with
the mountain's spirit (i.e. Lhilheqey) or with Chichelh Siyam.

The partial cut scenario was generally regarded by the people interviewed as a better
form of forest management that is compatible with the cultural uses that are associated with the
mountain. Although the participants felt uneasy about the volume of timber removal represented
by the scenario (i.e. 75%), partial cutting was generally affirmed as a more respectful
management approach. In essence, the Cheam concept of respectful land management regards
the forest as habitat for the wild animals and plant life that have traditionally sustained and
provided nourishment for their people. Thus, the concept of mass scale use of forest resources
that is associated with clearcutting is simply alien to the Cheam's cultural and spiritual tenets.
Legends and ceremonies alone reflect a tradition of material dependence on the forest and a
spiritual interconnection with it. These tenets demand a more respectful or holistic approach to forest management that accommodates the contemporary economic imperatives of harvesting timber wealth with the associated requirement of sustaining other cultural uses that require living forests in order to persist – i.e. hunting & fishing, social ceremonies, spiritual practices, and so on. According to the people interviewed, the habitat that is retained by the partial cut scenario is largely compatible with the Cheam approach to respectful land management.

It is interesting to note that the competing imperatives of culture and economics not only make the partial cut scenario more appealing than the clearcut model, but they also point to the relative attraction of partial cutting over a management approach that is based largely on preservation of the mountainside – i.e. the existing condition model. As I have argued elsewhere in this chapter, and in Chapters 2 and 6, First Nation cultures and communities are adaptive and recognise the need to change with time. Preserving their traditional territories as ecological reserves, or in standard parkland designations, is simply untenable to most First Nation communities and does not recognise their need (and right) to access timber and other resources to provide vital social programs and employment for their band members. Thus, the considerable expression of preference by the participants for the partial cut model relative to the existing condition, combined with their stated wish to reap some pecuniary benefits from their timber resources, suggests that preservation is not the preferred management approach.

ii. Stream Management

Using terms such as "wasteful", "disrespectful", and "irresponsible", the interview participants clearly expressed their disapproval for the kind of stream management represented by the existing condition. Participant reactions to the wholesale removal of vegetation from the stream were remarkably similar to their assessments of the clearcut model and, therefore, can be summarised in a few brief sentences. In general, the interview participants argued that the lack of riparian vegetation deprives the stream of the vegetative cover and nutrients that are essential to maintain a healthy population of fish. Moreover, the presence of cattle in the adjacent pasture ensures that any juvenile salmon that may inhabit the stream will have to cope with the additional stress of pollution from faeces and disturbed gravel beds. Thus, any role that the stream may have as a contributor to the Fraser River salmon fishery is severely compromised. The people interviewed posit that mismanagement of the sort depicted by the existing condition is representative of the devastation that Sto:lo communities have encountered in rivers and sloughs.
throughout their traditional territory, and the cumulative impact of riparian deforestation has placed tremendous pressure on severely diminished fish stocks. Realistically, the Cheam do not expect the salmon to disappear entirely from the waters of the Fraser Valley. However, the Cheam participants believe that the consequences of deforestation from clearcutting or intensive agricultural development will result in fewer fish which will in turn deprive them of a resource that they rely upon for their social and ceremonial gatherings, and upon which they base expressions of cultural identity.

By contrast, the modified plan elicited an overwhelming and largely unanimous expression of support from the interview participants. Most of the participants felt that a thick stand of mature vegetation would be the consummate restoration plan, and believed that even the modest 15 metres of riparian vegetation represented by the best practice model would be insufficient to ensure the recovery of the stream. Moreover, the plan was seen as a respectful and more productive use of the land because it allows a number of uses and resource values to exist concurrently. In essence, the modified plan preserves pasture for the feedlot owner while at the same time creating a healthier environment for spawning and juvenile salmon which, ultimately, is of considerable value to Native, commercial and recreational fishing interests.

What is most interesting about the participants' reactions to the modified plan, in addition to being a more respectful management approach, is the clear expression of spiritual interest in the restored stream. On the one hand, the people interviewed felt that the modified plan would be a suitable setting for the spiritual meditation and cleansing that typically occurs on Mount Cheam. Whether the Cheam choose to fast privately along its shores, cleanse themselves in its water or with cedar branches, or simply find a quiet place to meditate and contemplate life, several participants characterised the modified plan as an ideal setting for mental and spiritual renewal. That they could not identify these qualities in the best practice model, largely because the relative thickness of the modified plan is more conducive to privacy and transcendent experiences, suggests that there are important spatial cues that planners can identify to enhance the human experience of natural settings. A team of planners and landscape architects working with an Ojibway community in Ontario made a similar finding, and their appreciation for the place of First Nation landscape aesthetics in resource management is a foundation for one of the recommendations that is advanced in section 7.4.
In addition, the oral tradition surrounding the Xa:ls legends compels the Cheam to use their environment respectfully without compromising the land's productive potential. Participant reactions to the existing condition clearly indicated that the stream's capacity as fish bearing habitat had been diminished, however, the consequences of departing from these teachings and failing to respect the land have deeply personal and spiritual implications. In essence, the relationship that the Cheam have with their environment involves a responsibility to utilise and protect the resources that have been given to them by the Creator and Xa:ls. Due to its current state of neglect, the sentiment that the Cheam people have been neglectful in their commitment to safeguard the health of the stream, particularly for the young adults interviewed, carries with it profound feelings of guilt and spiritual anxiety. Thus, in the absence of cultural symbols or legends with historical significance, an apparently unremarkable setting can possess profound spiritual significance. Given the sacred covenant that the Cheam have with the Creator and the land, resource managers should not be surprised when indigenous communities assert that "everything has got a certain sacredness to it (Len, Young Adult)" and proceed to colour the wide areas of their traditional territories with spiritual significance (S. Sheppard, personal communication). Once this conceptual leap has been made by Western resource managers, they may find it easier to appreciate the cultural and spiritual qualities that are important aspects of First Nation landscapes, and perhaps both Natives and non-Natives can begin to look for ways to build bridges between their respective understandings.

7.2.3 Effectiveness of Visual Media in Planning Communication (Research Objective 3)
In Cheam oral tradition, all forms of life are intertwined. It is this complex understanding of nature, combined with the long-term occupation of regions 'from time immemorial', from which First Nations derive their strong sense of rootedness and place, the sense that the land is their homeland. This complexity frustrates the efforts of most resource managers to appreciate the cultural interests of aboriginal communities and, by extension, to develop policies and management plans which accommodate their abstract values and traditional uses of the land. In essence, land-based cultural values often spring from social or cultural structures that non-aboriginal resource managers and academics, as a result of previous education or cultural background, are often poorly equipped to understand. In response to the third objective of this thesis — "...to explore the effectiveness of various data and landscape visualisation media as a
means of eliciting land-based cultural values...” – I have found that sensitivity to unfamiliar cultural perceptions of the landscape can be facilitated by a realistic model of the environment under various land management conditions:

Finding 5: Soliciting community reactions to management plans is essential to fair and inclusive resource management, but placing land-use information in standard cartographic format will exclude a great deal of important perceptual and cultural information. GIS technology coupled with landscape visualisation capability embodies the best representation of the land inasmuch as it provides more information with greater clarity than conventional planimetric resource maps.

However, I have also found that the key to effective cross-cultural communication, or ‘consultation’ as resource managers choose to call it, does not simply reside in using better communication media. I have also found from my research that there is considerable diversity within the Cheam community, that the conventional approach taken by industry and government agencies of consulting with only one or two band members may not adequately uncover the full complexity and diversity of cultural values within a community:

Finding 6: Efforts by western resource managers to conceptualise and accommodate the place values (social, spiritual...) that people derive from their environment will be complicated by the fact that such values are tightly interwoven and measured differently by distinct segments of Cheam society.

Both findings point to the need for more effective means of communicating across cultural boundaries and, in particular, for ways that non-Native resource managers can apprehend what First Nations mean by cultural value or ‘sacredness’ when addressing forested lands. Some approaches to addressing this need are discussed in section 7.4.

i. Effectiveness of Visual Media in Planning Communication

Images for resource management purposes should ideally depict the land as seen through the eyes of the affected community. As many resource managers are beginning to realise, eliciting and utilising indigenous land-use information is essential for inclusive land-use planning processes, but in placing it in standard cartographic format much of value may be lost. For example, the clearest indication that cartographic information is poorly suited to communicating resource management information are the statements from the elders and adults interviewed that maps are confusing and difficult to interpret. On several occasions, this was demonstrated by a near inability to reply to questions about the resource management scenarios depicted by the maps, followed by an almost apologetic declaration that “I’m not really good with maps” (Joy, Adult). In other instances, the mapping information generated such confusion in the
minds of elder participants that, even in moments of relative confidence with the maps, information about settlement history and patterns of use was obviously incorrect and distorted by the media.

What is most interesting about the use of visual media to discuss the resource management scenarios with the Cheam is the greater use that the young adults make of the landscape simulations in spite of their considerable training and experience in map interpretation. Although the young adults could readily understand and were not confused by the cartographic information, the photo-realistic landscape simulations tended to elicit more preference based responses than the maps. In addition, the simulations appeared to engage the younger participants to a greater degree than the map data as reflected in their tactile uses of the different media. As the young adults themselves explain, the simulations provide more information with greater clarity than the maps, thus lending some support to the notion discussed in Chapter 5 that a medium’s level of abstraction will affect its perceptual effectiveness. In essence, a photo-realistic image conveys more information than the abstract and sometimes confusing language of planimetric resource mapping, with the result that simulations will tend to elicit more responses independent of the research participant’s age or the order in which they view the media.

As Frank Duerden (1992, 1993, 1996) and others posit (Crerar, 1999; Nantel, 1999), realistic simulations prove to be very successful in enabling elders and other community members to visualise the landscape and describe culturally important uses of the land at a highly localised scale. This ability to enhance the visualisation of the terrain and resource management proposals using topographic models may prove to be an invaluable resource for land-use planning and landscape design processes involving First Nation communities. In section 7.4, I will revisit landscape simulation as a resource management tool and argue for its potential role in mainstream land-use planning.

**ii. The Complexity of Land-Based Cultural Values**

Any effort by conventionally trained planners to dialogue with aboriginal communities is likely to be frustrated by the non-Native pattern of compartmentalisation in which places and cultural experiences of place are reduced to separate categories which 'possess' qualities that can be observed and rated in terms of their relative importance:

He [white people] views his world in categories. There is the economic world, the social, the religious, the working world. The [whiteman’s] view of the world is fragmented; he feels comfortable ranking, categorizing (sic), segregating,
compartmentalising the world around him, the native does not (Diermenjian and Jones, 1983: 3).

This is one basis of misunderstanding between First Nations and non-Native resource managers. Although the preceding discussion conveys the impression that Cheam environmental values can be separated into a set of relatively discrete compartments (i.e. physical, social, spiritual...), the resource manager's ability to comprehend and perhaps differentially weight these values may be frustrated by the fact that they tend to overlap with one another. For instance, one crucial lesson that I have learned from the people interviewed is that there is a spiritual foundation to the social experiences that members of the community derive from their physical use of the land. In essence, the sharing ethic that is crucial to the strengthening of community relationships is based to a large extent on oral traditions that describe how landscapes were created as part of a moral order in which humans were given the right to utilise the resources of the earth. That same tradition reinforces the notion that nothing on this earth has been created for the exclusive use and enjoyment of any one person or community. Stories that describe the moral and sometimes physical consequences associated with covetous behaviour oblige the Cheam to share whatever they harvest from the earth not only to mitigate material disparities, or to reinforce important community bonds, but as an act of thanksgiving to the Creator as well. In essence, ritualised forms of sharing such as the First Salmon Ceremony fulfil a social as well as a spiritual role where the act of sharing an abundant harvest is a means of strengthening family and community relationships, as well as demonstrating profound spiritual veneration and respect. Thus, efforts by Western resource managers to categorise and differentially rank expressions of social and spiritual interest in the land are likely to be met with some apprehension because these values comprise an integrated whole, where no one set of values is considered to be more significant than any other.

Equally frustrating for many First Nations is the presumed existence of a single aboriginal world-view in which there are no discernible cultural variations within communities, and that patterns of environmental preference are largely homogeneous. Often, the presumption by most resource managers is that a conversation or phone call with a single band member will suffice in order to gauge the community's reaction to a management plan, with the belief that aboriginal people are singular in their cultural perspectives:
Solidified by novels, films and even dissertations written by cultural anthropologists, members of Euro-Canadian society have accepted the view of being able to know all First Nations by studying a particular tribal group. This assumption is tantamount to studying residents of Vancouver and presuming to understand all Canadians.

The Cheam participants have demonstrated that, even within a relatively small community, important perceptual variations exist that are sometimes a function of different life experiences across generations. For instance, the young adults interviewed described the deep sense of cultural identity that they derive from the legends and ritual activities that are traditionally associated with Mount Cheam. However, when asked to comment on their understanding of the mountain’s symbolic meaning, many of the adults and elders declared their cultural ignorance and pointed to several years of residential schooling and culturally repressive laws as the bases for their lost knowledge. As I have learned from the Cheam, the cultural disparities within a community may be rooted in the unique employment experiences of different generations, attempts by the state to assimilate and “enfranchise” First Nation people into the dominant white culture, or revivals that have captured the spiritual and political energies of a younger generation.

7.3 Implications for Resource Management (Research Objective 4)

Thus, it is difficult to talk in terms of a homogenous world-view within a First Nation community, and is hardly surprising that provincial agencies are often stymied in their attempts to develop regulations that protect the cultural interests of aboriginal people. In response to the fourth objective of this research – “to discuss the implications of land-based cultural values for resource management in British Columbia and examine any barriers to the effective integration of cultural values in BC forest management” – the following discussion examines the current setting for cultural resource management in British Columbia. As First Nations grow increasingly concerned about the preservation of their culturally significant lands, it has become apparent that the conventional approaches to resource management and cultural protection have been largely ineffectual.

7.3.1 The Present Situation

In the view of the BC Ministry of Forests (MOF), integrated resource management involves the management of all renewable surface resources within the provincial forest system
so that they are used in the combination that meets the basic needs of the people of British Columbia (BCMOF, 1995a: 6; 1999). Resource conservation is implicit in this, and thus some land will not be exploited for all of its possible resources. The intention is that resource management is to be co-ordinated and harmonious, without any impairment to the productivity of the land. Consideration will be given first to the various resource values that exist, even though this may not result in the highest economic or financial returns. Due to its multiple use mandate, the MOF has had to address scenic, historic, wilderness, grazing and water developments. They are now confronted with having to address the cultural lands of First Nation people:

Aboriginal rights include fishing, hunting, gathering, trapping for food, the use of the land and resources for shelter, medicinal, spiritual, and ceremonial purposes. Aboriginal rights must not be unjustifiably infringed upon by resource development activities of the Crown (BCMOF, 1995b, section 5, emphasis added).

Nevertheless, the MOF does not have the requisite expertise to deal with all the varied interests that have now sprouted up, especially in the area of cultural land-uses. The difficulty that arises here in relation to cultural values is that most provincial and federal resource agencies are understandably ill at ease when encountering situations where they must make decisions involving culturally significant lands (Asch and Smith, 1993; Cummings, 1998; Redmond, 1998). These values are often unfamiliar and not well understood by land-use planners and, consequently, conventional modes of acquiring and incorporating First Nation perspectives on land management can seldom inform the decision-maker adequately. In the first instance, it is virtually impossible for a resource manager following conventional administrative processes and scientific methods of analysis to understand cultural values sufficiently and act on such values when making decisions (Stankey, 1996; Wondolleck, 1998: 258). Even though they must make a decision in a particular case, it is unclear how the land manager should go about including, assessing and accommodating these values. In addition, forest managers were not trained to deal with issues such as these when they received their professional education in forestry, wildlife biology, resource economics or related land management topics (Cummings, 1998: 289; Hammond and Judy, 1996; Willems-Braun, 1997). Cultural land values do not fit within the traditional paradigms of professional land management, and hence present a challenge even to those resource managers with some training in the social sciences.
At a forestry conference in Portland, Oregon, Ted Strong, representing First Nation interests in the United States, remarked "we must understand that status quo management is completely unacceptable" (Cummings, 1998: 256). His comments reflect the central feature of resource management issues facing First Nations and forest planners in the Pacific Northwest and elsewhere. Over the last few years, places and their accompanying imagery such as Gustafsen Lake, Meares Island, and Ipperwash have found their way into the Canadian public's consciousness. Too often, the images and messages generated by the media have failed to provide the public with the reasons for confrontations between Natives and non-Natives. Inevitably, the issues involve not only unceded land and treaty violations, but also the greater issue of culturally significant lands (Bobiwash, 1998). In cases like Gustafsen Lake and others, there have been non-Native encroachments upon grounds that are understood to be culturally important to the First Nations people. To non-Native land managers, largely uneducated and disinterested about First Nations people and their traditional ways-of-life, defining land as culturally meaningful or 'sacred' is incomprehensible and unacceptable as a legitimate interest.

The current situation, characterised by uncertainty and distrust between First Nations and non-Native resource managers, leaves few people satisfied. In the absence of fair and effective mechanisms to address the impacts of resource management activities on culturally significant lands, the First Nation elders and band members who are knowledgeable about cultural places are growing increasingly concerned about their preservation and protection (Jones, 1998; Mohs, 1992). In the past, some protection has been afforded through a tradition of silence or, in other words, a reluctance to disclose too much information about important culturally sensitive areas:

Frank (Adult): Well it was, that was where a lot of our spiritual stuff took place, up in that area. And basically that's as far as I'll go on that. These are sacred areas...

Will (Young Adult): ...some of the spiritual stuff I really don't want to get into deeper, I mean but it is significant to us and natural and we need the habitat to keep it that way.

This strategy appears to have been relatively effective in ensuring the overall protection and conservation of selected sites, particularly those that are not located on reserve lands. The tradition of silence is still maintained by many Sto:lo people who believe that the disclosure of information will inevitably result in the wilful destruction and desecration of culturally important areas:
I'm reluctant to tell you about these spots because the last time, a loggin' company tried to take the 'head of the dog' and destroyed the whole thing. ... You know, I'm a proud man and these places are sacred to me. I was taught all of this by four elder chiefs. If I tell you about these places and they are recorded, then people will go there and destroy what is there. So I'm reluctant to tell you. Enough damage has been done (Sto:lo elder in Mohs, 1992: 200).

As regional developments have proliferated in recent years in the upper Fraser Valley, cultural preservation concerns have become more pronounced. Resource development (e.g. timber harvesting, aggregate mining, etc.) has disturbed transformer sites and smilha initiation grounds, and urbanisation has brought a growing influx of residential subdivisions, utility easements and back-country recreation users into areas which, in spite of their apparently natural undisturbed quality, possess substantial cultural meaning to the local communities. The consequence has been that, of the 200 sacred sites identified by the Sto:lo Nation to date, about 50 sites have been damaged or disturbed by urban or resource development activities (Mohs, 1992: 187). Another 25 face potential destruction or ongoing disturbance from their proximity to development. This represents over 50 percent of all culturally significant areas that have been documented by the Sto:lo Nation (Mohs, 1992: 187).

Current and potential impacts are greatest upon areas that are intended for ceremonial and religious uses. Virtually all longhouse training grounds and ritual bathing sites are affected. For instance, one Sto:lo man recently stated that his band has been increasingly restricted from using sacred grounds on Chilliwack Mountain, due to timber harvesting and settlement of the area by white residents (Mohs, 1987). These grounds, which cover an area of about 100 acres, include sites where many winter spirit dancers ritually cleanse themselves for the smilha ceremonial:

This is where we get our cedar from for the smokehouse, where we get our cedar boughs from, our devils club from. Now we can't go there anymore, can't use that anymore. There's too much development and too many people around. We used to go up Tamihii but too many sports fisherman started coming around and interfering with our sacred ways. Now we go up Chilliwack Lake and Slesse Creek. These areas should be set aside as sacred grounds (Sto:lo Informant in Mohs, 1987: 56).

This individual also maintains that dancers from other bands have moved further up the Chilliwack River valley to use more remote traditional grounds, but even these have been encroached upon. The beach area and high grounds at the outlet of Chilliwack Lake have since been developed as a park and recreational property, forcing dancers to move progressively further north and east along the lake.
Culturally significant sites are easily overlooked and often unknowingly damaged or destroyed in the course of development. As the examination of Sto:lo cultural places in Chapters 2, 3 and 6 posit, they do not have the same familiar or easily recognisable characteristics of archaeological sites such as burial grounds or ancient settlements. Generally, there are no artefacts, no cultural markings or alterations, and no distinguishing characteristics (i.e. Finding 3). It is only through appropriate investigation and dialogue with First Nations people that archaeologists, anthropologists, heritage resource managers, and the public in general can learn of their existence and appreciate their value. For instance, if the transformer rock found at Xa:ytem (See Chapter 2, p. 26) were evaluated by archaeologists during a typical survey, it would undoubtedly be written off as an insignificant glacial erratic. However, there are few heritage sites that the Sto:lo people would consider more important (Duff, 1952; Hill-Tout, 1902; Mohs, 1992). From a resource management perspective, cultural significance has generally been excluded from heritage resource legislation and policies, and spiritual values are noticeably absent from the list of criteria of significance recognised under the British Columbia Heritage Conservation Act (1979).

7.3.2. Current Policy Options: Legislation, Litigation, Consultation...
At present, there are no statutory provisions guaranteeing First Nations access to culturally significant sites and/or traditional rights of use of their sacred grounds (Cummins and Whiteduck, 1998; Oman, 1998; Redmond, 1996). Existing legislation contains no special provisions affording protection to cultural areas and, therefore, they are covered by the same laws that protect archaeological sites. Furthermore, since few cultural sites have tangible archaeological manifestations (i.e. evidence of human use and occupation), few are registered. By way of contrast, in the United States, the American Indian Religious Freedom Act (P.L. 95-341) contains provisions affording protection "to sites considered important in the expression of Native American religious beliefs or lifeways" (Doyel, 1982: 638). There is no comparable legislation in Canada.

This situation is complicated by the fact that First Nations in British Columbia have generally been excluded from cultural resource management decisions, policy development, funding and planning (Carlson, 1999: 170; Dunnell, 1984; Mohs, 1992). Current management priorities are directed in response to proposed projects, and are designed to accommodate development. There is little or no long-range cultural resource planning and no First Nations input.
or direction with regard to conservation or preservation efforts, planning or policing. In short, current policies generally do not incorporate First Nations heritage values or concerns. Taken overall, legislation, policies and programs in British Columbia have failed to protect sacred places and to address First Nations cultural concerns. As a result, the subject of heritage resources has become a matter of political and legal concern to Canada's First Nations in recent years. However, despite petitions to both the federal and provincial governments, there has been little movement on the matter of cultural places.

The options currently available to First Nations regarding the protection and conservation of their culturally significant places are limited. They include:

- continuation of a tradition of silence;
- legal action and;
- consultation with provincial and federal governments.

Recent research with the Sto:lo people indicates that the first option has been of limited effectiveness in affording protection and guaranteeing traditional access to cultural areas (Carlson, 1999; Mohs, 1987; Mohs 1992). In essence, the tradition of silence presumes that if non-Natives are deliberately thwarted in their efforts to locate culturally significant places, then these areas may continue to exist in relative obscurity. However, the difficulty with this approach is that it is proving to be increasingly ineffective against the relentless incursion of resource development, agriculture and urban settlement into the upper Fraser Valley landscape. Large areas of Sto:lo traditional territory will be settled as the population of the Lower Mainland continues to swell, thereby displacing ritualists and smilha initiates from their sacred training grounds, and forcing hunters into ever more remote corners of the landscape.

The legal option may hold some promise as a means of protection and conservation, although there are no special provisions protecting sacred sites under existing legislation and no specific constitutional provisions guaranteeing traditional or cultural use rights (Jones, 1998; Notzke, 1994: 230). At present, existing aboriginal rights are guaranteed under Section 35 of the Canadian Constitution. However, it would appear that conservation or preservation efforts pursued in this manner would be limited by the need to proceed on a case-by-case basis. In addition, a further serious impediment to the legal option for British Columbia's First Nation people

\[\text{As documented by Cheam accounts recorded in this study.}\]
is expense; few bands and tribal councils can spare the resources that are necessary to pursue this option (Mohs, 1992: 203).

Nevertheless, many industry and political leaders are openly expressing a desire to put an end to forest confrontation, particularly as they wrestle with the issue of culturally significant lands. Having tried everything else in the book — lobbying, unilateral decisions, litigation, and so on — they are faced with the reality that nothing they have attempted recently has reduced conflict with First Nations in the forests. For instance, the Ministry of Forests has implemented and engages in a myriad of public and aboriginal consultation processes. On any given day in British Columbia it might be possible to tally a few hundred separate referral or consultation processes of one form or another that are sponsored by the MOF (Drushka, 1999: 134; Nixon, 1993; Wilson, 1998). Each process invites local input, and each process contends that it will take community concerns into consideration. There is no one correct cookbook method of applying community input to forest management, and the MOF cannot be rebuked for using the incorrect approach to local consultation. In fact, considerable latitude is sometimes required to ensure that the process meets the requirements and cultural norms of the participants (Brody, 1988: 260). However, the principles of fair process always apply. As Bob Nixon (1993: 40) contends, the first rule-of-thumb in community consultation should be based on the tenet that all interests ought to be given a reasonable chance to participate directly in the planning process. In effect, the “process must be inclusive” (Nixon, 1993: 40). In his appraisal of procedural fairness in the Integrated Resource Management process, former ombudsman Stephen Owen commented:

Meaningful participation means that individuals, groups, local governments, or any other party with significant and legitimate interests will be recognised in the planning, implementation and conflict resolution processes. ... In other words, a duty is placed on the decision-maker, insofar as is reasonably possible, to appreciate fully the significance of and the foundation for the various individual or group interests (Stephen Owen in Nixon, 1993: 40).

The Ministry of Forests has done considerable work in the area of community consultation and shared decision-making over the last decade. The MOF has made significant progress in their definition of shared decision-making and, in particular, in its direct application to forest management issues that affect First Nation cultural interests:

Consideration Stage 3A: If it appears that the proposed forest management activity may infringe on a potential aboriginal right [i.e. aboriginal rights may include (but are not limited to) fishing, hunting and trapping for food, and the use of land and resources for medicinal, spiritual and ceremonial purposes], the
following steps should be taken to attempt to accommodate the aboriginal right and forest activity:

1. In conjunction with discussions with the First Nation, identify ways to reconcile the aboriginal right and the forest management activity, through accommodation if possible.

2. Consult with affected First Nations and third parties with respect to proposed accommodations (BCMOF, 1999, Aboriginal Rights and Title Appendix, emphasis added).

However, the difficulty that arises from the Ministry of Forest's consultation guidelines is that, as policies, they place enormous discretion in the hands of Forestry officials with little direct incentive or necessity to engage in consultation with First Nation communities. MOF policies are designed to establish performance standards that describe a reasonable course of action when regulations or the law are unclear about how to achieve a desired result (BCMOF, 1999). In effect, policy statements are the MOF's best assessment of what due diligence would require under conditions of extreme uncertainty and, since they cannot supersede a government regulation or statute, they are generally unenforceable by the courts. As such, with little impetus to initiate a complicated, costly and often discordant process of government-First Nation dialogue, MOF and industry officials are inclined to avoid consultation and other forms of negotiation or shared decision-making when Native cultural interests are involved (Nixon, 1993: 27; Stevenson, 1999):

The situation with Louisiana Pacific has been a major concern to the three bands concerned: West Moberly Band, Salteau Band and Halfway Band. The company has been taking out the spruce and pine for the last 30 years right in the middle of the band's hunting and trapping territories without any consultation with the Native communities affected. There has been no consideration of the impact on the communities and no consultation involved with any planning or decisions affecting the areas (Dean Dokie, Headman, Treaty 8 Tribal Association in Nathan, 1993: 162).

Len (Young Adult): Well they're not talking to us for one thing. I mean, they're bound by the court, the Supreme Court in things like Delgamuukw and whatnot to consult. But I mean their interpretation of consultation; it's just non-existent as far as we're concerned...

George (Elder): Well first of all they know that this land is within our territory, it's our, our land, our place of spiritual gathering, food gathering and so forth. And so, at least out of courtesy to say that we would like to cut some of it down or do something and, but, next, but, they never, they weren't ever, our people weren't ever consulted in any way...

In short, the consequences flowing from conventional decision-making processes are often heightened misunderstanding, distrust and conflict. As policy makers and resource managers insulate themselves behind the cloak of scientific expertise and legislative discretion they become further isolated from the individuals whose information, ideas, and support are essential to culturally acceptable and workable decisions. This process puts the district level
resource manager in the middle, not only as a source of information and analysis on which to base decisions, but also as the target of criticism and emotion about the decisions that are eventually rendered (Cummings, 1998; Stankey, 1996: 101).

Land and resource management conflicts involving culturally significant lands are not inevitable. To manage better such disputes, decision-making must be structured to deal with the difficult underlying characteristics that define these issues. More appropriate ways must be found to articulate and act on the diverse values involved in resource planning (Fisher and Ury, 1981; Wondolleck, 1985). In many instances, it is possible to accommodate a full range of interests and values in an effective decision-making process. To do so requires that resource planning processes be more effective at acknowledging, understanding and involving the diversity of interests with a stake in the management of these lands so that, when possible, a credible and acceptable common ground might be achieved (Armour, 1991; Carpenter and Kennedy, 1988; Susskind and Cruickshank, 1987; Susskind, 1995). In the case of cultural values, new methods need to be developed and new opportunities need to be provided for these values to be more meaningfully articulated and integrated into decision-making. At times this common ground is found when stakeholders better understand the needs of the various groups involved and the realm of possible decisions available. At other times, the dialogue that ensues leads to acceptable compromises among the parties, creating common ground where one did not previously exist. The innovative experiments of a number of resource managers described below provide some insight into how forest planners might at least begin trying to identify common interests.

### 7.4 Recommendations

#### 7.4.1 Shared Decision Making: Co-Management

For First Nations, the ideal solution to disruptive confrontations over culturally significant lands is based on shared decision-making processes, often in the form of co-management agreements (Elias, 1991; Roberts, 1994; Robinson and Kassam, 1998: 25; Wolfe-Keddie, 1995). The main idea behind co-management is that local cultural and ecological knowledge is too valuable to ignore, and should be factored into decision-making about timber, fish, wildlife and other resources. The process involves placing the holders of local cultural knowledge in the same room as scientists and resource managers, and then convening a meeting to hear submissions by
project proponents. It is predicated on shared decision-making power and requires governments to relinquish some of their authority to First Nation communities.

Co-management is based on the expectation that the co-operative management of natural resources will facilitate culturally appropriate resource development and self-government for First Nations through community-based management of the resource planning process (Berkes, et al., 1991). As a method of resource sharing that is primarily applicable to First Nation communities, co-management is founded upon the basic premise that all cultures have, at their core, fundamental and defining values that are not easily grasped, conceptualised, or appreciated by people outside the culture (Stevenson, 1998). For instance, most people in Western society possess a relatively detached relationship with the natural world. For those of us that live in an urban environment, many of the commodities that we consume have been harvested from nature, synthesised, packaged for our consumption and, ultimately, are purchased at a location that is separated by large distances from the item's place of origin. As some environmental writers would contend, people in urbanised Western culture do not derive their physical livelihood directly from the natural world and, as such, inhabit a culture that has "alienated men from nature" (White, 1996: 181; Cronon, 1996). It is therefore difficult for many of us to apprehend what traditional land-based societies mean when they assert that the land is "part of them," that it is a vital part of their physical livelihood as well as an important source of cultural identity and spiritual meaning (i.e. Finding 1; White, 1996: 184-5).

By virtue of their close working relationship with the land, it would be reasonable to assume that forest managers possess a deeper affinity for the land-based cultural values of First Nation people. Ironically, however, the typical career path and expectations of the professional forester further complicate the development of cross-cultural communication and understanding. According to a career guidance document published by the Society of American Foresters, "after a few years of on-the-ground experience and crew supervision, foresters typically advance to administrative positions and spend less time outdoors" (SAF, 1988: 1). Professional forestry associations in Canada and the United States are well aware that "advancement" as a forester means putting oneself at a distance from the landscape and its inherent values. It is certainly true in Canada that the more successful a forester is in their profession, the further they are removed from the land (W. Lewis, RPF; Planning Superintendent, Abitibi Consolidated Ltd., personal
communication). Success in forest management essentially means promotion to the head office with the associated trappings of frequent meetings, forest development plan reviews and annual planning budgets. However, concomitant with that success, and the forester's growing detachment from the land, is the added frustration of not understanding why management plans are repeatedly criticised as "disrespectful," particularly when they have followed the scientifically accepted standards of good forest management (i.e. Finding 2; White, 1996: 184). Even more perplexing is how an apparently natural, unmodified forest can possibly retain important cultural and even sacred value to the local First Nation community (i.e. Finding 3; Mohs, 1992: 200).

Co-management is conceived as one means of bringing the holders of traditional cultural and ecological knowledge together with land managers to facilitate cross-cultural communication, build awareness of the values that define a community and their relationship with the land, and develop constructive solutions that satisfy the needs of both Native and non-Native communities (Robinson and Kassam, 1998; Stevenson, 1999: 12; Wolfe-Keddie, 1995). However, as a resource management concept, co-management is a relatively recent idea, and its emergence coincides with the development of new policies – particularly in the Northwest Territories, Ontario, Northern Quebec and Manitoba – that encourage greater local control and involvement in resource development (Notzke, 1994: 301). Moreover, it is a threatening idea to provincial policy makers because it contains the seed of shared resource management and, therefore, a share in the policy making autonomy of provincial cabinets and provincial resource royalties. Nevertheless, provincial receptivity to co-management may change over the coming decade as the Canadian courts are becoming increasingly activist in the cause of the government's duty to consult prior to development with First Nations, and it is now clear that some developments may not proceed without First Nation's endorsement (Robinson, 1999: 24). First Nations like the Cheam are convinced that co-management is one tool in their possession that has great potential to safeguard their cultural interests, as well as provide a vehicle for community economic development:

George (Elder): Well, like I earlier mentioned our Chief and Council, that we have been trying to develop a closer relationship, partnership you can say or co-management...

Darryl (Young Adult): Well what needs to be done, there's ... a number of ways, I mean you can look at co-management, you can look at building relationships with the private landowners, saying well here's what we should do for this reason. ... Taking existing ownership titles, like private land ownership under consideration
and taking wildlife and, and taking wildlife management issues, and taking agricultural management issues all into consideration, it would be co-management at a local level. That would be my, my, what I would suggest you know...

Dan (Adult): I think we should have probably one person that works with the forestry personnel down in Rosedale as part of the planning chain, and whatever they’re looking at should come back to the, to the Band. At least the council that would look at and see if there are changes that are, wouldn’t be good for the band. ... You know, see right now we don’t even, we’re not even in a capacity of co-management or the, they’re planning way around us still.

Acknowledging the special historical role played by First Nations in pre-colonial resource management is a critical first step to any discussion of the principles of co-management. Simply stated, First Nations have always held special rights to resources. Although treaties in most parts of Canada have been interpreted generally to have extinguished many of those rights, the basic right to hunt, fish, and trap has created a lasting bond between First Nation resource harvesters and the resources that are located on their traditional lands (Notzke, 1994: 79). Most First Nations remain attached, both physically and spiritually, to their traditional land areas and, as a result of this relationship, they approach resource sharing with a high degree of cultural and social commitment.

The concept of co-management has emerged in the past decade through efforts by First Nations throughout B.C. to re-assert their traditional or “inherent” rights to control the allocation, conservation and use of their resource base. Co-management represents a powerful tool for First Nation communities, and the way this tool is perceived and implemented will invariably be based on the culture of resource use and sharing that is particular to the First Nation(s) involved (Robinson, 1998, 1999). In general, co-management arrangements allow parties with an interest in the ownership and management of natural resources to share the powers that have traditionally been monopolised by provincial bureaucratic authorities, but to exercise those powers in a manner that is consistent with First Nation cultural interests and values. This means that resource management will be a co-operative venture where the planning, management, allocation, monitoring and enforcement of resource use and conservation will be in accordance with the social, cultural, economic, and spiritual values of local First Nation communities. Thus, it involves a combination of two “pure” management alternatives – i.e. local level and provincial level systems (Berke et al, 1991: 12). Traditionally, these two systems have been in conflict, in large part due to the efforts of provincial governments to preserve their exclusive jurisdiction over
resource planning, and the allocation of public resources by provincial governments to distant private companies with little or no local input or consultation.

Co-management arrangements between First Nations and other parties (i.e. federal, provincial, territorial, municipal governments and other third party interests) vary considerably in character and include (Robinson and Kassam, 1998: 25-30):

- those that are formalised and protected by law,
- formal but not necessarily legally binding agreements, and
- relatively informal arrangements that address specific local land-use and resource management problems.

A key difference between the three types is the legal basis for power sharing between governments, other land and resource users and the First Nation communities.

In the first form of co-management, the First Nation has recognised title to part of the lands and resources in question and legally recognised interests in a wider area, which they can exercise in collaboration with their provincial government partners. These have the potential to be powerful tools to promote First Nation interests. Elaborate decision making systems are put in place, supported by considerable bureaucracies and operational funding. The planning and management boards and commissions that are part of comprehensive land claim settlements are typical of this type of shared decision-making. A second form of co-management is emerging in which governments recognise that First Nations have a claim that is or might be supported by the courts and is therefore sufficiently strong to require governments to arrive at a formal agreement. The agreement may or may not be supported by federal, provincial or territorial legislation, and may or may not be administered by permanent professional bureaucracies. They usually come about when all parties agree on how resource management problems can be resolved. Finally, the third type of co-management is far less elaborate and based on simple agreements with little supporting expertise or funding. They are often responses to specific and localised environmental, cultural, or economic problems. The First Nations involved often have unresolved claims and grievances and very little formal power.

As their experience with co-management arrangements accumulates, First Nation peoples are beginning to ask whether the limitations of co-management outweigh its benefits.

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8 Co-management agreements are most commonly found in provincial jurisdictions east of the Rockies and include the Inuvialuit Game Council (NWT), the NorSask Forest Management License Area (Saskatchewan), James Bay and Northern Quebec Agreement, the Beverly-Kaminuriak Caribou Management Board (NWT, Manitoba and Saskatchewan), and the Gwaii Hanaas Agreement (British Columbia).
given the persistence of pre-existing power relationships and the prevalence of provincial bureaucratic notions about how cultural issues should be handled in the context resource management processes. The case of the Wendaban Stewardship Authority in the Temagami district of Ontario illustrates some of the benefits and limitations of co-management associated with forest management.

Co-Management Case Study: The Wendaban Stewardship Authority
The Teme-Augama Anishnabai (TAA), successive provincial governments, international and local logging interests, and the environmental movement have been in a prolonged and sometimes violent struggle over unresolved land-claims and the use of old-growth red and white pine forest in the Lake Temagami area of northeastern Ontario (Laronde, 1993; Shute, 1994; Shute and Knight, 1995; Wolfe-Keddie, 1995). The TAA provide a particularly interesting and relevant case study in the implementation of resource co-management because, like many First Nations in British Columbia, the TAA have occupied their traditional lands without having settled a treaty of co-existence with either the federal or the provincial government (Shute and Knight, 1995). Furthermore, like many First Nations in B.C., the traditional homeland of the TAA has been significantly exploited for its resource wealth while still subject to comprehensive land claims and protests (See Chapter 3, Section 3.2.2).

In their land claim with the province of Ontario, the Teme-Augama Anishnabai have identified fourteen family territories in their central homeland of n'Daki Menan with each territory traditionally possessing a central village site and several outpost camps (Laronde, 1993). Each family has historically been responsible for the care of its territory and has the right to use its resources, but the land is held by all and traditional law forbids individuals from trading or selling lands. The TAA were omitted from the 1850 Robinson-Huron Treaty which many of their Algonquin and Ojibway neighbours signed with Ontario. In 1877, the chief petitioned the Crown for a treaty but the Ontario government, which controlled Crown lands, refused to transfer the area because there was too much valuable timber on the proposed reserve. In the absence of a treaty which formally ceded a portion of n'Daki Menan, the province embarked on a program of economic development that paralleled initiatives in British Columbia at the time (See Chapter 3), and allowed tourism, mining and forestry to flourish in Temagami for seventy to eighty years.

In 1972, the TAA placed a legal caution on the 110 townships that comprise the n'Daki Menan, claiming continued doubt about land title in the area because no treaty had been signed
with the First Nation inhabitants. In 1984, Justice Steele of the Ontario Supreme Court ruled that it is immaterial whether or not First Nation peoples were represented at the treaty negotiations because "aboriginal rights can be unilaterally extinguished by the sovereign power" a ruling that was upheld by the Ontario Court of Appeals in 1989. Logging of the area continued, and by the mid 1980s the last stands of old-growth red and white pine were scheduled to be cut. Environmentalists and wilderness canoers began a roadblock, which was taken over in 1988 by the Teme-Augama Anishnabai as the traditional owners of the land. After court hearings, appeals, and another blockade in 1989, the provincial government conceded to the First Nation's demands and signed a Memorandum of Understanding with the TAA in 1990. Included in the terms of the Memorandum, the province agreed to negotiate a "treaty of co-existence," establish a Native/Non-Native stewardship council over four townships in the traditional homeland, and carry out bilateral consultations for forest management whereby the TAA would review provincial timber management plans and submit recommendations.

In 1991, the TAA and the Ontario government formally established the Wendaban Stewardship Authority (the Authority) to manage the lands and resources in the heart of the Temagami old-growth forest. The Authority has the power to grant resource extraction licenses, and possesses some funding, albeit limited. Most notably, it is bound by four basic principles: sustained life, sustainable development, co-existence, and public participation (Ross, 1993: 102):

The stewardship principle of sustained life says that the land is boss, that our decisions have to be related to the ability of the land to maintain its integrity, to be healthy, to sustain life (Laronde, 1993: 97).

The Authority has drawn up guidelines in timber management plans to protect cultural and heritage sites, hunting camps sites, ancient village sites, and other significant social and cultural places. On the ecological front, it has instituted wetlands guidelines "because the current timber management plans ignore the wholeness of life on the land" (Laronde, 1993: 98). It has produced a forest stewardship plan that considers all possible resource uses that the land – economic, social, and spiritual – is capable of providing within the limits of sustainability.

On the negative side, the Teme-Augama Anishnabai have difficulty working within the designated land base, which is only part of their traditional area and is, in their view, too small to be a natural biological unit. They also have difficulty working within the framework of timber management plans "in which we have absolutely no faith ... Timber management is a very narrow
way of managing the land; its primary objective, as is stated in the plans themselves, is to supply the industry” (Laronde, 1993: 97). In addition, case studies of the Wendaban Stewardship Authority underscore the fact that First Nation communities and the nation states with which they must negotiate are not equal entities (Shute, 1994; Shute and Knight, 1995; Stevenson, 1999: 10). After decades of oppression and forced assimilation, First Nations are attempting to recuperate and rebuild many aspects of their cultures and societies. However, in the process of negotiating co-operative management agreements, they simply do not have the resources (financial, human, etc.) or constitutional support to negotiate co-management agreements on an equal footing. It is the government (provincial or federal) that normally supplies the resources needed to negotiate and implement such agreements, and it controls the “purse strings”, the agenda and the negotiation process from beginning to end. Thus, First Nation communities like the TAA complain of the continuing uphill struggle with their counterparts in government and industry to recognise and accommodate their cultural interests, which Western planners continue to regarded as too “anecdotal” or “subjective” to be legitimate resource management concerns.

In spite of these limitations, the demand for co-management as an approach to resource planning continues to be made by First Nation communities such as the Cheam. In recent years, First Nation groups in British Columbia (e.g. the Nuu-chah-nulth, the Haida and the Shuswap) have argued that the province has mismanaged lands and resources, that they have better and more sustainable land and resource management practices than the state, and have negotiated co-management agreements grounded in principles of respect for the land (Notzke, 1994: 249; Robinson, 1999). However, considering the difficulty that the TAA have experienced breaking down cultural barriers with their non-aboriginal counterparts, I would recommend that First Nations such as the Cheam pursue some variant of co-management with the understanding that co-management may only be a partial solution to the problem of accommodating cultural values in forest management. As the discussion in the following section posits, part of the reason why Western resource managers tend to dismiss indigenous cultural knowledge may not be because such information is perceived as unimportant to land management. Rather, non-aboriginal land managers lack the requisite conceptual or analytical framework that allows them to tap into and systematically incorporate cultural values in resource management decisions (Ndubisi, 1982; Simon, 1984; Stankey, 1996; Wolfe and Lindley, 1983; Wolfe-Keddie, 1995). The conceptual
framework described in the following section was developed in large part to fill this apparent gap in land management practice.

7.4.2 A Socio-Cultural Planning and Management Framework

Although many forest managers continue to treat land-based cultural values with some scepticism, some managers have come to realise that forestry cannot be narrowly framed as a technical-scientific endeavour, and that an approach to forest management needs to be found that is both ecologically responsible – i.e. founded upon good science – and culturally acceptable – i.e. commands the support and understanding of the community (Simon, 1984; Stankey, 1996; Wolfe-Keddie, 1995). However, though the social and cultural aspects of the natural environment are becoming increasingly important in resource management, in the absence of a systematic framework or methodology, they are more difficult for resource managers to incorporate into planning practice. During the 1970's planning techniques for biophysical and ecological inputs increased in sophistication and were integrated into the standard practice of environmental planning and design – e.g. integrated resource management, comprehensive planning, etc (Simon, 1984: 37). At the same time, there was considerable discussion of and research into the spiritual, social and psychological aspects of the environment. Despite the institutionalisation of participatory provisions in other sectors of environmental planning (i.e. urban and regional planning, community design, landscape design, etc.), the incorporation of cultural inputs into the development of forest management plans continues to be largely outside the realm of normal practice (Redmond, 1996; Simon, 1984; Willems-Braun, 1997; Wolfe and Lindley, 1983).

The difficulty appears to stem from the fact that resource management and environmental planning practice lacks an explicit, coherent and systematic method of incorporating cultural variables into the planning process. For instance, in 1981 the Department of Indian and Northern Affairs (DIAN) attempted to increase community control over the planning process by introducing comprehensive planning and allocating funds for the hiring of planning consultants. Guidelines issued to consultants stated that "...special consideration must be given to cultural, social and traditional characteristics which differentiate the community requirements from those of non-Indians" (Rogers, 1981: 5). The guidelines contained detailed outlines explaining how to collect and address a broad range of physical and economic planning inputs but similar instructions pertaining to cultural and social information were conspicuously absent. The problem was
compounded by the dearth of professional planners with any understanding of reserve life or the complexity of First Nations culture.

An opportunity to remedy this gap in planning knowledge in an applied situation arose in the mid 1980s when the University of Guelph was asked by the Burwash Native Peoples Project, a consortium of Ojibway reserves near Sudbury, Ontario who were convinced that ways must be found to deal with the appalling level of social breakdown in their communities. The Burwash Project members believed that traditional cultural values are central to the growth and development of the individual First Nation person and to the preservation of group identity. Their value system is deeply concerned with how people dwell and their rootedness in the earth. They were seeking an environmental management framework that appropriates the best techniques from Western planning theory and practice while, at the same time, respecting aboriginal cultural interests. Ultimately, this framework was intended to allow Ojibway community members to plan their own settlements and resources using contemporary planning methodologies, yet in a "culturally sensitive manner" (Wolfe-Keddie, 1992: 145; Simon, 1984).

Led by professors Jackie Wolfe-Keddie and Joan Simon, the research team scoured the environmental planning literature for the theoretical underpinnings of what they termed a "socio-cultural" planning and management approach. Kevin Lynch's "good settlement" concept expressed the fundamental philosophy that the Burwash group was seeking. A good settlement, according to Lynch, is one that is "meaningful to its inhabitants" (Lynch, 1981: 131). According to Lynch, "meaning derives from elements linked to events and places in a coherent mental representation of time and space." According to the Burwash group, the fundamental problem with conventional environmental planning practice is the failure of most planners to recognise that the treatments or disturbances that they impose upon the landscape can alter the meanings that the local inhabitants derive from it (Simon, 1984: 38; Wolfe-Keddie, 1994). Furthermore, First Nations attach values to elements in the natural environment that most non-Native planners do not recognise as being important. The most problematic aspect of the integration of cultural theory into design practice is the recognition that environmental planners and resource managers often have cultural backgrounds that are considerably different from that of their client groups. Stemming from these considerations, non-Native planners or resource managers acting on their
own cannot simply intuit cultural values and plan landscapes with meanings and associations that resonate with members of another group.

Moreover, over the course of their research, the Burwash team came to realise that there was considerable cultural heterogeneity within the local Ojibway communities, both in their appreciation for and in their application of cultural knowledge (Simon, 1984). In essence, First Nations exhibit spectrums of behavioural or cultural diversity that are sometimes not readily perceived or acknowledged by people outside the community (i.e. Finding 6; Redmond, 1999: 128). Thus, the framework that the Burwash group developed was premised on the recognition that there are fundamental divisions both within and between societies arising from differences in values and cultural viewpoints (Wolfe-Keddie, 1994; Brownstone, 1984). Socio-cultural planning requires that these divisions are acknowledged and that, when working for their own communities, First Nation planners themselves will need to engage in some consultation themselves in order to tap into the full range of culturally based environmental values, and express them in a way that is useful for environmental decision-making (Ndubisi, 1982; Simon, 1984, 1991; Wolfe-Keddie, 1994). In this respect, the framework developed by professors Simon and Wolfe-Keddie provides a systematic method of incorporating cultural values into resource management decisions that is practical not only for Western resource managers in their work with First Nation people (i.e. either with First Nations as ‘clients’ or as co-management ‘partners’), but for aboriginal planners working for their own communities as well.

The approach developed involves structuring cultural information into three typological categories:

1. Traditional or historic expressions of place value and environmental meaning;
2. Conceptions of the ideal future environment;
3. Perceptions of the current landscape or project site.

In category one, questions of place meaning, or what the Burwash group called “placedness,” are explored from the group’s historic activities, as well as the physical attributes of the environments that they have traditionally lived in and incorporated into their myths (Simon, 1991: 40). This category helps to make explicit, both to the planner and the community, the spatial and environmental patterns that distinguish the culture. In effect, category one provides background information about the community’s traditional way-of-life and in particular addresses aspects of their historic lifestyles that were physically manifested in their past environment. For instance,
one theme that emerged from the Burwash project, from both the historical and mythological information, was that traditional settlements were located on land "where food grows on water" (Simon, 1991: 41). Discussions with elders confirmed that this is a value that persists to this day. It is a tangible or spatial manifestation of the Ojibway symbolism of water as the "giver of life." The Burwash team understood that this category was capable of providing them with culturally based spatial cues that could be translated into tangible design responses. The design response in this particular instance was to recognise that Ojibway settlements should be located near water, preferably accessible to stands of wild rice.

Category two structures information pertaining to the cultural definition of environmental quality, and is expressed through spatial images of the "ideal" environment by members of the community (Jolande, 1942; Lynch, 1972, 1981; Dubos, 1961; Simon, 1984, 1991). This information category proceeded in three steps. First, though a set of open-ended interviews, the Burwash team discussed with community members their ideas and conceptions of the ideal environment. Second, a series of maps and planimetric sketches of both actual and imagined ideal environments were prepared and project participants were asked to provide their responses to the images and discuss the landscape features that are important to them. In the final step, responses to the maps and sketches were then abstracted to compare similarities and differences between reactions to the images and the participants' earlier expressions of ideal environmental conditions. Community members were interviewed a second time to explore the underlying basis for any apparent discrepancies between their verbal idealisations and their cognitive responses to the maps in order to tap further into their concepts of environmental quality.

Category three information relates conceptions of environmental quality to the particular site and planning project (Simon, 1991: 43; Wolfe-Keddie, 1994). Information is collected from the community regarding their experiences of the landscape; features that are considered beautiful, best places to live, productive hunting areas, spiritually significant places, and so on. In other words, people and setting are examined together in this category because the landscape will have significant traditional, symbolic and social meanings that are specific to the cultural group. One purpose of this category of information is to heighten the planner's awareness of how others value, perceive and use their environment. Collecting this information involves documenting the people's experience of place on site as participants are taken into the field for
"environmental walks" (Simon, 1991: 43). Comments about specific features are keyed to small-scale site plans and significant physical attributes are photographed. Probing questions can be used to clarify the physical attributes of the site that would support or inhibit particular cultural activities.

The structure of information collection inherent in this process reflects a circular flow of time. Category one addresses the lived experiences and values gathered through time, and their implication for the changing present and future. Category two deals with the present values and images projecting into the future by relating to an ideal environment. Category three links the past and future images in a lived experience of the present. In effect, this documentation procedure established a participatory research and planning process. The community was actively involved in the data collection, interpretation and analysis. An important role reversal occurs to the extent that the community becomes the expert as their “terms of exchange” take precedence.

Although decision-making frameworks such as co-management are not new to forest management, socio-cultural planning is a new and as yet untested approach to forestry, particularly in jurisdictions such as British Columbia. Drawing to a large extent from my research findings and understanding of the planning literature, the value of a socio-cultural framework to the Cheam and, for that matter, other First Nations in British Columbia appears to reside in three factors:

1. It is community driven but recognises the existence of internal cultural divisions within First Nation communities (i.e. Finding 6);
2. It relies on visual media to dialogue with community members about spatial conceptions of the "ideal" environment (i.e. Finding 5);
3. It confirms the importance of culturally-based (and culturally meaningful) aesthetic and design considerations in the planning and management of First Nation landscapes (i.e. Finding 4).

First, cultural groups have arranged their settlements and altered their environments in ways that reflect and support their particular cultural values. Much of the contemporary literature on landscape architecture and environmental planning is devoted to attempting to infuse into planned landscapes the vitality and meaning found in environments that have been managed through the “vernacular tradition” – i.e. according to local tastes and customs (Condon, 1988; Olin, 1988: 149; Simon, 1984). However, the world is littered with community developments and landscape modifications that ignore the cultural needs of the inhabitants, largely because changes have
been imposed from the outside by people with little regard for or familiarity with the culture of the local community. The socio-cultural planning framework developed by Simon and Wolfe-Keddie recognises this fundamental problem with conventional planning practice and posits that a successful approach to culturally appropriate landscape and resource planning needs to involve the community in all phases of planning and management, including data collection, interpretation, analysis, design and implementation (Simon, 1992:44).

Participatory approaches are not new to environmental planning practice. However, the framework developed by Simon and Wolfe-Keddie is unusual in its affirmation that community-based planning needs to recognise the internal cultural divisions that exist within indigenous societies. Levels of cultural knowledge vary to a noticeable degree within the Burwash Ojibway and Cheam communities, and the socio-cultural planning framework points to the need for a planning process that is guided or "facilitated" by trained local professionals. In effect, the socio-cultural planning framework places the responsibility for managing the planning process in the hands of technically trained, local individuals who are familiar with the traditions and lifestyle patterns of their community. However, because they are members of a particular band, it cannot be assumed that they can plan their settlements and landscapes according to standards that others in their community would consider "culturally appropriate." Differences in lifestyle, religious beliefs and social experiences (e.g. residential schooling, employment, etc.) pervade First Nation societies to the same extent that they do in the various cultures and sub-cultures that comprise Western society. The framework developed by Simon and Wolfe-Keddie for the Burwash Ojibway communities was devised with this basic cultural premise in mind. In essence, local aboriginal planners do the least amount of planning work. Instead, the socio-cultural planning framework provides a method through which local planners acting as facilitators can consult with the cultural experts of their community to formulate solutions to the complex relationships between the physical environment and the social and economic considerations of lifestyle.

In addition, socio-cultural planning deals with cognitive images, and the mapping techniques used by the Burwash group affirm the utility of visual imagery in gathering cultural and ecological data. In the Burwash project, maps of both actual and managed – i.e. altered – environments were prepared, and a series of questions were asked of community members to discuss land-uses and traditional patterns of cultural activity on the land, as well as their
aspirations for the landscape and their settlements. Cartographic media of varying levels of abstraction have been used extensively with First Nations as an important part of traditional land-use and occupancy surveys to identify resource gathering areas, ancient settlement sites, burial grounds and other culturally significant places (Brody, 1988; Crerar, 1999). Although Simon and Wolfe-Keddie’s work with the Burwash group provides another meaningful demonstration of the use of “what it might look like” analysis (Ervin, 1992) using visual imagery with a First Nation community, I believe that Finding 5 in this study and similar research results by vanZuidam (1986), Ervin (1992), Duerden (1993), and Crerar (1999) point to the limitations of cartographic media in land-use planning and cultural use research with First Nation communities.

Thus, I would recommend the socio-cultural framework (as developed by professors Simon and Wolfe-Keddie) for First Nations such as the Cheam with two caveats in mind. First, Native groups are turning in ever-greater numbers to the cartographic techniques and technologies (i.e. GIS) of Western science as a means of expressing and asserting their cultural relationship with the land (See Chapter 2, Sections 2.5.2 and 2.5.3). They should do so with the knowledge that GIS mapping, coupled with the photo-realistic landscape visualisation, appears to be a more effective means of incorporating cultural perceptions and knowledge in resource management processes that affect land, water, wildlife and, ultimately, people. This recommendation may, in itself, be the most innovative and far-reaching result of my research. Few researchers and professional land managers appreciate the significance of using visual media that is clear and understandable in planning situations where the cultural interests of First Nation communities are involved. Indeed this study may be the first of its kind to document systematically and recommend the use of photo-realistic simulation media by an indigenous group. However, this recommendation is tempered by the caveat that landscape visualisation is a complicated and expensive technology, one that most First Nation communities have neither the financial resources nor the technical expertise to implement. Most aboriginal communities and organisations will therefore need to strengthen their capacity with computer-based planning tools such as GIS and landscape visualisation, often through the assistance of granting agencies and educational institutions that can lend their expertise in these technologies.9

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9 For example, I am currently working with Dr. Sheppard to implement an integrated GIS/landscape visualisation system with the Shuswap Nation Tribal Council (SNTC). Having secured the funding from a federal granting agency, the SNTC has asked that we prepare a needs assessment and training program as part of a recent capacity development initiative.
Second, landscape visualisation has the potential to be a very helpful tool for communicating ideas within and across cultural boundaries, but visualisation techniques that approach the realism of photography come very close to making a promise, or arousing a high level of expectation about what will actually be achieved. This raises serious ethical concerns because of the technology's potential to mislead or misinform community stakeholders. Whether the technology is being used by Native or non-Native practitioners, simulation interpreters will continue to encounter questions of potential bias and attempted persuasion, as long as simulations are prepared with artistic licence and in the absence of explicit, professionally sanctioned guidelines (Sheppard, 1989: 168, 1999; McQuillan, 1998; See Chapter 5, Section 5.2.2). Until the time comes when professional standards for simulation preparation become an accepted part of planning and resource management practice, both Native and non-Native simulation preparers should be willing to subject their work to open and objective appraisal.

Finally, the Burwash project and Finding 4 from this research suggest that culturally significant landscapes do not have to be, like the Western conception of wilderness, "untramelled by man" (DiChiro, 1996). If discussions with First Nation people about ecosystem management begin to reveal that certain vegetative patterns are ecologically productive and pleasing to human aesthetic senses as well, then environmental planners and landscape managers should not be afraid to replicate them. For instance, in the disciplines of environmental planning and design, there are fundamental design principles such as the notion that horizontal masses suggest repose and stability and that vertical ones imply elation or aspiration (Condon, 1988: 81-9). Nature is often the source of these design patterns, and they can be sought out and used as part of any scheme that involves some transformation of the landscape. Similarly, we can learn from other cultures the spatial patterns that can enhance the human experience of place. From the Cheam, the people interviewed suggested that thickly vegetated, more natural environments create a quiet, contemplative setting that is more conducive to transcendent experiences, feelings of refuge and aesthetic inspiration. In like manner, the Burwash team discovered that design values could be synthesised from traditional Ojibway land ethics and contemporary cultural and spiritual beliefs surrounding the choice of settlement location (Simon, 1992: 44-5). Thus, I would argue that considerations of human aesthetics and landscape design do have a part to play in land management processes involving First Nations. The purpose of
design in this sense is not intended primarily to make places look good, however it is meant to help people feel connected with the physical and cultural world from which they have originated. In essence, landscape design is the means through which the esoteric values and beliefs of culture are translated into material reality and, in the process, heightens the way that we experience the world and strengthens our attachment with particular places. The results of the Burwash project suggest that the socio-cultural framework may be an invaluable means through which Native groups like the Cheam can translate their cultural values and traditions into tangible landscape form. Precisely how effective this framework will be in landscape planning processes involving "hard" resource values such as timber and aquatic habitat is uncertain, and demands further research (See Section 7.5).

7.4.3 Education

Earlier in section 7.3, I argued that forest managers are often confronted with development projects and land management plans where a central objective is to address the cultural values of First Nation people. However, such an objective is not a simple task for most scientifically trained North American forest managers who have been educated to perceive the environment as a resource or commodity with a fairly narrow spectrum of values (e.g. commercial, recreational, and/or ecological). That very training may leave a land manager poorly equipped to understand and care for non-economic or non-ecological values, particularly those that are largely cultural in nature. In effect, caring for cultural values in land management means nothing short of rethinking and retooling the assumptions that professional land-use planners bring to their work, beginning with the system of education.

Professional foresters in search of new knowledge may logically turn to a college or university program. However, a cursory survey of course descriptions for conventional post-secondary programs in natural resource management reveals, at best, only a slight interest in cultural values as a serious topic of academic pursuit. Established universities and colleges can hardly be expected to promote sensitivity to cultural values, because the curricula of educational institutions at all levels largely mirror the dominant society's values. According to Harrington (1990: 239):

Of all the areas in which we have been remiss, the area of education is the one which has spun its wheels most deeply into a morass of trivia. Anchored to the trailing edge of culture, the educational system has ignored all signs of decay of the planet and toddled willingly behind the purveyors of the idea that affluence and progress are the same thing ... The educational machine, at this point,
seems both unaware of the needs of its students and hopelessly shackled to the prevailing commercial mentality.

Individual instructors and small programs such as the University of Calgary's Northern Planning and Development Theme School, and the Aboriginal Land-Use Planning Certificate program led by Dr. Peter Boothroyd at UBC, appear to be trying to incorporate cultural values into formal land management education (Robinson, 1999: 23; Boothroyd, 1986). However, the North American pattern of education in departments of resource management emphasises quantitative, scientific modes of thought with a focus on the economic or ecological value of natural systems (McCormack, 1998: 29). As Cheam subsistence values and their economic interest in timber resources demonstrates, these ways of thinking are not necessarily incompatible. However, the focus of post-secondary institutions is predicated firmly on the development of technical and scientific expertise, skills that do not reflect the larger more esoteric array of cultural values that First Nations such as the Cheam derive from their environment - e.g. social, spiritual and identity based values. Professional biases coupled with the strong influence over curriculum by industry and corporations create substantial obstacles for land management professionals seeking to be sensitised to cultural values through existing educational institutions.

Clearly, if professional foresters are to be effective in understanding and accommodating expressions of cultural value in forest management something needs to change in forestry education. Although cultural education in itself is not necessarily a new and unprecedented recommendation, the particulars of what forest managers need to learn, largely as a consequence of the findings of this research, are indeed new and innovative. In essence, based on the insights that I have gleaned from my interactions with the Cheam community, there are three important lessons of cross-cultural understanding that should be imparted to future generations of professional foresters:

1. Protecting cultural values involves much more than protecting one tree, one grave site, or one fishing spot along a creek. Protecting cultural values or any other value means using the land respectfully; protecting whole ecosystems from a single tree to an entire watershed.

For forest planners, this lesson involves thinking in terms of forest landscapes rather than commodities, and in terms of interactions between ecosystems rather than discrete sites. For instance, a forester may learn that a particular spot in a stream within an ancient cedar grove is a traditional smilha initiation site that has been used for ritual cleansing over several generations.
Protecting that location, and perhaps the few metres around it, may not preserve the value of the setting for the people who use it. It will also be necessary to protect the full length of the stream itself, all the way up to its headwaters, in order to preserve the purity of the water, the continuity of fish stocks and the spirits that are present at the site. As the Cheam have demonstrated (Finding 4), it may also be necessary to safeguard the aesthetic quality of the ritual bathing site, both what can be seen and heard from the stream to preserve the quiet, meditative quality of the setting.

Ultimately, the forest manager will discover that places with cultural or spiritual significance do not have discrete borders (i.e. Finding 3 – "...whole landscapes are sacred..."). In order to protect a culturally significant place that may appear to be only a few square metres, the planner must strive to maintain the functioning of the whole landscape. One of the most important concepts to be learned from the Cheam people is that "everything is everywhere" (Will, personal communication). The values that are inherent in the land are not enclosed in neat boundaries; they are distributed in repeating patterns throughout a landscape. Therefore, if everything is interconnected, then what is done in one place will affect the activities or experiences that are possible in another. The forester cannot clearcut and degrade the land for timber in one location and still expect the local community to catch salmon or find spiritual renewal in an adjacent part of the landscape. In effect, resource managers cannot draw a boundary on a map and say, 'you keep your cultural practices on this side of the line, and we will keep our logging machinery on that side.' If everything is everywhere, the result, in terms of planning and land-use is that every place must be treated respectfully. Thus, every landscape must be protected and maintained as a fully functioning ecosystem at all times to ensure that the harvesting activities that occur in one part of the landscape will not compromise or detract from other uses that take place nearby. Forest managers cannot simply draw neat borders on a map and simply assert that it is acceptable to maintain a functioning ecosystem on one side of the line and compromise it on the other.

2. Forest managers are more likely to succeed in their effort to protect spiritual values if they are open to the wisdom of local people who are close to the land.

For forest managers, sensitivity to cultural values does not mean adopting someone else's belief system. However, it does mean being sensitive to other belief systems and respecting the cultural and ecological knowledge that others can offer. In their effort to
incorporate traditional cultural knowledge into resource management plans, forestry professionals confront two barriers. The first obstacle is political in nature. The decision-making process for forest development plans and environmental assessments would have to be altered significantly to accommodate the use of traditional knowledge. Shared decision-making processes such as co-management may be the only effective means of communicating cultural information that is typically unfamiliar and cryptic to most forest managers. However, shared decision-making processes have the potential to disrupt the considerable policy making discretion and autonomy that is customarily enjoyed by officials of the BC Forest Service (Wilson, 1998: 346). Therefore, as a means of reconciling cultural knowledge with scientific approaches to resource planning, co-management may not be politically palatable to forest policy makers and land managers in all cases.

The second and perhaps most overwhelming barrier is the scepticism within the scientific community about the credibility or reliability of indigenous information. In general, forest managers rely primarily on 'hard' data from biophysical inventories and assessments. This reliance on 'objective' data is most prevalent among scientists on policy or regulatory committees who tend to dismiss traditional knowledge as subjective, anecdotal or unscientific. Moreover, it cannot simply be assumed that all impediments to creating shared decision-making regimes stem from purely political or scientific grounds. Also at play are extreme (sometimes racist) arguments which hold that First Nation people 'are not scientists', that they are illiterate, that they work only with anecdotal evidence, and that they are now 'too removed from the land' to manage ecosystems and wildlife populations (Robinson and Kassam, 1998: 27).

Cultural values cannot "live with science" in any simple way. Too often land-based cultural values are eclipsed by the reductionist idea that if things cannot be quantified, they do not exist. As Rowe (1990: 89-90) explains it:

The rational mind of science has a terrible failing. If it cannot cope with aspects of experience that are unmeasurable, it declares them meaningless, unimportant. They are unsubstantial epiphenomena. Feelings, the promptings of emotions, are distrusted because no white-coated savant has corked the incontrovertible evidence of them in a test tube. The better humanity becomes at science and its kind of rationality, the less room remains for non-cognitive things of the spirit. Values still call society's shots, but they are debased to those values that can live with science and those with which science can live.

Although it may be difficult for the scientific disciplines of ecology, forest engineering or economics to capture cultural values objectively, they can nonetheless be experienced. This
suggests that forest managers need to trust their own perceptions and observations, and get out of the classrooms and offices to experience the interactions of local people with their environment and the meanings that they derive from it. Computer graphics and thick reports are useful but distant surrogates for genuine cultural encounters. As I have learned from my interactions with the Cheam people, there is no real substitute for being there, face-to-face with the real context, learning to understand it and the people who care about it in all dimensions. As environmental educator Carl Reidel (1992: 19) expressed it:

We can only be responsible professionals if we have first-hand experience of the world we teach about or advocate. So go have a look. See for yourself.

3. To base all learning and management on an appreciation for what is meant by a "sense of place."

A crippling disadvantage of many corporate, governmental and "upwardly mobile" career lifestyles is the rootlessness that is created by frequent transfers to new assignments in other locations. Complicating this trend for forest managers (even for those who live in a place they love) are government and corporate land-use policies that tend to trivialise or ignore the sense of place that is expressed by local inhabitants. The result is a system that categorises the environment into discrete zones where the landscape is defined by inventories and databases, and the legacy of human occupation and use of the landscape is largely superfluous or irrelevant to the process of land-use planning.

By contrast, members of traditional cultures tend to stay in the place where they grew up, or at least tend to stay focused on their place of origin, even if they are forced to move (Lewis, P., 1993; McClellan, 1987). People in any culture who possess a strong sense of place know a great deal about the landscape where they live. They know its landforms and the stories and legends that are tied to places, weather patterns, vegetation communities, animal migrations, the history of human settlement and the spirits that continue to inhabit the landscape. They know these things not as data in an inventory but as direct personal experience. For many traditional cultures, sense of place is strongly bound up with cultural values. If a resource manager does not possess a personal sense of place, or respect that of others, it is unlikely that he or she can understand the cultural values expressed by any other group. Furthermore, if a land manager does not comprehend a sense of place in regard to any area being managed, it is incumbent upon him or her to learn about it from local elders and long-time inhabitants.
In general, by examining the issue of educating and sensitising professional foresters to land-based cultural values, there is a fundamental expectation that all forestry professionals should ultimately aspire to a direct, first-hand cultural experience of the land with the people who know and actively practice their traditional way-of-life. Although education is a valuable prelude to such experiences, professional educators cannot force or schedule learning about cultural values. If a forest manager truly wants to learn about land-based cultural values, then he or she must go to the forest and talk to an elder, or another community member, with an open mind.

7.5 Concluding Remarks

7.5.1 Outlook for the Future

Those who are working to preserve cultural landscapes – i.e. local communities, academics and a handful of planning professionals – are confronted with some formidable challenges. Today, fewer cultural places are being used by traditional people in the United States and Canada, and most of those sites are currently endangered by development projects (Bobbiwash, 1998: 203; Cummings, 1998; Mohs, 1987, 1990). What remains of both the past and the living traditions of North America’s land-based cultures is being threatened by rampant energy development, extractive industries such as timber and mining, and by unbridled urban development, tourism and recreational use.

From a legal perspective, the road is very narrow and precarious; there are very few legal avenues available that protect culturally significant lands. Most of the cultural sites that we hear about are on public land, and thus the responsibility for these sites rests with public agencies, instead of Native communities. Cultural sites on private lands are subject to the whim of the landowners. Laws that govern our historical heritage cover sites on both private and public land, but they are not implemented in a manner that recognises and preserves the special characteristics of traditional cultural lands. The cultural landscape of British Columbia is primarily a matter of the public trust, but given our province’s history of cultural repression and religious persecution against First Nation traditional practices (Carlson, 1999: 88), the fact that over 50 percent of the documented cultural sites in Sto:lo territory are threatened by urban and resource development should be no surprise (See Chapter 7, p. 238). The British Columbia public itself has not shown a tremendous concern for the preservation of land-based cultures and their traditional landscapes.
In principle at least, if our system of government and resource planning is to be functional in the realm of forest use and cultural preservation, then First Nation communities that are affected by forestry decisions should be afforded a reasonable opportunity to participate in forest management decision-making. Nowhere is this ability to participate needed more than in issues regarding lands and resources that are critical to aboriginal cultures and identities, and often difficult for non-aboriginal land managers to apprehend. Co-management agreements that possess a systematic framework for incorporating these "hard-to-define" values in decision-making (Wondolleck, 1998), complemented by government and industry partners that have been sensitised to cultural values (See Figure 7.1, following page), are widely touted in the planning and academic literature as the best means of accommodating aboriginal values with Western management systems (Berkes, 1993; Robinson and Kassam, 1998; Robinson, 1999; Shute, 1994; Shute; Stevenson, 1999; Wolfe, 1994). However, the difficulty with shared decision-making arrangements such as co-management resides in the fact that, in British Columbia, resource policy is formulated in cabinet and in the surrounding bureaucratic agencies with strict adherence to the principles of cabinet secrecy and bureaucratic autonomy over resource management decision processes (Drushka, 1999: 121; Nixon, 1993; Wilson, 1998). Graham Bruce, minister of municipal affairs in the former Vander Zalm government, once wrote that British Columbia is an "arrested parliamentary democracy" (Drushka, 1999: 119). He meant that even when compared with the great "Mother of Parliaments" in Great Britain, decision-making processes in this and other Canadian provinces have not evolved to keep pace with changing times. Moreover,
agencies such as the Ministry of Forests possess enormous discretionary powers, and neither First Nations, the broader public, nor Members of the Legislative Assembly have much knowledge of how they are exercised (Nixon, 1993: 28). For instance, prior to his term as chair of the BC Legislature's Select Standing Committee on Forests and Lands, Graham Bruce commented that his committee had failed to conduct almost any public business during the previous 20 years. In effect, the role of elected members of the legislature had been diminished in favour of executive discretion by individual cabinet ministers. In the legislature itself, with the exception of a cursory examination of forestry issues during the annual forest ministry spending estimates debate, matters concerning forests and their dependent industries continue to be dealt with entirely outside the legislature.

In theory, the strength of executive power inherent in British Columbia's strong cabinet-weak legislature system does create considerable potential for decisive and co-ordinated action (Nixon, 1993; Wilson, 1998). Concentrated cabinet power translates into structural flexibility, allowing ministers considerable latitude to explore alternative ways to manage conflict, cope with information deficiencies, and expand opportunities for community input. However, the problems with this system are significant. Forest policy is made by cabinet and senior Ministry of Forests officials under strict rules of bureaucratic autonomy and secrecy that preclude public disclosure of cabinet level decision processes. The weak, part-time legislature does not allow opposition parties an adequate base from which to expose information about cabinet decisions (Wilson, 1987). Public accountability has increased as First Nations, environmentalists, forest workers and others have expanded their capacities for scrutiny. For the most part, however, decision-making processes unfold behind the scenes with a minimal degree of legislative and public review, and almost no judicial review (Drushka, 1999: 126). To a large extent, BC forest policy continues to be formulated and implemented in the shadows and the prospects for significant, government-initiated changes to the forest decision-making process in BC appears somewhat bleak. In short, co-management or shared decision-making is a threatening idea to most provincial legislatures because it contains the seed of substantial reductions in the decision-making autonomy of provincial cabinets and district managers, as well as a share in provincial resource royalties (Stevenson, 1999: 24).
There are indications, however, that change is underway, and that increasingly First Nations may be in a position to exert influence over the way non-aboriginal people use the land and its resources. At the lowest level this is happening in all joint-management regimes (co-management, joint ventures, etc.), and one tactic employed by First Nations to exercise a share of control over land and resources is the assertion of rights (Mohs, 1992; Notzke, 1994: 18). When ordinary measures such as negotiation and litigation have failed (or take too long to produce results), Native groups resort to extraordinary tactics ostensibly to defy established authority and assert their own control. In some instances, tactics such as blockades or unilateral resource control have been met with considerable success:

- One of the early co-management agreements was signed by the B.C. government with the Haida Nation in 1992, and took its cue from a unilateral political initiative on the part of the Haida to control the sports fishery in their homeland Haida Gwaii (Robinson, 1999: 15).
- The Stein River Valley is another instance where Native groups and environmentalists joined forces to preserve wilderness areas from logging. In 1987, under persistent pressure from the Lytton band, the Ministry of Forests signalled their willingness to negotiate alternatives to logging the Stein, as well as cultural and environmental values at stake in the valley (Notzke, 1994: 100).
- Recent efforts by area bands (i.e. West Bank and Adams Lake) in the Shuswap and Okanagan nations to assert their logging rights independent of Ministry of Forests licensing requirements have been met by a willingness to negotiate and, in some cases, successfully implement co-management agreements (Carl Mashon, GIS Coordinator, Shuswap Nation Tribal Council, personal communication).

The influence of First Nations on resource-based activities has become most visible in areas that are subject to the settlement of treaties and comprehensive claims, and British Columbia is bracing itself for the impact of these processes (Asch and Zlotkin, 1997; Drushka, 1999: 265; Wolfe-Keddie, 1995). The negotiation and implementation of contemporary treaties is taking place in an economic and political environment that is fundamentally different from the eastern Canadian provinces and the territorial north. In common with the northern territories, however, British Columbia will feature many assertive aboriginal players in the natural resources game and resource companies will have to accommodate themselves to new landlords. This accommodation will be more difficult in some cases than in others. As Gitksan spokesman Don Ryan puts it, "We're ready to do business. But companies have to understand that we want control over how that business is done" (Watt, 1990: 47). British Columbia's First Nations have widely different political agendas, cultural practices, environmental values and economic priorities,
but undoubtedly aboriginal influence will change certain resource use practices and effect the discontinuation of others.

Through whatever strategy they choose (or are compelled to use), it is clear that the First Nations of British Columbia are concentrating considerable energy and ingenuity on gaining greater control of their traditional lands and resources. As my research with the Cheam people has demonstrated, they have many overlapping objectives: to secure traditional uses and lifestyles, to effect spiritual healing and cultural revival through strengthening connections with the land, to improve land and resource management according to traditional principles, and to benefit from non-traditional uses and generate revenue. Many are trying to devise new approaches to the use of lands and resources that balance traditional principles and practices with the contemporary business approaches to resource development that many regard as essential for greater First Nation self-sufficiency and economic stability.

First Nation anxiety about the fate of culturally significant sites that are left on their traditional territories is heightening in a climate of rapid political change as treaty and land claims negotiations appear closer to reality. As Native groups move closer to regaining some measure of control over their traditional homelands, there is a concomitant expression of concern and apprehension from the non-aboriginal segments of Canadian society (Carlson, 1999; Nathan, 1993). Fears surrounding the settlement of treaties and land claims include the idea that significant tracts of the province will be transferred to exclusive First Nation control, that forest resources would be less effectively utilised, that the public will lose royalties, that environmental regulations will become even more bureaucratic and complicated, that First Nation controlled enterprises will not be able to cope with a complex world timber market, and so on (McCrorquodale, et al. 1997). How First Nations will steward their traditional territories and, in particular, what Native treaty settlements are going to mean for the rest of British Columbia remains highly uncertain. As the Cheam have demonstrated, First Nations are not totally preservationist; many have been employed or involved in the forest sector for generations. Some First Nations will place considerable emphasis on joining hands with business partners in commercially managing the resource, while others will be at the forefront of community-based approaches to resource management with an emphasis on sustaining the cultural and social benefits of resource use.
In any event, no simple, straightforward answer can be offered to alleviate the fears or dispel the misperceptions held by the non-aboriginal public about the political and economic landscape of post-treaty British Columbia. However, one thing remains certain, whether First Nations choose to participate in resource management largely out of commercial profit, or from a set of more balanced motives that attempt to reconcile community economic and cultural interests, First Nations will be playing in a complicated and competitive global timber market that may not accommodate their desire to manage forests with cultural values in mind. For more than 130 years the forest industry has dominated economic activity in BC. Recently it has experienced some of its most active and profitable years ever, and the potential remains strong. However, the economic decline that began in 1997, largely due to fluctuating demand for BC timber products in Japan and the United States, suggests that the provincial economy remains very much at the mercy of the global market, and the economic future of forestry in British Columbia remains cloudy (Drushka, 1999).

In essence, managing for cultural values may not be practical in a post-treaty British Columbia where market uncertainties and the associated need to provide employment for band members may compel First Nations to utilise their resources more intensively with little regard or respect for competing cultural interests. However, this rather grim prognosis for the future of cultural preservation in BC is based on the assumption that participation in the global timber market is a new and untried venture for Native communities. BC First Nations may find it necessary to turn to their Native American cousins in the United States where considerable management experience has already been accumulated in balancing cultural and economic imperatives. For instance, the Yakima First Nation of south-central Washington has adopted an effective approach to integrating traditional Native American values into an economically viable commercial forestry program (McCorquodale, et al., 1997). Commercial forestry on Native reservations throughout the western United States has considerable potential for generating economic wealth for tribal nations (IFMAT, 1993) but, like the First Nations of British Columbia, Native American values provide a unique context within which commercial forest management must be conducted. Whereas commercial forestry on federal, state and private lands is primarily constrained by profitability, silvicultural objectives, and state and federal environmental statutes, Native forest lands must also be managed for cultural and religious values that may be without
statutory protection (IFMAT, 1993; Czech, 1995). Protection of those values mandates protection of sacred sites, traditional use areas, archaeological sites and materials, culturally important wildlife, and culturally significant ecological and aesthetic settings. The Yakima, Menominee (Wisconsin) and Navajo (Arizona) nations are successful examples of this balanced approach to forest management and may prove to be a tremendous source of knowledge and experience when the First Nations of British Columbia are poised to manage independently their traditional territories (Einbender-Velez, 1993; McCorquodale, 1997; Nesper and Pecore, 1993).

One study, After Native Land Claims, examines various initiatives already undertaken by First Nation communities in the province as bellwethers for economically and culturally sustainable First Nation development in a post-land claim BC. In the final analysis, it takes a positive view that the aboriginal role in resource management will provide significant economic and cultural advances (Notzke, 1994: 194). In any event, change towards greater First Nation control and management of forestry is on the way (Robinson, 1999). In a few words to a small gathering on a hot spring afternoon in 1992, Willy Seymour, a spokesman for the 54 nations of the Coast Salish people, captured both the loss and the hope involved in First Nations forestry's future. Speaking to the Royal Commission on Aboriginal Peoples (1993), during its visit to a traditional West Coast longhouse near Victoria, Seymour said:

Our people were the first loggers. The posts in this house, they are sacred – for our shelter, our government, our education, for our discipline and justice. Our forefathers selected the trees that would carry the echoes of our people and our history. Our forefathers used to go to the beaches and gather food; today that is no longer possible. They used to hunt deer and gather roots from these hills. That is no longer possible. We were the only users of the resources. Our relatives were the centre of our empire where we went to practice our spirituality. The teachings in this home never change, nor the ultimate respect we hold for the land. To ensure that spiritual values are protected, we need the land base. If we continue to use the resources, we must contribute to their enhancement. Today I feel a glimmer of hope that the commission has come into our home to listen to our concerns. I hope you will take the heartbeat of my ancestors with you.

7.5.2 The Future Research Agenda
The cultural diversity and urban character of Canadian society have grown immensely since the nineteenth and early twentieth centuries, and attitudes toward nature in mainstream Euro-Canadian society have evolved in parallel with these social developments. During most of this period, the predominant world-view has seen the land as having primarily utilitarian and commercial value, as a resource for some rather limited human purposes. At the turn of the twentieth century in the United States, the conservation philosophy of Gifford Pinchot expressed
this view when it defined conservation as the use and development of natural resources for the
greatest good for the greatest number for the longest time (Pinchot, 1947). Under this
philosophy, the first obligation of public land managers is to promote the wise human
development of public lands for economic and commercial goals. In British Columbia, crown
lands have clearly been a significant source of material wealth, and have provided many of the
raw materials needed to support the BC economy and personal livelihood. The main value of the
land has been seen in its economic worth rather than in its spiritual, social, aesthetic, spiritual,
historic, or other intrinsic qualities. More recently, however, there has been a philosophical shift
toward a more expansive land ethic, a more holistic view that emphasises multiple values in the
landscape.

The idea that nature has deeper, non-materialistic meanings can be found in several
places in North American culture. To a large extent, land-based cultural values have been the
exclusive province of First Nation cultures, philosophers, poets, explorers, and writers who have
expressed this point of view in their ideas, traditions and behaviour (Nash, 1982; Hughes, 1983).
Until recently, however, this viewpoint has been submerged in individual and corporate efforts to
carve a way of life out of the natural environment. The development of the environmental
movement, the greening of public attitudes in the past thirty years, and the articulation of an
alternative land management ethic by First Nation groups has reinstalled this perspective in
mainstream public life, and now the emergence of more diverse and less materialistic attitudes
toward the land is being seen (Cronon, 1996: 407; Suzuki, 1997).

In the coming decades, managing crown lands with regard to the importance of natural
setting to human cultural values will require that land managers learn to consider the cultural and
spiritual implications – along with the economic and ecological impacts – of their decisions. A
central theme of this thesis has been that land-based cultural values are real values that real
people experience, remember and talk about in real places, and they are not to be dismissed
because of their intangible character. At the same time, because of their elusive, esoteric nature,
they are values that are difficult for land managers to understand and incorporate into resource
management. This chapter has attempted to bring home to planners and resource managers
some ideas about how they might incorporate these values into land management strategies.
However, as with most exploratory treatments of complex social issues, this thesis raises nearly
as many questions as it answers. Essentially, it points to the need for additional research to
develop further our basic understanding of land-based cultural values and, in particular, for a
systematic examination of innovative managerial approaches to including cultural values in
resource management. The following summarises what appear to be the most significant
research needs identified in the preceding chapters of this thesis.

1. **We need to understand how to integrate information about land-based
cultural values into resource and ecosystem management by government
agencies.**

Although the examination of co-management and socio-cultural planning posits that these
frameworks are perhaps the best integrative techniques available in the planning literature and
professional practice, my discussion of these approaches points to some possible shortcomings
that deserve further study. Specifically, co-management is widely touted as the most effective
means for communicating complex perspectives and world-views across cultural boundaries and,
indeed, First Nations such as the Cheam have endorsed co-management as the decision-making
framework in which they would prefer to function in a post-treaty context. However, there are few
studies in the planning and resource management literature that have systematically examined
how effective existing co-management frameworks have been in facilitating cross-cultural
understanding and, inevitably, in protecting culturally significant landscapes. In fact, as some
authors would contend (Stevenson, 1999), co-management agreements are invariably negotiated
in the ideology and language of the dominant culture. In the process, First Nations may find that
they are coerced into accepting a Western model of environmental management, replete with its
concepts, procedures, and ways of knowing and doing. Thus, rather than building cross-cultural
understanding, co-management may inevitably facilitate a form of cultural co-optation (Stevenson,
1999: 25). In addition, the socio-cultural planning framework advocated by professors Simon and
Wolfe-Keddie may have considerable potential as an integrated resource management
framework, however its application to forest management, particularly in British Columbia, has not
yet been systematically evaluated. Both of these approaches to culturally sensitive land and
resource management deserve to be studied in greater depth.

2. **What interpretive visual medium, or combination of media, can best serve
managers in articulating land-use plans and responding to community
concerns regarding the cultural impact(s) of management alternatives?**
The second objective of this thesis was to explore the effectiveness of different landscape visualisation media as a means of eliciting land-based cultural values from a First Nation community. While this study has demonstrated that there are particular advantages in using photo-realistic landscape simulations over conventional planimetric maps, one of the Cheam participants raised the interesting suggestion that it may be worthwhile to present simulations together with conventional mapping information in order to provide "an overall perspective" of the landscape (Chapter 6: 210). Simulation perception research has largely focused on examining the cognitive and affective responses of simulation interpreters to discrete image classes (i.e. simulations, maps, photos, video animations, etc.), and at varying levels of image abstraction. However, few studies have systematically examined interpreter responses to media combinations (i.e. maps and simulations, videos and simulations, etc.) in an effort to evaluate the relative effectiveness of different image aggregations in improving interpreter comprehension of technical and potentially contentious land management proposals. There is a broad spectrum of media formats available to land-use planners, and future research needs to identify which format, or combination of formats, is optimally suited to improving cross-cultural communication and decision-making.

3. How can we better comprehend the attitude that is held by some people in government agencies that land-based cultural values are irrelevant to the business and science of resource management, and how do we address that point of view?

Throughout this research I have focused considerable effort on examining the traditions and cultural world-views of the Cheam people. However, I have spent comparatively little time addressing the world-views of non-aboriginal Canadian society and, in particular, on the cultural perspectives which forest managers bring to land management processes involving First Nation interests. In fact, the difficulty associated with incorporating indigenous cultural values into forest management may not be based entirely on the esoteric nature of these values, but it may also be a function of the cultural filters that professional land managers bring to planning processes. In effect, Native and European peoples have constructed their understandings of land and landscape differently. To First Nation people, natural environments may be replete with deep cultural and personal meanings. However, in planning processes involving First Nations and forested lands, Euro-Canadians often carry the notion of 'wilderness' with them as part of their conceptual baggage. Broadly defined, the term wilderness is typically reserved for places
showing little human alteration or human presence, places that my examination of Cheam culture posits are central to their cultural and spiritual existence. If planning educators are to be truly effective in encouraging future land managers to think outside their cultural boxes (as suggested in section 7.4.3), then these constructs need to be identified and addressed more explicitly in resource management curricula. Future research needs to identify how professional planning education reinforces entrenched ideologies and cultural perspectives and, most importantly, finds innovative approaches to teaching forestry professionals that cultural landscapes include much more than the “total assemblage of visible things that human beings have done to alter the face of the earth” (Lewis, P., 1993: 115).

4. We require cross-cultural studies of similarities and differences in land-based cultural values and preferences, their relative importance and their historical background.

An unexpected consequence of working in close proximity with colleagues and friends over the course of the last year is that they would often provide their own perspectives and observations regarding the management scenarios that were prepared for the Cheam interviews. Of the three stream simulations, the existing condition in particular was characterised as ‘visually appealing’ or a ‘pleasant setting.’ That this scenario in particular should resonate with non-aboriginal observers meshes fairly well with the prevailing dogma in environmental perception research that relatively open, pastoral landscapes with an abundance of open fields and remnant forest patches have an intrinsic appeal that is fairly universal across human cultures. In essence, Prospect-Refuge theory posits that as biological beings that are intrinsically driven by the need to survive and subsist, humanity has evolved to prefer environments that offer some measure of safety or refuge (through bosques, caves, etc.), while at the same time affording a degree of prospect onto an open landscape. The reactions of the Cheam participants to the stream simulations largely challenge this notion because, not only did they react strenuously to the existing scenario as an undesirable landscape condition, but they preferred the option which offered the most refuge with virtually no prospect – i.e. the modified plan. Although research of this nature may have more theoretical than practical implications for landscape planning, it will nonetheless challenge some deeply rooted notions in environmental psychology research that cultural filters play a fairly minor role relative to the more intrinsic or “bio-basic” factors in determining landscape perception and preference.
5. **What are the salient physical attributes of culturally significant places to which strong human attachments exist?**

The more practical result of the previous research objective may be that particular landscape patterns and typologies exist for different cultural groups which possess meanings and associations that are grounded in their unique cultural traditions and histories. As I have learned from the Cheam participants, the modified plan has certain physical qualities that are conducive to the meditative experiences that are typically sought by Sto:lo ritualists and spirit dancers. The obvious implication of this finding is that considerations of landscape design possess some importance in a First Nations appraisal of environmental condition. Furthermore, there may be other physical characteristics that can be elicited from land-based communities like the Cheam which lend themselves to the cultural or spiritual experiences described during the interviews. Research that explores this finding in greater depth will not only underscore the importance of aesthetic factors in environmental restoration schemes, but may also reveal a form of ‘pattern language’ that environmental planners can emulate when designing landscapes with human cultural values in mind.

6. **What are the thresholds beyond which communities will object to particular forms of landscape disturbance, and is there a cultural foundation for these preference thresholds?**

While the previous research objective addresses the cultural basis for landscape restoration or rehabilitation schemes, there is some suggestion from the Cheam findings that there are thresholds of acceptability when communities are confronted with large scale physical disturbances to their landscape. For instance, while most of the participants affirmed that partial cutting would be an acceptable means of harvesting timber, while at the same time preserving cultural uses of the Cheam foothills, there was a widespread sense that the scenario involved too much timber removal (i.e. 75% removal). Moreover, most participants expressed an interest in examining the same scenario under less intense harvesting conditions (e.g. 50% – 70% removal). Research with both aboriginal and non-aboriginal communities may demonstrate that variations of partial cut timber harvesting are, in general, socially acceptable to both segments of BC society. However, because Natives and people of European descent have constructed their understanding of the landscape in different ways (McCormack, 1998: 26), I would hypothesise that the basis for acceptability is fundamentally different for both groups. This raises the
interesting possibility that how much timber removal is tolerated (and perhaps where it occurs) may be fundamentally different where Native and non-Native interests are concerned.

7. How permanent are places of ritual activity and ceremony for First Nation cultures? In particular, to what extent do traditional cultures prescribe where ritual performances may take place?

A question raised in Chapter 6 (p. 182) addresses the degree to which Cheam ritual activities are disrupted by large-scale forest disturbances. In particular, when timber harvesting occurs in an area that the local community considers especially important for cultural and ritual performances, to what extent does the harvesting impose cultural disruptions of a long-term nature, or temporarily inconvenience the people who are accustomed to using the area? Implicit in some of the participants' comments is the notion that there are particular areas on the mountain which Cheam tradition and spiritual tenets prescribe as the only suitable locations for ritual cleansing and other spiritual activities. If such is the case, then the ramifications of timber harvesting in the Cheam foothills are more significant than was implied in Chapter 6. In essence, Western religions are comparatively portable to the extent that they can be practised anywhere and, with certain exceptions, at any time. However, the very landscapes that we see through the filters of Western culture as just so many hectares of empty wilderness, may very well be the “holy shrine” of a local community (Pavel, 1993). By disturbing forests for a period of 80 to 100 years or more (i.e. the time it takes for a forest stand to reach maturity), large-scale disruptions such as clearcutting may prevent Native ritualists from using places with traditional and very particular religious meanings for at least a human generation. Resource management practice will need to accept the notion that apparently unmodified settings can possess significant cultural value (i.e. Finding 3). However, future research may confirm the notion that entire landscapes retain some semblance of cultural or spiritual importance, and that there are specific areas that are more sensitive to disturbance than others.

This thesis and the preceding list of research opportunities are founded on the recognition that values in the land arise from many cultural and individual sources, insights and experiences, and that there are many voices from diverse sectors of society that are relevant in defining these deeper meanings in the land. Resource managers have much to learn about landscape meaning from people who already have deep connections to the land. This can be done, in part, by listening to those who possess deep connections with place and are already good at caring for
the land and all its attendant values. The land management bureaucracies of the BC Forest Service or the Ministry of Environment, Lands and Parks are not the only repositories of land wisdom, especially when there are so many valid perspectives about land uses and so many land values. Resource managers must understand how to learn from others and communicate with them whether they are professionally certified "experts" or not. In fact, one mark of an expert manager will undoubtedly lie in the ability to communicate and work collaboratively with many constituents and communities, to identify common goals and specific values, and to implement jointly shared ideas about appropriate land-uses.
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Cheam Interview Guide

Interview No. Date: Duration:

Location:

Tape Number:

Participant:

Address:

Telephone:

Review the statement of consent and research objectives at the beginning of the interview.

"Probing" questions are bulleted.

Part A: Place Recognition and Orientation
1. Do you recognise the place shown in the map/picture?
   - Can you point out any significant or special features of this place?
   - Is this an important/special place to you or your family?
2. Are there any stories/legends associated with this place?
3. How has this land changed in:
   - your lifetime,
   - your parent's lifetime,
   - your grandparent's lifetime?
4. Is this place known by any particular name in Halkomelem?
5. Did your elders or ancestors use this place for any purpose?
   - How did they use it?
   - When (i.e. what season) did they use it?

Part B: Scenario Preferences/Perceptions
1. How is this mountain/stream important to you or your people?
   - Do you/have you used this place for any purpose(s)?
   - How will the management scenarios that you see in these pictures affect those uses?
2. Are any of these pictures an appropriate/inappropriate way of managing the land?
   - Which of these alternatives do you prefer?
   - Are there any features that are not appropriate or desirable for the people of Cheam?
   - Based on what you can see in these maps/pictures, what would you do differently?
   - Why would you choose to manage the land in that manner?
   - Do your recommendations reflect traditional beliefs and values, or are they based on something else? (If the latter) What do you base your recommendations on?
3. Is this a beautiful place?
Appendix A3: Interview Guide

4. **What effect will the management scenarios have on the ability of animals and fish to survive?**
   - Why is that important to you?
   - What would you do to ensure that those creatures could survive?

5. **Are there any traditional activities/uses that take place in this setting/landscape?**
   - Are these ongoing (i.e. current) activities/uses or are they practices that only your elders would remember?
   - How will the management plans that you see affect the activities/uses in this place?
   - What will happen if they are disturbed?
   - Which of the plans provides the best measure of protection for their use of the mountain/stream?
   - Are there better ways of protecting these activities/uses than the scenarios that you see in the pictures?

6. **How would the people of Cheam manage this mountain/stream?**
   - Would its appearance change, or would it remain in the condition that you see in the first image?
   - Why would you choose to manage the mountain/stream in that manner?

7. **How can places like the ones that you see in these pictures be protected for cultural or traditional uses/values?**

**Part C: Wrap-up Questions**

1. **How would you describe the Cheam's current resource management role?**
   - In what ways can Sto:lo or, specifically, Cheam people have a different role in forest/watershed management?
   - How would you characterise provincial (e.g. MOF) and/or federal government (e.g. DFO) agencies as resource managers?
   - Do they address your interests/concerns fairly/appropriately?

2. **Some Sto:lo elders have described a 'philosophy of life' which is different from non-native peoples.**
   - How would you describe that philosophy of life?
   - How do traditional Cheam philosophies or life-ways influence your relationship with the land and water?
   - What aspects of traditional Cheam philosophy would you want non-aboriginal resource managers to adopt?

3. **How do the pictures appear to you?**
   - Are they realistic?
   - Are they an accurate portrayal of the landscape? In other words, does something appear to be missing or incorrect?
   - Are they useful?

4. **Which provides the better source of information – the maps or the pictures?**
   - Are the maps useful? What would make the maps better?

5. **Were you born here?**

6. **Have you lived anywhere else?**

7. **What do (did) you do for a living?**

8. **Have you done anything else in your lifetime?**
Name
Street
Rosedale, British Columbia
Postal Code

December 15, 1999

Salutation:

I wish to express my thanks for meeting with me last November to discuss forest and watershed
management in the Cheam lake watershed. I'm currently completing transcripts of the interviews
that I conducted with other band members and should have them completed in the next two
weeks. I expect to have a copy of your transcribed interview mailed to you in early January.

I've enclosed a gift from the UBC Longhouse (First Nations House of Learning) as an expression
of thanks for your help in completing my research.

Once again I thank you for your time, and hope that you enjoy your Christmas.

Sincerely,

John Lewis
Chi-Square Formula: \( \chi^2 = \sum (E - O)^2 / E \)

Expected Frequency Formula: \( E_{ij} = T_i \times T_j / N \)

### Table 6.11: Number of Comments Related to a Particular Medium

<table>
<thead>
<tr>
<th>Order</th>
<th>Timber Scenarios</th>
<th>Stream Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maps (%)</td>
<td>Sims (%)</td>
</tr>
<tr>
<td>Elder (n=2)</td>
<td>3 10.34%</td>
<td>11 32.02%</td>
</tr>
<tr>
<td>Adult (n=6)</td>
<td>13 44.83%</td>
<td>29 49.15%</td>
</tr>
<tr>
<td>Young Adult (n=3)</td>
<td>13 44.83%</td>
<td>19 32.02%</td>
</tr>
<tr>
<td>Total (n=11)</td>
<td>29 100.00%</td>
<td>59 100.00%</td>
</tr>
</tbody>
</table>

Significance (DF = 2): \( \chi^2 = 8.38 \) (0.01 < P < 0.025)

### Observed Frequencies

<table>
<thead>
<tr>
<th>Order</th>
<th>Timber</th>
<th>Streams</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maps</td>
<td>Sims</td>
<td>Total</td>
</tr>
<tr>
<td>Elder</td>
<td>3</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Adult</td>
<td>13</td>
<td>29</td>
<td>42</td>
</tr>
<tr>
<td>Young Adult</td>
<td>13</td>
<td>19</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>59</td>
<td>88</td>
</tr>
</tbody>
</table>

### Expected Frequencies

<table>
<thead>
<tr>
<th>Order</th>
<th>Timber</th>
<th>Streams</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maps</td>
<td>Sims</td>
<td>Total</td>
</tr>
<tr>
<td>Elder</td>
<td>4.61</td>
<td>9.39</td>
<td>14.00</td>
</tr>
<tr>
<td>Adult</td>
<td>13.84</td>
<td>28.16</td>
<td>42.00</td>
</tr>
<tr>
<td>Young Adult</td>
<td>10.55</td>
<td>21.45</td>
<td>32.00</td>
</tr>
<tr>
<td>Total</td>
<td>29.00</td>
<td>59.00</td>
<td>88.00</td>
</tr>
</tbody>
</table>

### (Expected Frequencies-Observed Frequencies)²/Expected Frequencies

<table>
<thead>
<tr>
<th>Order</th>
<th>Timber</th>
<th>Streams</th>
<th>Chi Sq.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maps</td>
<td>Sims</td>
<td>Chi Sq.</td>
</tr>
<tr>
<td>Elder</td>
<td>0.56</td>
<td>0.28</td>
<td>3.00</td>
</tr>
<tr>
<td>Adult</td>
<td>0.05</td>
<td>0.03</td>
<td>0.30</td>
</tr>
<tr>
<td>Young Adult</td>
<td>0.57</td>
<td>0.28</td>
<td>3.68</td>
</tr>
<tr>
<td>Chi Square</td>
<td></td>
<td></td>
<td>1.77</td>
</tr>
</tbody>
</table>

\( df=2 \)  
0.10 < P < 0.90

\( df=2 \)  
0.01 < P < 0.025
Chi-Square Formula: \( \chi^2 = \sum (E - O)^2 / E \)

Expected Frequency Formula: \( E_i = T_i \times T_j / N \)

Table 6.12: Number of Comments Related to a Particular Medium by Order of Presentation

<table>
<thead>
<tr>
<th>Order</th>
<th>Timber Scenarios</th>
<th>Stream Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maps - Simulations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elder (n=2)</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Adult (n=6)</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Young Adult (n=3)</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Total (n=11)</td>
<td>16</td>
<td>9</td>
</tr>
<tr>
<td>Significance (DF = 2)</td>
<td>( \chi^2: 0.87 ) (0.10&lt;P&lt;0.90)</td>
<td>( \chi^2: 7.99 ) (0.01&lt;P&lt;0.025)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order</th>
<th>Observed Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maps - Simulations</td>
<td>Maps (%)</td>
</tr>
<tr>
<td>Elder (n=2)</td>
<td>12.50%</td>
</tr>
<tr>
<td>Adult (n=6)</td>
<td>23.53%</td>
</tr>
<tr>
<td>Young Adult (n=3)</td>
<td>41.18%</td>
</tr>
<tr>
<td>Total (n=11)</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order</th>
<th>Expected Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maps - Simulations</td>
<td>Maps (%)</td>
</tr>
<tr>
<td>Elder (n=2)</td>
<td>3.20</td>
</tr>
<tr>
<td>Adult (n=6)</td>
<td>5.76</td>
</tr>
<tr>
<td>Young Adult (n=3)</td>
<td>7.04</td>
</tr>
<tr>
<td>Total (n=11)</td>
<td>16.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order</th>
<th>( (\text{Expected Frequencies-Observed Frequencies})^2/\text{Expected Frequencies} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maps - Simulations</td>
<td>Maps (%)</td>
</tr>
<tr>
<td>Elder (n=2)</td>
<td>0.45</td>
</tr>
<tr>
<td>Adult (n=6)</td>
<td>0.01</td>
</tr>
<tr>
<td>Young Adult (n=3)</td>
<td>0.13</td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

\( \text{df=2} \) 0.10<P<0.090 (0.01<P<0.025)
Chi-Square Formula: \( \chi^2 = \sum \frac{(E - O)^2}{E} \)

Expected Frequency Formula: \( E_{ij} = T_i \times T_j / N \)

### Table 6.12: Number of Comments Related to a Particular Medium by Order of Presentation

<table>
<thead>
<tr>
<th>Order</th>
<th>Timber Scenarios</th>
<th>Stream Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maps - Simulations</td>
<td>Maps (#)</td>
<td>Maps (%)</td>
</tr>
<tr>
<td>Elder (n=2)</td>
<td>2</td>
<td>12.50%</td>
</tr>
<tr>
<td>Adult (n=6)</td>
<td>6</td>
<td>37.50%</td>
</tr>
<tr>
<td>Young Adult (n=3)</td>
<td>8</td>
<td>50.00%</td>
</tr>
<tr>
<td>Total (n=11)</td>
<td>16</td>
<td>100.00%</td>
</tr>
<tr>
<td>Significance (DF = 2)</td>
<td>( \chi^2 = 0.87 ) (0.10 &lt; ( P &lt; 0.90 ))</td>
<td>( \chi^2 = 7.99 ) (0.01 &lt; ( P &lt; 0.025 ))</td>
</tr>
</tbody>
</table>

### Observed Frequencies

<table>
<thead>
<tr>
<th>Order</th>
<th>Timber</th>
<th>Streams</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sims - Maps</td>
<td>Sims</td>
<td>Maps</td>
<td>Total</td>
</tr>
<tr>
<td>Elder</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Adult</td>
<td>17</td>
<td>7</td>
<td>24</td>
</tr>
<tr>
<td>Young Adult</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>13</td>
<td>38</td>
</tr>
</tbody>
</table>

### Expected Frequencies

<table>
<thead>
<tr>
<th>Order</th>
<th>Timber</th>
<th>Streams</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sims - Maps</td>
<td>Sims</td>
<td>Maps</td>
<td>Total</td>
</tr>
<tr>
<td>Elder</td>
<td>2.63</td>
<td>1.37</td>
<td>4.00</td>
</tr>
<tr>
<td>Adult</td>
<td>15.79</td>
<td>8.21</td>
<td>24.00</td>
</tr>
<tr>
<td>Young Adult</td>
<td>6.58</td>
<td>3.42</td>
<td>10.00</td>
</tr>
<tr>
<td>Total</td>
<td>25.00</td>
<td>13.00</td>
<td>38.00</td>
</tr>
</tbody>
</table>

### (Expected Frequencies-Observed Frequencies)\(^2\)/Expected Frequencies

<table>
<thead>
<tr>
<th>Order</th>
<th>Timber</th>
<th>Streams</th>
<th>Chi Sq.</th>
<th>Chi Sq.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sims - Maps</td>
<td>Maps</td>
<td>Sims</td>
<td>Chi Sq.</td>
<td>Chi Sq.</td>
</tr>
<tr>
<td>Elder</td>
<td>0.05</td>
<td>0.10</td>
<td>0.30</td>
<td>1.50</td>
</tr>
<tr>
<td>Adult</td>
<td>0.09</td>
<td>0.18</td>
<td>0.03</td>
<td>0.17</td>
</tr>
<tr>
<td>Young Adult</td>
<td>0.38</td>
<td>0.73</td>
<td>0.07</td>
<td>0.33</td>
</tr>
<tr>
<td>Chi Square</td>
<td></td>
<td></td>
<td>1.53</td>
<td>2.40</td>
</tr>
</tbody>
</table>

\( df = 2 \) \( 0.10 < P < 0.90 \)
Chi-Square Formula: $\chi^2 = \sum (E - O)^2 / E$

Expected Frequency Formula: $E_i = T_1 \times T_j / N$

### Table 6.13: Number of Tactile Uses of the Media

<table>
<thead>
<tr>
<th>Group 1 Order of Presentation: Maps - Visualisations</th>
<th>Group 2 Order of Presentation: Visualisations - Maps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant</td>
<td>Map</td>
</tr>
<tr>
<td>Darryl (Young Adult)</td>
<td>223</td>
</tr>
<tr>
<td>Len (Young Adult)</td>
<td>405</td>
</tr>
<tr>
<td>Dan (Adult)</td>
<td>175</td>
</tr>
<tr>
<td>Mary (Adult)</td>
<td>110</td>
</tr>
<tr>
<td>Total</td>
<td>913</td>
</tr>
</tbody>
</table>

### Significance (DF=3)

Group 1 $\chi^2$: 114.14 (P<0.001)  
Group 2 $\chi^2$: 58.83 (P<0.001)

### Observed Frequencies

<table>
<thead>
<tr>
<th>Group 1 Order of Presentation: Maps - Visualisations</th>
<th>Group 2 Order of Presentation: Visualisations - Maps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant</td>
<td>Map</td>
</tr>
<tr>
<td>Darryl</td>
<td>223</td>
</tr>
<tr>
<td>Len</td>
<td>405</td>
</tr>
<tr>
<td>Dan</td>
<td>175</td>
</tr>
<tr>
<td>Mary</td>
<td>110</td>
</tr>
<tr>
<td>Total</td>
<td>913</td>
</tr>
</tbody>
</table>

### Expected Frequencies

<table>
<thead>
<tr>
<th>Group 1 Order of Presentation: Maps - Visualisations</th>
<th>Group 2 Order of Presentation: Visualisations - Maps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant</td>
<td>Map</td>
</tr>
<tr>
<td>Darryl</td>
<td>192.56</td>
</tr>
<tr>
<td>Len</td>
<td>318.14</td>
</tr>
<tr>
<td>Dan</td>
<td>261.30</td>
</tr>
<tr>
<td>Mary</td>
<td>141.00</td>
</tr>
<tr>
<td>Total</td>
<td>913.00</td>
</tr>
</tbody>
</table>

### (Expected Frequencies - Observed Frequencies)$^2$/Expected Frequencies

<table>
<thead>
<tr>
<th>Group 1 Order of Presentation: Maps - Visualisations</th>
<th>Group 2 Order of Presentation: Visualisations - Maps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant</td>
<td>Map</td>
</tr>
<tr>
<td>Darryl</td>
<td>4.81</td>
</tr>
<tr>
<td>Len</td>
<td>23.71</td>
</tr>
<tr>
<td>Dan</td>
<td>28.50</td>
</tr>
<tr>
<td>Mary</td>
<td>6.62</td>
</tr>
</tbody>
</table>

Chi Square $\chi^2$ = 114.14 $\chi^2$ = 58.83  
df=3  
P<0.001  
P<0.001
1. Timber Scenarios: GIS Timber Supply Analysis
Forest cover data provided by the BC Ministry of Forests, Chilliwack District, Fc1 format.

**Management Constraints**

- ALR
- Inoperable
- Owner
- Riparian Areas
- ESAs
- Problem Forest Types

**Management Opportunities (Analysis Unit Definition)**

- **Fir Stands**
  - Attribute Query
    - Stand Age > 80
    - Site Index > 20
  - Fir Sites
    (Good & Medium)

- **Cedar Stands**
  - Attribute Query
    - Stand Age > 80
    - Site Index > 19
  - Cedar Sites
    (Good & Medium)

- **Hemlock Stands**
  - Attribute Query
    - Stand Age > 80
    - Site Index > 14
  - Hemlock Sites
    (Good & Medium)

**New Vector Theme: Restricted Areas**

**New Vector Theme: Merchantable Timber**

**Timber Blocks (Vector Overlay)**

- Restricted Areas
- Merchantable Timber

**Polygon Subtraction**

**Timber Blocks**
1. **Stream Scenarios: GIS Riparian Buffer Development**  
Digital data provided by the BC Ministry of Forests, Chilliwack District, ArcINFO E00 format.

### Riparian Buffers

- **Vector Stream Data**
  - Buffer 15 Metres
    - "Best Practice" Polvaons
  - Buffer 50 Metres
    - Existing Condition
    - "Modified" Polvaons

### Context Map (Digitising)

- Heads-up Digitising Orthophotography (1996)
  - Vector Data Buildings
  - Vector Data Roads
  - Vector Data Fraser River
  - Merge Data
    - Local Context Map

### Scenario Maps

- "Best Practice" Polvaons
  - Local Context Map
    - "Best Practice" Scenario

- Existing Condition
  - Local Context Map
    - Existing Condition Scenario

- "Modified" Polvaons
  - Local Context Map
    - Modified Plan Scenario
The following simulation process is a general overview and applies to both the timber and stream scenario models.

**Simulation Design**

- Define Purpose(s) of the Simulations

**Define Scope of the Simulations:**
  - Where to Simulate - Viewpoint Selection;
  - What to Simulate - Viewpoint Condition;
  - Quantity of Simulations.

- Define the Simulation Method:
  - Landscape Modeling;
  - Photomontage

**Simulation Process**

- Obtain Project Data:
  - Topographic data;
  - Site photography;
  - Digital forest-cover files.

- Construct Digital Elevation Model (DEM)

- Import GIS Vectors
  - Cutblock Polygons: Timber Scenarios
  - Riparian Buffers: Stream Scenarios

- Populate Model with Bitmapped Vegetation

- Render Landscape Scenarios

- Layer Scenarios onto Site Photos

- Prepare Final Photomontages

**Presentation**

- Modify Simulations
- Pretest Simulations
- Modify Simulations

- Project Interviews