Towards a Broad-Based Precautionary Principle in Law and Policy:

A Functional Role for Indigenous Knowledge Systems (TEK)

Within Decision-Making Structures

by

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Submitted in partial fulfillment of the requirements for the degree of Master of Laws

at

Dalhousie University
Halifax, Nova Scotia
August 2000

IN LOVING MEMORY OF

JILL EDDY (1957-2000)
My inspiration to fly

AND FOR

AARON CRAWLEY
My flying companion

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ABSTRACT

Dominant articulations and interpretations of the precautionary principle are heavily biased towards scientific knowledge systems as the basis for informing decision-making about the impact of a given human activity upon an ecosystem. The self-legitimating nature of the 'scientific way of thinking' tends to devalue indigenous knowledge systems, and crucial information about how to *anticipate* the affects of human activity is lost on decision-makers. It is becoming increasingly apparent that detailed data gathering necessary for the operation of the *predictive* framework under conventional scientific knowledge systems is not feasible within most interdependent ecosystems. The precautionary principle evolved to address this reality, being a guide to decision-making where there is lack of information about a human-natural ecosystem. Yet the science-biased precautionary principle still operates within a predictive framework, undermining its justification and utility for guiding decisions. Precautionary decision-making must be restructured to include many knowledge systems including indigenous and scientific knowledge systems to avoid becoming a management 'catch-phrase'. In other words, the precautionary principle must become broad-based. Many writings on the precautionary principle have launched into how best to implement the science-biased principle. This thesis aims to step back and explore the assumptions behind decision-making structures, the organization of knowledge and social institutions, as well as concepts of conservation, management, and sustainable development which all shape a precautionary decision-making framework. Awareness that decision-making processes and the organization of knowledge are firmly entrenched in the 'philosophy of language' is the first step towards effective communication between people in a cross-cultural precautionary decision-making setting.

While the international community has recognized indigenous knowledge systems, the recognition has mainly been from a human rights perspective rather than a serious attempt to hold the knowledge, in its own right, up against scientific knowledge. By treating the use of indigenous knowledge systems as a human rights issue, the systems tend to be marginalized from discussions within international environmental law forums where the meaning and operation of the precautionary principle are being negotiated. To attain a functional role for indigenous knowledge in precautionary decision-making structures, the paternalistic treatment of Traditional Ecological Knowledge (TEK) must give way to a respectful recognition of whole indigenous knowledge systems as being capable of displacing scientific knowledge and management systems. Recognizing the whole knowledge system can help to safeguard against appropriating selected parts of indigenous knowledge, depriving it of its contextual meaning. Viewing the knowledge in isolation can set up the trap of 'authenticity' which can be used as a weapon when indigenous practices supposedly fail to pass the test of conservation. Simply inserting the term 'indigenous knowledge' into national legislation as a factor to be taken into account in a precautionary decision is not sufficient for securing a functional role for the knowledge systems. Relationships must be built and legal or informal management structures created, to ensure that whole indigenous knowledge systems, including management, legal, political, land/sea tenure and spiritual systems, can operate within an anticipatory precautionary framework in concert with state management systems.

ABBREVIATIONS

ACAP: Atlantic Coastal Action Program

AEWC: Alaska Eskimo Whaling Commission

AFS: Aboriginal Fisheries Strategy

DFO: Department of Fisheries and Oceans (Canada)

DOC: Department of Conservation (New Zealand)

FAO: Food and Agricultural Organization

ICCPR: International Covenant on Civil and Political Rights

ICES: International Covenant on Economic, Social and Cultural Rights

IFA: Inuvialuit Final Agreement

IUCN: International Union for the Conservation of Nature and Natural Resources (now World Conservation Union)

IWC: International Whaling Commission

JBNQA: James Bay Northern Quebec Agreement

MNR: Ministry of Natural Resources (Ontario, Canada)

NGO: Non-Governmental Organization

RCAP: Royal Commission on Aboriginal Peoples

RMA: Resources Management Act (New Zealand)

TEK: Traditional Ecological Knowledge

UDHR: Universal Declaration of Human Rights

UNCED: United Nations Conference on Environment and Development

UNEP: United Nations Environment Program

WWF: World Wide Fund for Nature

ACKNOWLEDGEMENTS

Warm thanks go to: my supervisor, Professor David VanderZwaag for his beaming smile, booming voice and moments of 'thinking out aloud'; to Professor Philip Girard for his attentive eye and snappy grammar; to Professor Ronalda Murphy for making everyone feel smart; to Professor Aldo Chircop for his encouragement; and to Sheila Wile and Tiffany Coolen-Jewers for sorting me out.

Many, many thanks go to Bob Johannes and Milton Freeman for pointing me in the right direction for my research and for sending me some materials.

Thanks to: my great friend Seetal for her goofiness, words of wisdom and wonderful, wonderful friendship; to my buddies Krishna and Rodrigo for losing brain cells with me on a regular basis; to Fabienne, Stefan, Leonardo, Federico, Mark, Chris, Frank, Sita and all the other crazy cats on the 26th 32nd and 33rd floors for all the camping, drinking and general merriment; to Rebecca and Lisa for putting up with my messy ways; to Jan-Mark and Margo for our frolics down the aisles of the Cohn; to Jodie, Mike, Tanya, Wilber, Christine, Georgina, Rania and Benny for being the dancing fiends they are; and to the other graduate students for remaining calm.

Thankyou to the Roy A. Jodrey fund and the Law Graduate Studies Committee for funding my thesis; to Professor Patricia Doyle-Bedwell, Steve Wilson, and Chris Millie for their time; to all the library staff and to Ricky for her cheerie smile in the library.

Cheers to: my mum for being the grooviest mum on the planet and for sending her enthusiasm through cyber space; to my best friend and sister Lucy for her 2am calls (Australia is 13 hours ahead, ahead I tell you); to my dear Grannie for her wonderful letters. Ahhh how I love the letters; to my dad for his support; and last but of course not least, to my love Aaron for the music in my world.

Thanks for having me Canada – it's been a full-on ride.

CHAPTER ONE: CONTEXT AND THESIS OVERVIEW

Introduction

The scientific bias of the precautionary principle, as presently articulated by international legal documents, impedes the functional role for indigenous knowledge systems[1] in precautionary decision-making. The knowledge base of the precautionary principle must be broadened to include non-scientific knowledge systems to strengthen a decision-maker's capacity for anticipating the effect of a given activity upon an ecosystem. While many knowledge bases may be applied to what this thesis calls a 'broad-based' precautionary principle,[2] this discussion focuses on applying indigenous knowledge systems to precautionary decisions and decision-making structures affecting indigenous societies. This thesis argues that many indigenous knowledge systems operating within an anticipatory framework clash with the predictive framework surrounding the science-based precautionary principle. It is argued that not only is an anticipatory framework essential for establishing a functional role for indigenous knowledge systems, but that it is also essential for making more accurate decisions about inherently uncertain environmental patterns. Thus even where science-biased management regimes will continue to be in operation, indigenous anticipatory frameworks can encourage a reassessment of the way in which precautionary decisions are made. Above all, this thesis argues that there must be a fundamental rethinking about knowledge systems and social learning to implement successfully the institutional reform necessary to accommodate a broad-based precautionary principle operating within an anticipatory framework.

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[1] Indigenous knowledge systems are more commonly referred to as Traditional Ecological Knowledge (TEK) – a term which is problematic and not used within this thesis. See below at part 1.2.

[2] "There are cases of local, newly emergent or 'neo-traditional' resource management systems which cannot claim historical continuity over thousands of years, but which are nevertheless based on local knowledge and practice appropriately adapted to the ecological systems in which they occur." F. Berkes, & C. Folke, "Linking Social and Ecological Systems for Resilience and Sustainability" in F. Berkes & C. Folke, eds., *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience* (Cambridge: Cambridge University Press, 1998) 1 at 13. See ibid. for several case studies of non-indigenous traditional user knowledge systems. See also L.D. Dyer & J.R. McGoodwin, eds., *Folk Management in the World's Fisheries* (Colorado: University Press of Colorado, 1994).

This introductory chapter is divided into five parts. Part one outlines the scientific bias of the precautionary principle within the dominant legal articulations of the operation of the principle. The part sets the scene for the argument throughout the thesis that the scientific bias within decision-making processes runs deeper than the choice of words within national and international legal instruments. Part two explores the dominant articulations of 'Traditional Ecological Knowledge' (TEK) within current literature. The danger of treating TEK as a subset of western science is highlighted and the need to understand the whole indigenous knowledge system, including spiritual, economic, tenure and political systems, is emphasized. Part three cautions against the appropriation of components of indigenous knowledge from the whole system, depriving the knowledge of its contextual meaning and rendering the knowledge susceptible to a form of 'ideological colonialism'. Part four provides a thesis overview and part five sets out the methodology guiding the research and organization of this thesis.

1.1: Part One - The Scientific Bias of the Precautionary Principle

The precautionary principle as a principle of sustainable development is widely understood,[3] not commonly interpreted.[4] It is difficult to resist the need for clarity that definitions offer within rigid legal and political structures. A set definition with respect to the operation of the principle, however, has been consciously avoided because of the recognition that it will be applied within a variety of contexts. Articulation of the principle as a *guide* to political decision making, coupled with measures ensuring its enforcement and public accountability render it an effective management tool capable of accommodating a variety of discourses. Its definitional ambiguity is, in effect, its management value. However, while recognizing the principle's flexibility, the most

[3] Earll writes, "precaution[ary] action taken beforehand to avoid dangerous events is an easily understood, universal and widely practiced feature of human behaviour. We all take precautions in our everyday life: we check our driving mirrors before overtaking: we use condoms to avoid HIV infection; we fit seat belts to avoid injury in accidents. Precaution strikes such a common chord that, if for no other reason than ease of understanding, we are likely to continue to discuss the precautionary principle." R.C. Earll, "Commonsense and the Precautionary Principle: An Environmentalist's Perspective" (1992) 24 *Marine Pollution Bulletin* 182 at 182.

[4] T. O'Riordan & J. Cameron, "The History and Contemporary Significance of the Precautionary Principle" in T. O'Riordan & J. Cameron, eds., *Interpreting the Precautionary Principle* (London: Cameron May, 1994) 12 at 20.

influential definitions or articulations by academics and legal instruments have largely confined its operation to scientific frames of reference. A useful conceptual definition is the following offered by Cameron and Abouchar:

> The precautionary principle ensures that a substance or activity posing a threat to the environment is prevented from adversely affecting the environment, even if there is no conclusive scientific proof linking that particular substance or activity to environmental damage.[5]

The definition emphasizes the most important aspect of the precautionary principle from a legal point of view: that positive action to protect the environment may be required *before* proof of harm has been provided.[6] "The new element is the timing of, rather than the need for, remedial action."[7] However, by explicitly including the term 'scientific' and by implicitly affirming the science-based cultural assumption[8] of causal connections (by providing that *even if* there is no link...) the definition illustrates the assumption that scientific knowledge will inform the precautionary principle.

The most common legal articulations of the principle are derived from the explicitly science-biased Principle 15 of the *Rio Declaration on Environment and Development (Rio Declaration)*. Principle 15 provides that:

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full *scientific certainty* shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.[9]

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[5] J. Cameron & J. Abouchar, "The Precautionary Principle: A Fundamental Principle for Law and Policy for the Protection of the Global Environment" (1991) 14 *Boston College International and Comparative Law Review* 1 at 2.

[6] D. Freestone & E. Hey, "Origins and Development of the Precautionary Principle" in D. Freestone & E. Hey, eds., *The Precautionary Principle and International Law; The Challenge of Implementation* (The Hague, Kluwer Law International, 1996) 3 at 13.

[7] *Ibid.*

[8] See below at footnotes 10 and 11.

[9] *Rio Declaration on Environment and Development*, 14 June 1992, 31 I.L.M. 874 [hereinafter the *Rio Declaration*] (emphasis added).

Operational guides in other international instruments similarly emphasize 'scientific certainty', either explicitly[10] or implicitly[11], as the yard stick for an assessment as to whether in a given situation it is appropriate to invoke the principle. Furthermore, "threats of *serious* and *irreversible* damage", "*cost-effective* measures" and "environmental *degradation*" all import value judgements. By setting scientific discourse as the standard by which to make such judgements, dialogue as to the balancing factors of the principle is restricted. What might be understood as serious and irreversible damage to science-oriented managers may be considered as posing little threat by societies that have observed, over thousands of years, how nature responds to human activities.[12] Conversely what may appear to be little threat of damage within a scientific understanding may appear devastating to people who live within environmental patterns. Finally, what may be 'cost-effective' according to western concepts of progress and development may heap enormous costs onto a society that places a different emphasis on economic factors within its concept of development.[13] By restricting interpretation of the precautionary principle to a scientific framework, current definitions and articulations are in danger of discounting, from the outset, legal interpretations of a broad-based precautionary principle.

The precautionary principle is a guide for policy makers who must make a particular decision, not knowing, because of lack of information or *understanding* about the information, what the ramifications of the decision will be on the environment. The

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[10] See for example, the *United Nations Framework Convention on Climate Change*, 9 May 1992, 31 I.L.M. 849, art. 3(3) [hereinafter the *Climate Change Convention*]; the *Convention on Biological Diversity*, 5 June 1992, 31 I.L.M. 818, preamble [hereinafter the *Biodiversity Convention*]; and the *Ministerial Declaration on Sustainable Development for the ECE Region* (*Bergen Declaration*)16 May 1990, U.N.Doc A/CONF.151/PC/10, para. 7.

[11] See for example, article 3(2) of the *Agreement on Cooperation in Research, Conservation, and Management of Marine Mammals in the North Atlantic*, 9 April 1992, L.S.B. 26:66 which uses the phrase "no conclusive evidence of a causal relationship between inputs and their alleged effects" implying that there would be expected to be a causal relationship.

[12] The following quote by Peter Alogut illustrates this point, "Elders say that any kind of animal moves away for a while but, according to the government, animals are in decline. To the Inuit, they have moved, but not declined...From what I have heard, there used to be lots of walrus here. Now there isn't, but they're not gone. They have just moved...in our community there is a place called Ullikuluk where there hardly used to be any walrus. Now, there are many. The government says they became extinct when really they have just moved." M.M.R. Freeman, "Inuit hunter's knowledge indicates biologists underestimate Arctic whale populations" (unpublished paper, in author's files)

[13] See chapter four.

guide in such a situation is to 'err on the side of caution'. In essence, the principle recognizes the futility of searching for a cause and effect relationship between human acts and impacts on the environment under specific (arguably all) circumstances and calls for the taking of precautionary action before an *anticipated* adverse event occurs. The question remains – how do policy makers *anticipate* an adverse event? Do they draw from 'common sense' and 'intuition'? Invariably, they will be required to point to *some* information as the basis for a decision. There will necessarily be a value judgement as to the most appropriate information on which to base the decision that there is not enough understanding about the environment in question to be 'certain' of the decision's outcome.

The value judgement depends to a certain extent upon whether the decision-maker is working within an anticipatory or a predictive framework. The two verbs, to anticipate and to predict, are often used interchangeably but their different emphases on information gathering and interpretation have enormous consequences for precautionary decisions. According to the Oxford dictionary[14], to predict is to "make a statement about the future; foretell, prophesy" while to anticipate is to "deal with or use before the proper time." The distinction that this thesis makes[15] is that prediction is a cognitive, rational process using present data to foretell how patterns will react to human activity based on what the thinker understands as the laws of nature driving those patterns. Prediction is a lineal knowledge building process requiring a fixed future end from which to judge present data. In that sense it is an artificial process because the end, the laws, are a human construction in the first place and are subject to change. Anticipation on the other hand, is an unconscious process combining information from *repetitive experiences* (collective and individual) from which the brain processes and matches complex probabilistic variables or functions too difficult for logic to unravel.[16] Anticipation is a spatial, not a temporal process so in a sense, the thinker is already in the future and simply using the information "before the proper time," that is, before the outcome of a given activity.

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[14] J. Swannell, *The Oxford Modern English Dictionary* (Oxford: Clarendon Press 1992)
[15] Although the distinction is reiterated throughout the thesis, it is most clear in chapter five.
[16] T. Lewis, F.A. Amini & R. Lannon, *A General Theory of Love* (New York: Random House, 2000) at 110.

Anticipatory frameworks, it is argued, embrace uncertainty, emotion, qualitative information and an integrated approach to decision making in the sense that social institutions are organized to respond to environmental feedback. Predictive frameworks are based on a rational processing of quantifiable information directed towards reducing the role of risk in management decisions, tending to 'lock in' the decisions and affecting the capacity to respond to environmental feedback. Thus there will be a value judgement about, *inter alia*, the organization and interpretation of qualitative and quantitative information depending on the framework used.

Although it may be assumed that a policy maker's function is to make rational decisions using the 'best' information available to him or her, decisions to invoke the precautionary principle often clearly involve other motives. Politics is about conflict and about emotion. "Above all, it is about mutual accommodation, or lack of it, among people with differing moral codes and different goals."[17] However, real communication and understanding between cultures is undermined where there is a dominant perspective that is so widely accepted and taken for granted that it can unconsciously exclude all other perspectives.[18] Arguably, as may become evident throughout this thesis, indigenous knowledge, largely unintelligible to scientific cognitive processes, is often dismissed as anecdotal information, leaving it open for policy makers to decide that, due to lack of information, a particular precautionary policy is justified. Some high profile implementations of the precautionary principle, including the moratoria on seal and whale hunting, have been the product of western moral outrage whipped up by the political aims of some environmental groups, despite indigenous knowledge disputing the decisions.[19] Broadening the precautionary principle by receiving indigenous knowledge systems into decision-making structures can safeguard against the imposition of western morality on indigenous affairs. When indigenous knowledge systems are held in the same esteem as scientific knowledge systems by the establishments of working

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[17] E.N. Anderson, *Ecologies of the Heart: Emotion, Belief, and the Environment* (New York: Oxford University Press, 1996) at 13.
[18] L. Clarkson, V. Morrissette & G. Regallet, *Our Responsibility to the Seventh Generation: Indigenous Peoples and Sustainable Development* (Manitoba: International Institute for Sustainable Development, 1992) at 1.
[19] See chapter three (3.3.1)

relationships and shared understanding, abuse of the precautionary principle through misdirected emotion is less likely to occur. This is not to say that emotion does not have an important place in the successful implementation of the precautionary principle. Indigenous knowledge systems are an important guide to how emotion can be embraced by precautionary decision-making but not used as a weapon for an interest group's political aims.

This thesis shows that the scientific bias of the precautionary principle penetrates deeper than specific legal articulations explicitly referring to 'scientific uncertainty'. The bias goes to the root of how western society interprets precaution, environmental degradation, uncertainty, risk taking, cost-effectiveness and decision-making. Elsewhere, writings on the precautionary principle have been ordered into two generations: the first generation tended to concentrate on the "rapid emergence of the principle upon the international scene, and upon its status as policy or law, approach, principle or rule" and the second generation is in the process of addressing the problem of how to put the principle into operation. [20] While it could be said that this thesis belongs to the second generation, it does not address the implementation of the principle as articulated by international and national legislation. It takes a step back to question what type of knowledge system lies at the basis of the precautionary principle, motivating a decision-maker to think and decide in a certain way and determining who will make the decisions in the first place. The step back enables a decision-maker to see the wider socio-legal impact[21] on the principle more clearly to determine how the operation of the principle can be best tailored to a particular context. The step involves a self-conscious reassessment of the underlying assumptions behind knowledge systems that are firmly entrenched

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[20] Freestone & Hey, *supra*, note 6 at 14. For writings on 'first generation' topics (with second generation discussions also) see for example, W. Lang, ed., *Sustainable Development and International Law* (London: Graham & Trotman/ Martinus Nijhoff, 1995); D. VanderZwaag, ed., *Canadian Ocean Law and Policy* (Ontario: Butterworths Canada, Ltd, 1992); D. VanderZwaag, *Canada and Marine Environmental Protection: Charting a Legal Course Towards Sustainable Development* (London: Kluwer Law International, 1995); J. Brunnee *et al.*, "Beyond Rio? The Evolution of International Environmental Law" (1993) Nov. *Alternatives*, 16; E. Hey, "The Precautionary Concept in Environmental Policy and Law: Institutionalizing Caution" (1992) 4 *Georgetown Int. E. L. Rev.* 303; and D. Freestone, "The Road From Rio: International Environmental Law after the Earth Summit" (1994) 6 *Journal of Environmental Law*, 193.

[21] Including land tenure systems, social infrastructure and management frameworks.

within decision-making structures so that better informed precautionary decisions can be made. The largely unquestioned embrace of the term 'scientific uncertainty' and the derivatives thereof (implied and explicit) by the international community and some national communities is evidence that this step has been skipped.

1.2: Part Two - What is Indigenous Knowledge?

The international community has seized upon the phrase 'Traditional Ecological Knowledge,' or TEK, which not only confines the understanding of indigenous knowledge into scientific frames of reference, but in doing so, also imports certain restrictions on the application of the knowledge and renders it susceptible to judgements of 'legitimacy'. Western definitions of 'traditional' usually refer to cultural continuity transmitted in the form of custom, opinion or beliefs derived from historical experience.[22] The term is often used to denote 'other than modern' based on a temporal historical time frame but transposed on to spatial realities (contemporary societies).[23] In Tucker's words, the conceptual distinction is used to explain or justify a normative 'development' path whereby societies that deviate from the "European techno-economic standards are designated as 'traditional' or 'primitive' despite the fact that they are contemporaneous with those who label them as such."[24] Of course there are other understandings of the term 'traditional' including, as Berkes points out, 'time tested and wise'. He says that for many groups of indigenous people, the word carries positive meanings.[25] The problem is that the dominant discourse can restrict and define the application of what is understood as 'traditional knowledge' when indigenous groups have little control over policy making. Policy makers (and the public in general) need to understand that flexibility and

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[22] F. Berkes, "Traditional Ecological Knowledge in Perspective" in J.T. Inglis, ed., *Traditional Ecological Knowledge: Concepts and Cases* (Ottawa: Canadian Museum of Nature, 1993) 1 at 3.

[23] V. Tucker, "The Myth of Development: A Critique of Eurocentric Discourse" in R. Munck & D. O'Hearn, eds., *Critical Development Theory: Contributions to a New Paradigm* (New York: Zed Books, 1999)1 at 8.

[24] *Ibid.*

[25] For example, he writes, "when the Inuit (Eskimo) participants in a 1995 conference were asked to describe traditional knowledge, there was consensus on the following meanings: practical common sense; teachings and experience passed through generations; knowing the country; being rooted in spiritual health; a way of life; an authority system of rules for resource use; respect; obligation to share; wisdom in using knowledge; using heart and head together." F. Berkes, *Sacred Ecology: Traditional Ecological Knowledge and Resource Management* (Philadelphia: Taylor & Francis, 1999) at 6.

continuity are fundamental characteristics of any social system,[26] and so naturally many indigenous societies have adopted western influences to keep indigenous systems relevant to contemporary issues. Adoption of 'modern trappings' may leave contemporary indigenous practices open to the charge of 'inauthenticity', that is, lacking in tradition as the western discourse understands the word. 'Modern' influences, however, are incorporated into a framework of *existing indigenous knowledge* and so the charge generally has no foundation. Restrictions constructed by the western use of the word 'traditional' mean that important practices which appear to have been learned since contact with Europeans, but which are often actually the product of indigenous knowledge applied to contemporary problems, may be dismissed as 'untraditional' and important knowledge may be lost.

The term 'ecological knowledge' is also problematic. The word 'ecological' may immediately conjure up ideas of a branch of biology and with it, all the concepts inherent in western science. While ecological biology and indigenous knowledge may have in common the understanding of the relationship of living beings with one another and with their environment, they may differ in their ideological foundations for the knowledge, which will have a bearing on how they in practice, develop and apply the knowledge. For example, the behaviour motivated by the scientific belief that humans can influence patterns within the ecosystem may be totally different from behaviour stemming from many indigenous beliefs that humans cannot presume to have the power to influence.[27] Under the banner of ecology, decision-makers may introduce a species to eradicate a

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[26]K. Ruddle, "Local Knowledge in the Folk Management of Fisheries and Coastal Marine Environments" in L.D. Dyer & J.R. McGoodwin, eds., *supra*, note 2, 161 at 174.

[27] This passage by Jim Bourque highlights the difference: "When I was very young, I lived on the land with my family. My father had lived on the land for 56 years and always trapped in one marsh. He knew that marsh intimately – all the wildlife, and the relationships between the plants and the wildlife. He described this to me as the circle of life and told me that man is an integral part of that circle. As part of that circle, man has a responsibility in the hierarchy – *not a responsibility to maintain a balance among wildlife populations, but a responsibility to leave enough seed so that the animals will continues to survive.* When I was 18 years old, I worked as a guide for biologists. My job was to transport them by dog team. We talked many times about ecosystems. What they told me reminded me of what my father had said about the marsh. The main difference between what the biologists said and what my father had said was that *man was not a part of the ecosystem and could influence the ecosystem...*"(emphasis added), Arctic Institute of North America and Joint Secretariat – Inuvialuit Renewable Resource Committees, *Circumpolar Aboriginal People and Co-Management Practice: Current Issues in Co-Management and*

'pest' for the purpose of restoring balance. Perhaps indigenous knowledge would envisage problems with interfering further with natural systems and think the problem through differently. In any event, indigenous knowledge incorporates into problem solving more than simply empirical observation about the local ecology. Religion, culture and other components are so integral and intertwined that it makes little sense to specifically identify the components of the knowledge. This thesis shows that it is more accurate to talk about indigenous knowledge systems rather than indigenous knowledge *per se*. Unlike the specialization of fields within modern science, indigenous knowledge can constitute the whole social system, including religious, management and economic systems, and not simply 'ecological knowledge' in the narrow scientific sense. By distinguishing indigenous knowledge systems from scientific systems, this thesis does not intend to devalue indigenous knowledge. Rather, it is argued that conventional science employs a particular way of thinking about the world, termed here the 'scientific way of thinking', not shared by many indigenous cultures.

So what are indigenous knowledge systems? The following definition of indigenous knowledge was proposed during a one-week workshop hosted by the Inuvialuit Game Council and Joint Secretariat – Inuvialuit Renewable Resource Committee which examined the experiences of northern co-management regimes:

> Traditional knowledge is an accumulated body of knowledge that is rooted in the spiritual health, culture, and language of the people and handed down from generation to generation. It is based on the intimate knowledge of the land, water, snow, ice, weather, and wildlife, and the relationships between all aspects of the environment. It is the way people travel and hunt. It is a way of life and survival.[28]

Environmental Assessment (Calgary: Arctic Institute of North America, 1996) [Hereinafter Circumpolar Report] at 114.

[28] *Ibid.* The Royal Commission on Aboriginal Peoples write the following definition for traditional knowledge, "By traditional knowledge we mean a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment...[It] is an attribute of societies with historical continuity in resource use practices; by and large, these are non-industrial or less technologically advanced societies, many of them indigenous or tribal." Canada, *Report of the Royal Commission on Aboriginal Peoples: Perspectives and Realities*, vol. 4 (Ottawa: Supply and Services Canada, 1992) [Hereinafter RCAP *Perspectives*] at 454.

Commentators have identified certain common underlying characteristics of the knowledge, on the basis of the unifying factor of the belief in the interconnected relationship between humans and their surroundings. Some indigenous people agree that indigenous environmental knowledge can be understood as good reasoning, common sense and logic built on experience[29] about the relationship of living beings with one another and with their environment.[30] It includes a set of empirical observations about the local ecology, a system of classification and a system of self-management that governs hunting, trapping and fishing.[31] Unless specified, this thesis uses the term indigenous knowledge to mean the whole indigenous knowledge system including legal, economic, spiritual, management and social systems.

1.3: Part Three - Understanding Indigenous Knowledge in Context

Indigenous knowledge continues to be expropriated, objectified and commodified by people outside of the community in which it was formed.[32] The most common practice is to take specific elements of indigenous knowledge that are considered significant by western environmentalists or managers out of context and insert them into the dominant framework of scientific knowledge.[33] In this process, the knowledge is converted to a form recognizable to western culture and the original knowledge is stripped of its original content and significance. An extension of this process is to incorporate indigenous ideologies into western political agendas and then ultimately use those ideas against those same communities - as happened in the anti-sealing campaign discussed below.

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[29] Circumpolar Report, *ibid.*, at 114.

[30] Berkes, *supra*, note 22 at 3. From the point of view of western science, TEK is a multidisciplinary field of study involving ecology, geography, anthropology, and linguistics. M. Johnson & R.A. Ruttan, "Traditional Environmental Knowledge of the Dene: A Pilot Project" in M. Johnson, ed., *LORE: Capturing Traditional Environmental Knowledge* (Ottawa: IDRC 1992) 35 at 43.

[31] Dene Cultural Institute, "Traditional Ecological Knowledge and Environmental Assessment" in P. Boothroyd & B. Sadler, *Traditional Ecological Knowledge and Environmental Assessment* (Hull, Quebec: CEARC, 1993) 6 at 8.

[32] M.G. Stevenson, *Traditional Knowledge in Environmental Management? From Commodity to Process* (Alberta: Sustainable Forest Network, 1998) at 5.

[33] *Ibid.*

One glaring example of the tendency to misappropriate knowledge from indigenous cultures, twisting it to serve political or environmental agendas is 'Chief Seattle's Speech.' In an article which explores the world-wide blind embracing of ideas that have arguably come to personify Native American culture for much of the western world, Kaiser traces the origins of the 'speech.' The speech is reputed to have been Chief Seattle's response to President Franklin Pierce's offer to buy Aboriginal lands in 1854 in what is today Washington State.[34] The two short speeches by Seattle on the occasion of signing the Point Elliot Treaty that are recorded in the National Archives in Washington, D.C. bear no resemblance to the popularized speech under Seattle's name.[35] The first published version of the latter speech was presented to the public by Dr. H.A. Smith more than thirty years after the Chief is said to have delivered it.[36] According to Kaiser's[37] research, Dr. Smith's speech was a reconstruction from 'extended notes'[38] that he had taken from a speech by the Chief given at a reception for the new commissioner of Indian Affairs for Washington Territory a few years before the Treaty was signed. Kaiser found that in 1969 William Arrowsmith, an American Poet and writer, published the "Speech of Chief Seattle" and altered the wording, not the context of the text published by Smith. This version was shortly followed by the now famous text published in 1974 by an anonymous author.[39] In the third version, the content of the text was mostly altered and it adopts a definite ecological theme. It is to be noted that Seattle could not have made several remarks in the third version in 1854. For example, seeing "a thousand rotten buffaloes on the prairie, left by the white man who shot them from a passing train" would have been difficult as, according to Kaiser, there were no trains running across the prairie in America in 1854. Eventually Arrowsmith's colleague, Ted Perry, came forward and revealed that it was a fictional speech that he made for the Baptist Radio and Television

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[34] D. Paul, *We Were Not the Savages: A Micmac Perspective of European and Aboriginal Civilizations* (Halifax: Nimbus Publishing Ltd, 1993) at 50.

[35] Kaiser, R., "Chief Seattle's Speech(es): American Origins and European Reception" in B.A. Swann, & A. Krupat, *Recovering the Word: Essays on Native American Literature* (London: University of California Press, 1987) 497 at 505.

[36] *Ibid.*

[37] *Ibid.* at 505-6. See Appendix II for the text of the three speeches.

[38] Kaiser hypothesizes that Smith would have based the speech on the interpreter's version or on his own knowledge of Lushotseed. *Ibid.* at 505.

[39] The anonymous author notes in his version entitled "The Decidedly Unforked Message of Chief Seattle" that it is "[a]n adaptation of his [Chief Seattle's] remark, based on an English translation by William Arrowsmith." *Ibid.* at 507.

Commission.[40] Nevertheless, the world embraced the speech with environmental fervor because the text seemed to satisfy the hope that, where science has failed, somewhere out there is a culture that has all the answers to our ecological crises.

The devastation felt throughout the Inuit community after an anti-sealing campaign is one of many examples of the dangers of twisting local indigenous knowledge to answer modern global concerns. Appropriation (and misappropriation) largely deprives the knowledge of its contextual meaning. In 1982, the European Economic Community placed a ban on the sale of white coat seal pup pelts and in 1983 for mature seals, as a result of successful campaigns by Greenpeace and animal rights groups.[41] The annual revenue from the sale of sealskin pelts dropped by over sixty percent in eighteen out of twenty Inuit communities in the Northwest Territories from the collapsed market.[42] The animal rights movement had incorporated Inuit ideologies into anti-sealing campaigns and then ultimately used those ideas against Inuit communities which have hunted seals for thousands of years.[43] Not only were the Inuit bitten by a romanticized version of their own ideology, but the international community, it seems, did not think twice about imposing western morality upon the Inuit who were not consulted prior to the ban.[44] It seemed to outsiders that there was no longer a need for Inuit communities to continue this hunting process when considering the modern 'amenities' that were now available to them. Freeman points out that "tradition in these cases is equated with 'backwardness' and, hence, an ongoing struggle to survive; a

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[40] Arrowsmith had given him permission to use the idea of the speech as the basis for the script and that "in passing the script along to the Baptists, I always made it clear that the work was mine." *Ibid.* at 514.

[41] W. LaDuke, "Traditional Ecological Knowledge and Environmental Futures" in Colorado Journal of International Environmental Law and Policy, *Endangered Peoples; Indigenous Rights and the Environment* (University Press of Colorado, 1994) [Hereinafter Colorado Journal] 126 at 138.

[42] *Ibid.*

[43] A representative of the International Fund for Animal Welfare defended the collapse of the sealskin market by arguing that his organization would not have a problem with Inuit hunting if the Inuit hunted in the same way they did 'five hundred years ago'." D.J. Buege, "Epistemic Responsibility and the Inuit of Canada's Eastern Arctic: An Ecofeminist Appraisal" in K. Warren, ed., *Ecofeminism: Women, Culture and Nature*, (Indiana University Press, 1997) 99 at 100.

[44] Freeman states that although the US federal agencies submitted reports on Alaskan indigenous whaling at IWC meetings, the Inupiat and Yupik whaling communities remained unaware of the discussions. M.M.R. Freeman, "The Alaska Eskimo Whaling Commission: Successful Co-Management Under Extreme Conditions" in E. Pinkerton, ed., *Cooperative Management of Local Fisheries: New Directions for Improved Management and Community Development* (Vancouver: University of British Columbia Press, 1989) 137 at 139.

condition which, activists claim, no longer exists."[45] Western bodies, including environmental groups, rarely recognize the relationship between environmental initiatives and cultural and physical genocide.[46] These 'social justice issues' must be recognized as a part of an environmental agenda so that there will be a variety of societies left whose people understand how to care for an ecosystem in a sustainable, practiced manner.[47]

1.4: Part Four – Thesis Overview

While the body of the thesis is divided into five chapters, there is an overlapping of themes and continual cross-referencing between chapters. The first two chapters begin with some conceptual foundations for anticipatory and predictive decision-making frameworks discussed in more practical terms by later chapters. Overall, the interrelated conceptual, institutional and legal issues for the functional role of indigenous knowledge within precautionary decision-making provide the scope for the following exploration of indigenous and scientific knowledge systems.

The effect that the structure of language itself has on the way humans perceive the world, and make decisions about the world, is explored in chapter two. As Greenburg suggests, "it is not only particular concepts that are derived from our language but also a coherent way of looking at the world, a philosophy, as it were, which will differ from language to language."[48] This chapter explores the idea of looking at the world through a noun-based language, as European languages predominantly are, and through a verb-based language, a predominant characteristic of many indigenous languages. Noun-based languages tend to focus on the characteristics of 'things' while verb-based languages tend to focus on the *relationship* between 'things'. In other words, the

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[45] M.M.R. Freeman, "Issues Affecting Subsistence Security in Arctic Societies" (1997) 34 *Arctic Anthropology*, 7 at 10. He quotes McGoodwin as saying that members of urban populations have little "direct experience with animal husbandry or with large wild animals...[and] have achieved a level of affluence permitting them to press for the cessation of activities that are no longer important in their own societies, but which are otherwise still essential among other peoples and subcultures – about whom they know very little." at 13.

[46] Freeman, *supra,* note 44 at 138.

[47] *Ibid.*

[48] J. Greenburg cited in T.W. Overholt, & J.B Callicott, *Clothed in Fur and Other Tales: an Introduction to an Ojibwa Worldview* (Washington, D.C.: University Press of America, 1982) at 17.

function of a noun-based language is arguably to render the world intelligible to a society destabilized by constant external changes[49] by reducing objects and concepts into discrete, static, manageable labels which can remain relevant to people within a fluid social structure. The function of a verb-based language is arguably to articulate experience by identifying objects and concepts in terms of their use or their relationship to other things in an active process.[50] The variety of meanings embedded within many indigenous words set up a highly contextual knowledge source from which narrative, coupled with dreaming and visionary experiences practiced by some societies, can offer a speaker and listener the opportunity to expand and explore their own experiences of the world.

This chapter provides the setting for the argument throughout this thesis that the assumption of uncertainty is inherent to a world full of 'relationships between things' because the human mind cannot unravel the complex interconnections of which they are a part. Instead the thinker thinks within the environmental processes, anticipating the effect of his or her activities from cognitive processes sensitive to environmental feedback. One 'byproduct' of this way of thinking is to embrace uncertainty and accept that no one opinion about a course of action can be absolutely right or wrong, gearing decision-making structure towards consensus in the sense of 'joint thinking' as opposed to jointly agreeing. Another 'byproduct' is that people are treated as being within the unit being conserved,[51] developed[52] and managed[53] because when people understand their surroundings as comprising relationships between things, they cannot speak about the relationships without speaking about themselves.[54]

Thinking outside environmental processes on the other hand, as many decision-makers within state bureaucracies do, is largely the product of interpreting nature in light

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[49] Including changes in population, external technology (see chapter two, part 2.2) and information saturation.
[50] R. Joe, & L.Choyce, eds., *The Mi'kmaq Anthology* (Nova Scotia: Pottersfield Press, 1997) at 148.
[51] See chapter three.
[52] See chapter four.
[53] See chapter five.
[54] F. Capra, *The Turning Point: Science, Society, and the Rising Culture* (New York: Simon and Schuster, 1982) at 87.

of 'characteristics of things' because the thinker can analyze all the pieces to work out nature's processes to predict the effect of a particular activity once the workings are revealed. The thinker can look objectively at the processes because he or she is removed from them. The goal of this rational, scientific way of thinking[55] is to narrow uncertainty to the point where the acceptance of an argument among peers can become essentially unanimous.[56] The goal is largely achieved by gathering quantifiable data about nature's processes to be used as 'proof', for example, that the environment will respond in a particular way to a given activity. This chapter indicates that such a goal is a symptom of a society using a predominantly noun-based language structure to understand the world. While some sciences have begun to look at 'relationships between things'[57] for precautionary management based on an anticipatory framework, this part highlights the fundamental restrictions that language can have upon the way these paradigm shifts are expressed and ultimately applied within western science-based cultures.[58]

Chapter three argues that anticipatory and predictive frameworks within which the precautionary principle operates are largely the products of a culture's relationship to nature. The chapter begins with an exploration of a common indigenous belief held by some indigenous peoples in Canada and the South Pacific that humans are *within* the patterns of the environment, intimately connected, so that it is futile if not dangerous to assume that humans can understand and manipulate the environment. Instead, beliefs and practices are based on the idea that there are too many variables to be certain about anything, except for a person's own experience. To survive within an inherently uncertain world, anticipatory capacities are finely tuned and relationships with the non-human world are strengthened to 'know' what will be the likely outcome of a given activity. The western romanticization of indigenous people as being 'one with nature' is a means of setting an idealized standard that doesn't take into account the complex relationship that people who live within environmental patterns experience and maintain.

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[55] See chapter three (3.2).
[56] C.S. Holling, F. Berkes & C. Folke, "Science, Sustainability and Resource Management" in Berkes & Folke, *supra*, note 2, 342 at 346.
[57] See the discussion of chaos theory and movements in psychiatry in chapter three (3.2) and resilience-oriented management in chapter five.

Being 'one with nature' probably does not include graphic images of bloody harp seal hunts. Living *within* the patterns, however, has developed within many indigenous societies complex relationships between persons, human and non-human, and between persons and their habitats. On the basis of a reciprocal relationship, non-human persons offer themselves to humans so long as the humans observe certain standards of behaviour and attitudes towards those persons that maintain them. The graphic images that some western people might find contrary to their concept of appropriate 'killing' and 'conservation', explored in the chapter, are the same images that some indigenous people may consider essential for maintaining the natural balance of which they are a part.

When a world is full of 'characteristics of things', it is conceptually simple to understand world order as the "predictable behaviour of each part within a rationally determined system of laws"[59] – arguably the cornerstone of the 'scientific way of thinking' explored in part two. The scientific way of thinking assumes that the human mind can understand the workings of the world because humans are considered separate from the objects that fill it and therefore capable of observing 'objectively' the predictable patterns to understand how they fit together. It is argued that the concept of cause and effect, essential to a predictive framework, is a western cultural assumption, absent in the empirical world but still very much a part of science-biased precautionary decision-making. The chapter explores, however, a paradigm shift in the science-oriented world's relationship to nature. Some contemporary scientific disciplines are placing humanity back into the natural environment by focusing on the value of knowing '*that* X is so' without '*why*'. The theory of relativity and the theory of atomic phenomena are pointed to as a shift in scientific focus towards the 'relationships between things' as comprising the empirical world. In a world with such inherent uncertainty, predictive frameworks are redundant. Studies of limbic resonance and memory systems within the field of psychiatry are looked at as evidence of a shift towards scientific 'validation' of anticipatory capacities.

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[58] See for example, the assumptions inherent within the terms 'wildlife' in chapter three (3.3.1b) and 'wildlife management' in chapter five (5.1 and 5.3).

[59] C. Merchant, "The Death of Nature" in M.E. Zimmerman, *et al.*, eds., *Environmental Philosophy: From Animal Rights to Radical Ecology* (New Jersey: Prentice Hall, 1993) 268 at 276.

Part three of chapter three focuses on the role of emotion within precautionary decisions derived from, *inter alia*, a culture's relationship with nature. The morality of killing and the morality of conservation are explored as evidence that several high profile uses of the precautionary principle, in particular, the moratoria on whale and seal hunting, have been driven by emotion. The practice of 'dressing emotional motivations in scientific clothing' to fend off indigenous knowledge contradicting a decision is highlighted as an abuse of the precautionary principle. On the other hand, indigenous knowledge systems seem to openly embrace the role of emotion within precautionary decision-making. Religion is focused on as providing the foundations for what this thesis calls 'internal precautionary approaches' in which the spiritual and social rules of sustainable resource use are internalized by the users themselves. Taboos are explored in some detail as a culturally powerful expression 'that X is so' based on individual and collective experience. In other words, they are arguably a manifestation of the anticipatory framework used to guide decisions and actions. It is shown how indigenous knowledge cannot be extracted from its spiritual and emotional context and still remain meaningful. Thus, it is argued, to achieve a broad-based precautionary principle which holds indigenous knowledge in the same esteem as scientific knowledge, the role of emotion within decision-making processes must be addressed and accommodated.

Chapter four, focusing on tenure systems and sustainable development strategies, provides the socio-political context for the following discussion in chapter five on anticipatory and predictive frameworks. Building on the points made in chapter three about internal precautionary approaches, it is argued that the competitive use of resources and the externally policed precautionary measures featured in common property (open-access) regimes are largely absent within the common property (communal property) regimes of many indigenous societies. An exploration of many customary marine tenure systems in Canada and the South Pacific reveals a complex, flexible system of access rights and responsibilities, often encompassing the whole land-sea interface. Whereas the complex rules relating to resource use may appear to inhibit the *systematic* and *scientific*

planning and implementation of effective resource management,[60] it is argued[61] that the system is an effective resource management system in which anticipatory precautionary decisions are made.

Part two of chapter four argues that dominant concepts of sustainable development fundamentally interfere with the organization of customary tenure systems and therefore the anticipatory framework of the cultural equivalents of the precautionary principle. It is shown that simply altering legal articulations of 'scientific uncertainty' will not displace the science-bias of the precautionary principle because the bias is firmly embedded within the dominant concept of sustainable development itself. Progress, arguably the cornerstone of this concept, is pointed to as an artificial construction of time and space by the thinkers of modern science and can lead to the breakdown of customary tenure systems. Modernization, it is argued, is commonly mistaken for 'development' and the criteria of a nation 'being in itself' is offered as an alternative that can allow for non-lineal concepts of development observed by some indigenous societies. Sustainable development strategies that would not interfere with customary tenure systems are touched upon although it is emphasized that an indigenous society must have the power to decide itself how best it can become 'being in itself'.

Chapter five looks in more detail at predictive and anticipatory frameworks for the operation of the precautionary principle with an aim to finding common ground for indigenous and scientific knowledge systems in precautionary management. Following on from chapter four, this chapter explores the different focus of management between indigenous and science-oriented world-views. The focus of indigenous management is largely on human activity as part of environmental patterns (regulating 'how' people fish and hunt) while the focus of science-based management is largely on the resource itself, (regulating 'how much' can be taken).[62] This difference in focus affects, among other

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[60] E. Hviding, "Contextual Flexibility: Present Status and Future of Customary Marine Tenure in Solomon Islands" (1998) 40 *Ocean & Coastal Management* 253 at 260.

[61] The point is introduced in this chapter but explored in chapter five.

[62] F. Berkes, "Indigenous Knowledge and Resource Management Systems: A Native Canadian Case Study from James Bay" in S. Hanna, & M. Manasinghe, eds., *Property Rights in Social and Ecological Context: Case Studies and Design Applications* (Washington, D.C.: The World Bank, 1995) 99 at 107

things, the organization and interpretation of data gathered to make management decisions. The scientific emphasis on quantifiable data and the emphasis within many indigenous management systems on accumulating a variety of environmental signals is explored in some detail as one of the reasons why finding a common 'language' between indigenous and science-oriented managers for precautionary decisions has been difficult.

The predictive bias of conventional scientific precautionary management regimes is explored as an artificial construction engineered to reduce the role of risk in society. The approach is reactive to environmental harm and tends to lock in management decisions by creating an artificial climate of certainty in which social institutions operate. However, the movement towards a resilience-oriented understanding of environmental patterns has the potential for shifting management focus towards qualitative data collection as well as towards people, as opposed to resource, regulation by basing management decisions on the premise of inherent uncertainty and by embracing risk. The concept of resilience and Holling's 'science of surprise' are explored in some detail for the purpose of showing how science-oriented management regimes can move towards an anticipatory framework.

Some indigenous management systems are explored in light of the whole social/spiritual system in which individual anticipatory capacities for precautionary decisions are facilitated by the flexibility inherent to the systems. It is shown that such societies organize individual activity and social institutions around environmental feedback so that pro-active precautionary action can be taken with little cost to individuals and society.

Adaptive management, with its non-linear, resilience-oriented multi-equilibrium approach to the interpretation of environmental signals is offered as a management regime which can facilitate a 'meeting of the minds' between indigenous and science-oriented managers. Adaptive management focuses on ecosystem processes rather than

ecosystem products[63] and some commentators have noted a "remarkable convergence between adaptive management and traditional ecological knowledge and management systems".[64] Thus adaptive management regimes are an important starting point for building a functional role for indigenous knowledge systems in joint indigenous-government (hereafter referred to as 'shared') precautionary decision-making.

Chapter six explores the legal pathways for and obstacles to a functional role for indigenous knowledge systems within shared precautionary decision-making. The chapter argues that the human rights field has been the primary motivating force for the recognition of indigenous knowledge by international and some national legal and political regimes. However, such recognition, it is argued, assigns to indigenous people a participatory role rather than providing the motivation for establishing relationships to facilitate a functional role for the people *and their systems*. In other words, a functional role depends not only on respecting human rights, but on respecting the systems *in their own right* while at the same time protecting the rights of the people. The existing human rights avenue for the input of indigenous knowledge into government precautionary decisions through human rights mechanisms is explored, however. While such mechanisms have procedural processes in place for basing their decisions on uncertainty and lack of information, it is argued that such an avenue is an expensive, cumbersome path for giving indigenous societies a decisive voice in decisions affecting their ecosystems.

Part two of chapter six looks at national attempts in Canada and New Zealand to include indigenous knowledge in precautionary decision-making. The part briefly looks at some case law in Canada and New Zealand affirming indigenous rights to a greater share of conservation decision making and confirming that valid conservation concerns are entitled to priority over treaty and aboriginal rights. Some co-management regimes in Canada are looked at to determine how decision-making mechanisms can accommodate a functional role for indigenous knowledge. Fundamental problems to achieving this aim

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[63] Berkes, *supra,* note 25 at 178. In other words, relationships between things rather than characteristics of things. See chapters two and three.
[64] *Ibid.* at 126. See in general Pinkerton, *supra*, note 44.

are looked at including ignorance about indigenous knowledge systems by government bodies, the different approaches to decision-making (by consensus or majority) and language and social barriers for those with the most traditional knowledge experience. Funding is identified as a major obstacle to bringing indigenous knowledge research to the decision-making table. However, even where the legislative door is open for co-management research arrangements, common scientific perceptions of the value of indigenous knowledge still impede its ability to displace scientific knowledge.

Finally, it is argued that even if a broad-based precautionary principle became a reality within management regimes, overriding conservation legislation based on the 'scientific way of thinking' can subvert the functional application of indigenous knowledge. This part links in with chapter three and emphasizes that the whole indigenous knowledge system, including religion and world-views, must be afforded a functional role if the knowledge is to be applied effectively as the basis for a precautionary decision. Thus attempts in Canada and New Zealand to include indigenous knowledge within precautionary decision making in conservation legislation are explored. The problems of not including the whole system and of defining indigenous concepts to be interpreted by western courts are highlighted.

1.5: Part Five – Methodology

A thesis on indigenous and scientific knowledge systems must obviously include indigenous as well as western voices. The majority of references dealing with indigenous conceptual issues have been either drawn from works by indigenous writers or by western writers quoting indigenous peoples or translating their narratives into English. As will be discussed in chapter two, the differences between the processes for the transmission of information that find expression within the two cultures makes an in-depth analysis supported by purely indigenous sources difficult. Conflict arises where the western academic culture requires verifiable, supported evidence to back up an argument while the indigenous academic culture may offer information clothed in personal experience, personal experience arguably being the cornerstone of many

indigenous knowledge systems. Much literature risks being discarded as anecdotal and is condemned to burial deep within academic footnotes. A law thesis needs to draw upon information from other disciplines to remain relevant to societal changes. A few indigenous narratives are included in the thesis but their inclusion is not intended to offer an understanding as to the complexity of indigenous knowledge bases because such understanding can only of course be experienced by those within indigenous discourses.

Where indigenous sources about practical issues affecting indigenous knowledge systems are unavailable, the writings of non-indigenous experts have been used. However, the sources have been limited to respected experts who have either lived in indigenous communities or conducted extensive research on an issue facing indigenous societies. While their observations have been included, conclusions or analyses that appear clothed in scientific frames of reference have been avoided.[65] Conversely, predominantly non-aboriginal authors have been referred to for the analysis of scientific concepts while including indigenous observations and perspectives.

Admittedly, it is counterproductive to classify peoples into discrete entities of 'indigenous' and 'western'. People within a tight community often do not share the same beliefs, practices and needs, let alone people within a particular culture whose members may be scattered within a large geographical region. Nevertheless, this thesis focuses on broad conceptual issues that, while practical examples are given from specific communities, are best highlighted by a general grouping based on 'culture'. So how is culture treated in this thesis?

Culture can be broadly defined as "the configuration of learned behaviour and results of behaviour whose components and elements are shared and transmitted by the

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[65] One exception is the section on dreaming and visionary experiences in 2.2. While several of the indigenous authors have referred to these practices, due to their intensely personal nature, there seems to be a reluctance to share the concepts behind the practices. I use Ridington's analysis (who lived within an indigenous community) purely as an illustration that there are fundamental differences in the processes of anticipation between cultures. I mean no disrespect to indigenous cultures by including the ideas. Note that this whole process of conducting an in-depth analysis to work out why knowledge systems operate as they do is a classic example of the 'scientific way of thinking' seemingly unavoidable in a law thesis which requires evidence to support statements and rational arguments.

members of a particular society."[66] Overholt & Callicott suggest that "culture as an organized information system reflects, instructs, and synthesizes the moments of human experience. It is the relational hierarchy through which experience becomes meaningful."[67] While culture is a social construction, human social beings are 'defined' by their cultures. The following extract by the International Institute for Sustainable Development illustrates the interdependence between humans and culture:

> We are immediately constrained by accident of birth to one particular understanding of the world with a common body of knowledge. Customs, norms, beliefs and institutions are already in place. Throughout our socialization, we interact with this social world, testing its boundaries; at some point in time this world solidifies in meaning and becomes our inner world. Not only does it become our inner world, but the meanings and the expressions of this inner world are so widely shared and accepted that they attain the quality of an 'objective' social fact. These are not just the internal boundaries from which we act, they also become the same external boundaries toward which we act. Some of us are able to stretch these boundaries; none of us can totally escape.[68]

Intercultural understanding is possible, however, through a self-conscious assessment of cultural assumptions and biases. Culture can be conceptualized as "a patterned system[69] of symbols and meanings."[70] According to Geertz, a 'symbol' can refer to many things, including "any object, act, event, quality, or relation which serves as a vehicle for a conception – the conception is the symbol's 'meaning'."[71] A meaning, then, will be formulated from the reflective process of perception and interpretation, expression and reinterpretation.[72] It is important to remember that differences in interpretation which culminate in cultural differences may flow from race and ethnicity as

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[66] M. Le Baron Duryea, *Conflict and Culture: a Literature Review and Bibliography* (British Columbia: University of Victoria Institute for Dispute Resolution, 1992) at 4. A more specific definition is: "culture involves the cumulative deposit of knowledge, experience, meanings , beliefs, values, attitudes, religions, concepts of self, the universe, and self-universe relationships, hierarchies of status, role expectations, spatial relations, and time concepts acquired be a large group of people in the course of generations through individual and group striving" L.B. Nadler, M.Keeshan Nadler & B.J. Broome, "Culture and the Management of Conflict Situations" in W.B. Gudykunst *et al.*, eds., *Communication, Culture, and Organizational Processes* (London: Sage Publications, 1985) 87 at 89.

[67] *Supra*, note 48 at 1.

[68] Clarkson *et al.*, *supra*, note 18 at 1.

[69] Where a "patterned system connotes orderliness, stability and self-regulation" S. Ting-Toomey, "Toward a Theory of Conflict and Culture" in Gunykunst, ed., *supra*, note 66 at 72.

[70] *Ibid.* at 73.

[71] C. Geertz, *The Interpretation of Cultures* (New York: Basic Books Inc., 1973) 91.

well as from age, socioeconomic status, gender, national origin, recency of immigration, (or in the case of colonization, the recency of domination), sexual preference and disability.[73] This thesis concentrates predominantly on race and ethnicity although age and socioeconomic status factors are touched on. According to the above definitions, intercultural understanding is made possible when the interpretive processes concerning the same 'symbolic event' between two individuals are in close alignment with one another.[74] Potential conflicts arise when two individuals, coming from two distinctive cultures, have two different ways of expressing and interpreting the same 'symbolic event'.[75] Cultural assumptions, attitudes and values are not a conceptual overlay that we can choose to place on experience.[76] Rather, we experience our 'world' in such a way that our culture is already present in the very experience itself.[77] Nevertheless, it is possible to go far enough into the cultural world of another by 'stretching one's internal and external boundaries' and putting cultural influences into perspective to reach an understanding that different interpretations are not so much conflicting, as orthogonal. This thesis attempts to do just that.

To stretch the boundaries, we must know where they lie by understanding what is commonly understood as 'western' or 'scientific' and 'indigenous' 'world-views'. A world-view can be understood as "a set of conceptual presuppositions," both conscious and unconscious, articulate and inarticulate, that are shared by the members of a culture.[78] World-views contain more than simply consciously held beliefs such as what happens to souls after death. They also contain automatic and unthinking processes including perceiving and recognizing, processes that therefore may be expected to vary, sometimes significantly, from culture to culture.[79] Geertz stresses the difference between a cognitive

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[72] Ting-Toomey, *supra*, note 69 at 73.
[73] Le Baron Duryea, *supra*, note 66 at 4.
[74] *Ibid.*
[75] *Ibid.* It is to be noted that what passes for cultural differences may actually be the result of expectations and perceptions which, when acted upon, "help to bring about a form of self-fulfilling prophecy." J. Macfarlane, ed., *Dispute Resolution: Readings and Case Studies* (Toronto: Edmond Montgomery Publications Ltd., 1999) at 33.
[76] G.Lackoff *et al.*, *Metaphors We Live By* (Chicago: The University of Chicago Press, 1980) 57.
[77] *Ibid.*
[78] Overholt & Callicott, *supra*, note 48 at 1.
[79] *Ibid.*, at 7.

orientation (world-view) and a normative one (ethos) which is useful to keep in mind when behavioural practices diverge from spiritual/moral beliefs.[80] He writes that a "people's ethos is the tone, character and quality of their life, its moral and aesthetic style and mode; it is the underlying attitude toward themselves and their world that life reflects. Their world-view is the picture of the way things in sheer actuality are, their concept of nature, of self, of society. It contains their most comprehensive ideas of order." [81] He points out that while the distinction is useful for conceptual analysis, the two ideas are thoroughly blended together in the living context of culture.[82] Arguably, moral codes are an ideal and set the 'standard' of behaviour much higher than is expected to be practiced. Other factors including emergency survival or overwhelming need may drag behaviour beneath a society's ethos but not necessarily, the world-view shared. It is important for science-oriented policy makers to keep this 'reality check' and not dismiss an indigenous community's commitment to stewardship if it diverges from the romanticized ideal.[83]

At the risk of making sweeping generalizations, this thesis is organized on the basis of themes relating to the facilitation of a functional role for indigenous knowledge systems, using examples from some indigenous societies from Canada, and the South Pacific including from New Zealand, Palau, Vanuatu and the Solomon Islands. This approach was taken, as opposed to studying one knowledge system in detail, because of the nature of the precautionary principle. The precautionary principle is a general guiding principle which depends on the context of a particular decision and so many indigenous knowledge systems were drawn from as examples of how a functional role can be achieved, depending on a variety of contexts. While the similarities between indigenous knowledge systems that are observed by commentators are highlighted in the thesis, it is in no way intended to imply that the systems are interchangeable. Each has its own distinct characteristics which are only intimately known to the people within the system in any event.

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[80] A common criticism by science oriented managers about indigenous practices discussed in chapter four.
[81] Cited in *Ibid.*, at 6.
[82] He writes, "the powerfully coercive 'ought' is felt to grow out of a comprehensive factual 'is'". *Ibid.*
[83] This point is developed in chapter 2. On the point of romanticizing a culture, see 1.3.

Use of the term 'indigenous peoples' is also problematic but necessary for a discussion on broad themes. No single agreed-upon definition of the term 'indigenous' or 'aboriginal' peoples exists in the international community but one offered by the Independent Commission on International Humanitarian Issues which presumably had input by indigenous peoples contains four elements; pre-existence, non-dominance, cultural difference and self-identification as indigenous.[84] Arguably, though, an indigenous people can often be dominant within a particular territory such as in Nunavut, northern Canada. The term 'indigenous peoples' is used in this thesis with reference to the descendents from the original inhabitants of an area who have retained a strong sense of their distinct culture and a strong *identity* with their ancestral homelands, whether still living there or not.[85] While at least 5,000 indigenous groups can be distinguished by linguistic and cultural differences or by geographic separation,[86] this thesis will draw upon common concepts that are rooted within similar world-views between culturally distinct groups.

Various terms are used to denote non-indigenous peoples, their world-views and systems throughout the thesis. The bulk of this thesis will refer to the 'scientific way of thinking' and 'science-oriented' or 'science-biased' managers and management systems. When talking about institutions and world-views that are not necessarily linked to the scientific way of thinking, but an important antecedent to it, the terms 'western' or 'Early European' are used. While it is recognized that countries are made up of multi-cultural societies with multiple influences on thinking within social institutions, this thesis focuses on the dominant 'scientific way of thinking' characteristic of governing authorities.

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[84] R.K. Hitchcock, "International Human Rights, the Environment, and Indigenous Peoples" in Colorado Journal, *supra*, note 41, 1 at 2.
[85] J.K. Asiema & F.D.P. Situma, "Indigenous Peoples and the Environment: The Case of the Pastoral Maasai of Kenya" in Colorado Journal, *supra*, note 41, 149 at 150.
[86] *The International Year for the World's Indigenous People*, U.N. Doc. DPI/1296-92358 (Nov. 1992) cited in *ibid.*, at 150.

Finally, this thesis uses the term 'functional role' to mean the capacity for an indigenous knowledge system to displace a scientific knowledge system within a decision-making structure. Functional connotes more than simply a decisive voice in decision-making, exceeding that of a mere consultative or participatory voice. To attain a functional role, the whole knowledge system must be accommodated within precautionary decision-making processes, including spiritual, economic, tenure and political systems. Indigenous knowledge systems must be respected as valuable processes for informing precautionary decisions 'in their own right' to safeguard against misappropriation and distortion of the knowledge by the dominant management paradigm.

CHAPTER TWO: THE IDEOLOGICAL DECISION-MAKING CONTEXT OF THE PRECAUTIONARY PRINCIPLE

Introduction

The ideological decision-making context of the precautionary principle is often overlooked by more practical concerns of determining the legal and political structures that can best facilitate the effective implementation of the precautionary principle. This chapter shows that there are some important ideological assumptions about the decision-making process, risk and uncertainty that must be addressed before institutional restructuring would be worthwhile. The aim of this chapter is to put into a cultural context the quantitative and predictive bias of the conventional science-based precautionary principle and management theory, and the qualitative and anticipatory bias of many indigenous cultural equivalents of the precautionary principle and their knowledge, social and management systems.

Part one suggests one source for a society's perception of nature which will determine the perspective from which precautionary decisions will be made – from within nature's processes or outside. Languages create a philosophy for their speaker and society by their structure and the manner of their use. It is argued that predominantly verb based indigenous languages move a thinker to perceive the world as 'relationships between things', encouraging a speaker and listener to rely on only their own experience as the basis for any empirical truths. Conversely, the predominantly noun based structure of English and related languages describes a world full of 'characteristics of things', reducing things and concepts into manageable entities about which judgements can be made and truths revealed.

Part two argues that the pre-European contact stability, or at least homogeneity, of many indigenous societies made possible the development of highly contextual indigenous languages capable of transmitting knowledge in an organic process. This

organic process, among other things, generates collective knowledge that feeds from and feeds into the personal experience of individual members, enabling each member to better match their thought processes to environmental signals. Anticipation is explored as a spatial process in which past, present and 'future' individual and collective repetitive experience is combined to unconsciously draw from a pool of probabilities, the most probable outcome of a given activity.

On the other hand, it is argued that the instability experienced by many early European societies necessitated low context language and knowledge transmission (in the form of writing) to successfully process the constant flow of information characteristic of a rapidly (lineally) changing society. Specialization in past and present western society is the key to processing the mass of information, resulting in fragmented branches of knowledge and a reliance on analytical and rational processes to put the pieces together. If enough (usually quantitative) information, which is considered reliable and 'testable', is gathered to reveal the workings of the environmental processes, it is thought that the decision-maker can predict the outcome of a given activity. The reliance on 'provable' information however, creates a hierarchy of knowledge in which personal experience becomes devalued. This hierarchy is a major obstacle to including indigenous knowledge systems within a precautionary decision-making structure and is explored throughout the chapter.

This chapter highlights the different approaches to decision-making processes. The belief in many indigenous systems that personal experience is the only truth that can be relied upon links in with the discussion on decision-making by consensus, common in indigenous societies, in which everyone's opinion is considered. Unlike many western decision-making structures in which opinions compete until all agree, many indigenous structures operating within the 'collective consciousness' arguably arrive at the decision communally through a type of joint thinking.[87]

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[87] See R. Ross, *Dancing With a Ghost* (Ontario: Octopus Publishing Group, 1992) at 22.

2.1: Part One – The Philosophy of Language: A World Full of 'Things' and a World Full of 'Relationships Between Things'

> *The Mi'kmaq language exists as the essential base of knowledge and survival. More than just a knowledge base, Mi'kmaq language reflects a philosophy, a philosophy of how we shall live with one another, a philosophy that reflects how we treat each other, and how all things in the world fit together. We all live in a circle and within the circle we are all dependent on each other and are in a constant relationship with each other.* - Rita Joe[88]

Many indigenous languages in North America[89] and the South Pacific[90] are verb-based languages that focus on the cycles, processes and interrelationships of all things.[91] Thus indigenous languages tend to identify objects and concepts *in terms of their use or their relationship to other things in an active process*.[92] For example, Anderson writes of the Haida, Tlingit, and Tsimshian peoples[93] that animals were classified not only in biological terms but in terms of the types and intensities of their spirit power. This system grew from the interaction between observation of the animals and the shamanic worldview and was mediated through the emotional involvement with animals, their capture and management of the people relying on them for existence.[94] In Palau, South Pacific, Johannes[95] observes that fish are named according to, *inter alia*, their biting characteristics[96] their fighting characteristics[97] and their habitats.[98] Thus implicit within

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[88] Joe & Choyce, *supra*, note 50 at 147-8.

[89] For example, see an explanation of the verb-based nature of Anishinaubae (Ojibwa) in D.D. Moses & T. Goldie, eds., *An Anthology of Canadian Native Literature in English* 2nd ed. (Toronto: Oxford University Press, 1998) and of the Mi'kmaq language in Joe, & Choyce, *supra*, note 50.

[90] See L. Lindstrom, *Knowledge and Power in a South Pacific Society* (London: Smithsonian Institution Press, 1990)

[91] Joe & Choyce, *supra*, note 50 at 148.

[92] *Ibid.*

[93] From the northwest coast of Canada.

[94] Anderson, *supra*, note 17 at 58. See chapter three.

[95] The following and many more examples can be found in R.E. Johannes, *Words of the Lagoon: Fishing and Marine Lore in the Palau District of Micronesia* (Los Angeles: University of California Press, 1981) at 126-130.

[96] A species of grouper (*Cephalopholis cyanostigma*) called *Hari merong* loosely means, 'always bites, takes any bait.' *Martacham* means 'very smart fellow', referring to a squirrelfish which, if it feels the prick of the hook, will not bite a second time. *Hafira* means 'testing' and refers to a particular snapper's nibbling approach to a baited hook.

the language structure and the words themselves is an understanding of the world being full of relationships *between* things.

Arguably noun-based languages emphasize the *characteristics of* things. English and its related languages are predominantly noun based[99] which reduce things and concepts (for example, 'isms') into static, manageable labels (objects) that can be quickly identified and 'understood'. Of course, indigenous languages contain nouns, but in the English language, nouns are employed differently and have a different emphasis. Arguably, in English, once something is labeled, the understanding of it is limited because implicit in the noun is often a conclusion as to its value. For example, nouns like 'pests' and 'weeds' are loaded with negative connotations, which makes it difficult to attribute value to their importance in maintaining the health of the ecosystem as a whole.[100] What we call them seems to be getting in the way of our knowledge of them, and this in turn limits our capacity to respond to them with an understanding that they are part of a complex world and capable of having different meanings, depending on the context.

A world full of verbs tends to convey to the thinker a sense that we can only rely on our own experience as the 'truth' of what we see in the empirical world. On the other hand, a thinker in a world full of nouns complete with value-laden adjectives is more prone to the assumption that the empirical world is as the thinker sees it. The following discussion about the weather highlights these differences. If nouns are used that are seemingly neutral, such as 'weather', often English speakers draw on the extraordinarily large number of value charged adjectives that are not so much descriptions *of* things, as

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[97] Such as *Hao* meaning 'missing', the name for two species of parrotfish who are often able to shake the hook.

[98] Including the generic name for goatfish (*so 'owo*) meaning 'middle of the current'.

[99] Joe & Choyce, *supra*, note 50 at 148; R. Ross, *Returning to the Teachings: Exploring Aboriginal Justice* (Toronto: Penguin Books, 1996) at 102.

[100] In her book *Hanta Yo*, Ruth Beebe Hill argues that "the Lokotah had no language for insulting those other orders of existence" such as the words 'pest' and 'weed'. Ross, *ibid.* at 78. Is to be noted that Vine Deloria, a prominent Native American lawyer, refutes Hills claims that she has an 'understanding of the Lokotah language like no other' but it is unclear if he refutes this specific claim. V. Deloria, *God is Red: A Native View of Religion* (Colorado: North American Press, 1992) at 41. See for a discussion of the western concept of 'weeds', C. Bradley, "Keeping the Soil in Good Heart; Women Weeders, the Environment, and Ecofeminism." in Warren, *supra*, note 43, 290.

they are conclusions *about* things.[101] For example, rather than saying, "this is weather", English speakers are likely to say, "this is wonderful weather" or some other adjective that does not describe the weather in itself, but rather the *judgement* that the speaker has made about it. Such a conclusion about the weather means that someone can say, "this is suffocating weather," leaving it open for argument as to who categorized it correctly. Even personalizing the statement by saying, "to me, this weather *is wonderful*" leaves open the notion that the opinion of one can be more accurate than the opinion of another. Arguably, if the adjective is converted into a verb such as "this weather *makes me feel* really wonderful," no judgements are passed, as the reaction is emotional, not intellectual. Emotional responses implicitly recognize that human beings are likely to respond in unique ways to the same events, things and people.[102] Thus it seems that cultures based on predominantly verb-based languages understand language as articulating what can be *experienced*. Sakej Henderson, a Chicksaw-Cherokee is reputed to have said:

> when you're speaking Mi'kmaq, you can go all day long without saying a single noun. My eyes can see nouns...That's what my eyes are supposed to do, see nouns, and obstacles and tracks and trails. But that's not what the function of the language is. It's not to become another pair of eyes. It's supposed to be speaking to the ear and to the heart...[103]

2.2 : Part Two - The Hierarchy of 'Knowing' – Information Processing, Social Learning and Decision-Making Structures

> *One of the troubles of our age is that habits of thought cannot change as quickly as techniques, with the result that as skill increases, wisdom fades.* – Bertrand Russell.[104]

Of course the differences in languages and the resulting concepts are far more complex than simply determining which language is predominantly noun/adjective or verb based. To move one step further, the following discussion highlights the response of

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[101] Ross, *supra*, note 99 at 102. This is not to say of course that there are no value free adjectives for example, green, light. The following example is based on Ross' argument.
[102] *Ibid.*, at 103.
[103] *Ibid.*, at 110-111.
[104] Berkes, *supra*, note 25 at xi.

language to the development of specific knowledge bases which evolved to address the specific environmental conditions of a particular society. A starting point is Hall's model for the study of value orientations based on low-context cultures (LCC) and high-context cultures (HCC).[105] While no culture exists exclusively on one end of the scale, he argues that aboriginal cultures are predominantly HCCs while western cultures are predominantly LCCs. Hall argues that a low-context communication vests most information in the explicit code (language, gestures etc). A high-context communication contains very little of the information in the coded, explicit, transmitted part of the message but rather, most of the information lies in the physical context or is internalized in the person as shared social and cultural knowledge.[106]

The relatively stable societies that were a feature of pre-European contact indigenous experience, and is still a feature for some groups, provide the context for a language based on shared cultural experience which in itself helps to bond the group (to stabilize society) in the face of an uncertain external environment. Basil Johnston, an Ojibwa writer, explains that:

> in my tribal language, all words have three levels of meaning; there is the surface meaning that everyone instantly understands. Beneath this meaning is a more fundamental meaning derived from the prefixes and their combinations with other terms. Underlying both is the philosophical meaning...
> When we say 'w'daeb-awae' we mean he or she is telling the truth, is correct, is right. But the expression is not merely an affirmation of a speaker's veracity. It is as well a philosophical proposition that in saying a speaker casts his words and his voice as far as his perception and his vocabulary will enable him or her, it is a denial that there is such a thing as absolute truth; that the best and most the speaker can achieve and a listener expect is the highest degree of accuracy. Somehow that one expression, 'w'daeb-awae', sets the limits to a single statement as well as setting limits to truth and the scope and exercise of speech...
> We say 'w'kikaendaun' to convey the idea that he or she 'knows'...when the speaker assures someone that he knows it, that person is saying that the notion, image, idea, fact that that person has in mind corresponds and is similar to what he or she has already seen, heard, touched, tasted, or smelled. That person's

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[105] See for a similar discussion on the distinction between a 'restricted' and an 'elaborated' code of discourse; R. Ridington, *Little Bit Know Something* (Toronto: Douglas & McIntyre, 1990) at 115.
[106] E.T. Hall, *Beyond Culture* (New York: Anchor Press, 1976) at 79.

> knowledge may not be exact, but similar to that which has been instilled and impressed in his or her mind and recalled from memory.[107]

As should become apparent throughout this chapter, highly contextual narratives[108] and the language on which they are based, enable a speaker and listener not only to deepen his or her own personal experience. It also trains a person to develop particular thought processes which sharpens a sense of anticipation essential for a successful life within an uncertain natural environment.[109] The organic nature of language and narrative directs thought processes towards anticipation and provides for the speaker and listener a wealth of collective knowledge, derived from generations of experience within a stable cultural setting.

Indigenous narratives, like the language itself, have many meanings and applications as well as containing tribal values, outlooks, perceptions, including perceptions of time as cyclical interconnection.[110] Arguably, inherent within the narrative is the idea that time cannot be divided into neat categories of past, present and future.[111] The past, present and future are intimately connected and one cannot be known

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[107] Moses, *supra*, note 89 at 107-8. McIlwraith quoted by Maud observes that "Two myths may give different people as the first occupants of a certain village, nor does such contradiction trouble the Bella Coola. Each man, convinced of the authenticity of his own family account, is quite willing to believe that the one belonging to someone else is equally correct..." R. Maud, *A Guide to B.C. Indian Myth and Legend* (Vancouver: Talonbooks, 1982) at 138.

[108] I use the term 'narrative' as a generic label to avoid implications often connected with the words 'myth' (that is, false or unreal), 'story' (an account of imaginary or past events) and 'legend' ('a popular but unfounded belief'. Swannell, *supra*, note 14.

[109] The connection between experience and anticipation is made clearer in the text accompanying note 126ff.

[110] Moses, *supra*, note 89 at 108. While significant events are located temporally in the western tradition, according to Vine Deloria, significant events are located spatially within American Indian religions. In other words, within sacred sites. He says at 67 that the "vast majority of Indian tribal religions, therefore, have a sacred center at a particular place, be it a river, a mountain, a plateau, valley or other natural feature. This center enables the people to look out along the four dimensions and locate their lands, to relate all historical events within the confines of this particular land, and to accept responsibility for it." It is recognized that there are sacred sites of significance to Christianity, for example, Jerusalem, but arguably they are significant with respect to the events that occurred on the site at a particular point in time. Thus the emphasis within many indigenous American thinking is not so much on *when* an event occurred, but *where* it occurred. *Supra*, note 100 at 122. See M.E. Tyler, "Spiritual Stewardship in Aboriginal Resource Management Systems" (1993) 22 *Environments* 1 at 6 and the discussion in chapter four, part one.

[111] Cruikshank, an Indigenous American author writes, "[o]ral tradition permits continuous revision of history by actively reinterpreting events and then incorporating such constructions into the next generation of narrative." J. Cruikshank, *The Social Life of Stories: Narrative and Knowledge in the Yukon Territory* (Vancouver: UCB Press, 1998) at 155.

or experienced without the other. Thus many of the narratives do not have distinctive time frames – many are set in a period before 'the world' had settled down to its present cycles, at the peak of what western societies may understand as 'supernatural activity'. That is, when life forms including spiritual elements were learning to coexist with one another.[112] The narratives do not appear to begin and end – they are always beginning and ending in a constant transforming pattern of circles within circles like "the sun in its journey that ceaselessly defines the days and seasons of our experience".[113] The language in itself reflects (or creates) the idea of time and space as cyclical interconnection. For example, Cree narrators generally refer to the future with the verb *ati-nikan* with the preverbal element *ati* indicating progression and giving the construction the sense of 'as the future unfolds.'[114] "*Oti ati-nikan i iniwak pi-yatwawi 'namiw' ki-t-isi ihkatikwak*" means literally, "here in the future people when they dwell here sturgeon they will call you" or "here in the future, when people dwell here, they will call you sturgeon."[115] In a theme that is not only repeated consistently in the narratives' structure and content, but also reflected in a world of cyclical interconnections, 'beginning' and 'end' are merely points in a person's experience of the narrative's cycles.[116] Thus indigenous language *and* narrative have evolved to express the relationship between things.

Storytelling combines drama and practical experience with moral content. [117] Rather than intended to be 'instructional' in the western educational sense, storytelling is

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[112] See for example, Chief Harris who relates Tsimshian (from the Northwest Coast of Canada) stories of creation. Chief Kenneth Harris, *Visitors Who Never Left: The Origin of the People of Damelahamid* (The University of British Columbia Press, 1974).

[113] Riddington, *supra*, note 105 at 3. See in general for narratives in Vanuatu, South Pacific; Lindstrom, *supra*, note 90.

[114] R.A Brightman, *Grateful Prey: Rock Cree Human-Animal Relationships* (Berkeley: University of California Press, 1993) at 66.

[115] *Ibid.*

[116] Riddington, *supra*, note 105 at 3.

[117] Cruikshank, *supra*, note 111 at 154. Clarkson *et al.* write, "There are hundreds of legends and stories that outline our roles and responsibilities to all the aspect of our creation...Like other people we have stories that speak of the first human being and his/her responsibility to the creation. We have stories of the travels of the people that outline the hardships and the lessons learnt through these. We have stories that tell of the things that the animal and the plant world have taught us about survival and respect for the planet. We have stories that outline how our political systems came to be. We have stories that tell of

open-ended to allow listeners to draw independent conclusions.[118] "By the very act of telling stories, narrators explore how their meanings work; by listening, audiences can think about how those meanings apply to their own lives."[119] It can be confusing for a science-oriented manager, for example, to extract meanings or conclusions drawn by an indigenous person when they are embedded in the narrative form unless he or she knows how to listen in a particular way. While not offering a view or advice directly, an aboriginal person may recite and (subtly) emphasize, often only through repetition, the facts that led to his or her preferred conclusion. [120] It is up to the listener to find that conclusion him or herself, so that it becomes his or her conclusion also.[121] Rita Joe writes:

> (s)ince our traditions, our knowledge of Mi'kmaq history and our secrets of life are oral, these sets of rules which govern our daily activities must be taught by our elders.[122] *No one actually learns by verbal knowledge but you learn through observation all during your lifetime*...In the Mi'kmaq world the philosophies of these rules are not considered important during your childhood. As you mature you begin to rationalize the philosophies yourself. Sometimes as an inquisitive child you may feel a certain rule is irrelevant to the positive contribution of your well being, then you must no doubt ask questions. An elder will take time to listen to you as to why this certain rule seems worthless to you. In all cases you will be listened to and your case will be aired. The elder will point out all the instances where this particular rule has worked in his lifetime and your case doesn't stand firm with all the positive attributes constituted for thousands of years by the usage of this rule. In all cases, your doubt will be transformed into newly acquired knowledge.[123]

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contact with other Indigenous people and how we formed alliances and friendships with them." Clarkson *et al.*, *supra*, note 18 at 49.

[118] Cruikshank, *ibid.* Lindstrom points out that the verbs people use to label the process of teaching in southern Vanuatu refer to its demonstrative characteristics so that rather than instructing a learner by saying 'this is how it is,' "teaching is pointing. The verb *–ahatin* means 'point/teach'; *iahatin* is a teacher who points at knowledge." *Supra*, note 90 at 44.

[119] Cruikshank, *ibid.*

[120] Ross, *supra*, note 87 at 22.

[121] *Ibid.*

[122] Boothroyd and Sadler write that elders of the Nuu-chah-nulth people, northern Canada, have emphasized that the teaching of 'conservation' begins at an early age. One method of the Nuu-chah-nulth was for the grandparents to begin to talk to the baby four days after birth and later, reinforced through stories, teach them how to 'watch nature'. After a story was told four times, a grandparent would ask the child to tell him or her the story and the grandparent would correct the child. *Supra*, note 31 at 60.

[123] Joe & Choyce, *supra*, note 50 at 51-2 (emphasis added). Moana Jackson, a prominent Maori writer, speaks of the tradition of respect for the gifts that are given to humans, and a realization of the need for balance in all things: "And when, in the course of everyday events, a person abused those gifts or upset the balance, and people wondered how to restore the good order and peace of the *iwi* (tribe), a story would be

Thus, rather than denouncing an opinion as wrong, people are encouraged to see a different point of view by being invited into the personal experiences of people within the group.[124] After all, as Basil Johnston points out, "the best and most the speaker can achieve and a listener expect is the highest degree of accuracy."[125] Embedded within the organic context of collective and personal experience, which ensures the narratives' relevance to societal changes, lies a moral outlook that bases its sense of, *inter alia*, 'right' or 'wrong', not on 'fundamental truths' but on personal experience.

The narratives are not static but rather feed from, and feed into, other personal experiences including, for some cultures, the vision quest and dreaming which transform experience into personal and collective knowledge. The vision quest is an intensely personal transforming experience during which a child, alone in the bush, comes in contact with medicine animals[126], or his or her spiritual guardian,[127] and comes to possess

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told. A tale of imbalance in those who had done wrong, and of the wise acts of those who in the past had restored their place and the place of those people or places wronged. And from the story came a certainty that created a tradition of precedent and law to guide the ways of all people, and a legal tradition to protect the balance in all things.

And from the telling of all those stories came a belief that a stable sense of order, of knowing one's place in the world, gave strength and understanding. And from that understanding came the solutions to many problems.

And the stories themselves came from the voices of the people and were woven from the threads of their own existence." J.M. Van Dyke, D. Zaelke & G. Hewison, *Freedom for the Seas in the 21st Century: Ocean Governance and Environmental Harmony* (Washington, D.C: Island Press, 1993) at xv.

[124] Similarly, according to Ross, it was considered very disrespectful or rude to pronounce someone else a liar. Rather, the individual's sincere beliefs would be accepted but the listener would proceed to win the individual over to the 'truth' by "tactful and diplomatic means. If this approach failed to achieve the desired result, unless the matter was of life-and-death or national importance, it was left alone." Ross, *supra*, note 87 at 20.

[125] For a western perspective, see Lewis *et al.* who point to new brain scanning technologies which show that perception activates the same brain areas as imagination. Perhaps for this reason, the brain cannot reliably distinguish between recorded experience and internal fantasy. In other words, the only 'truth' that we can really be sure of is our own personal experience. Lewis *et al.*, *supra*, note 16 at 104.

[126] Brightman states that the Crees whom he was living amongst referred to the entity as '*pawakan*' – literally 'dream image' which may be characterized as an *ahcak* (soul) being or it may be identified as an individual animal, bird, tool or any 'object'. Brightman, *supra*, note 32 at 76-7.

[127] For examples of the types of spiritual guardians that some Northwest Coast groups are connected to, see D. Jenness, *The Faith of a Coast Salish Indian* (Victoria: British Columbia Provincial Museum. Anthropological Papers no. 3, 1955). "Among the Salish peoples of the coast, each individual had a spirit guardian. This guardian gave him or her all his or her special powers, inclinations, and abilities. The spirit power thus included what Christians of the recent part knew as 'one's vocation.'" Anderson, *supra*, note 17 at 64.

the seed of 'knowing something'.[128] Ridington points out that to know something is to have both experienced and *interpreted* it. In other words, the 'medicine powers' which grow out of the visionary experience are socially validated personal interpretations of traditional stories.[129] Ridington observes[130] that the powers are real only as people discover them for themselves. In the same way as a child must figure out the medicines of old people, the old people must figure out the slowly emerging pattern of the child's medicines. The same ability through which the meaning of medicine stories is learned is the same ability through which the meaning in the pattern of animal movements in the bush are figured out - both processes combine intelligent observation and intense transformative experience.[131] This process provides power and knowledge to those members of society that have earned the capacity to responsibly use them, minimizing the risk of abuse which can affect the whole group. Ridington writes:

> The [medicine] stories become real in the theatre of their telling. They always remain secrets, but during the course of a lifetime become known to a widening circle of people. By the manner of their telling secrets, Dunne-za children establish themselves as people of knowledge. Thus, the story of an individual's life becomes part of the stories known to all. This diffusion of information balances the vision quest, during which a story known to all becomes part of the child's experience.[132]

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[128] Ridington, *supra*, note 105 at 90. See for example the RCAP report for a discussion of the vision quests practiced by the Blackfoot Confederacy. Canada, *Report of the Royal Commission on Aboriginal Peoples: Looking Forward, Looking Back*, vol. 1 (Ottawa: Supply and Services Canada, 1992) [hereinafter RCAP *Looking Forward*] at 64. Most sources for this section are drawn from North American indigenous experience but visionary quests and dreaming are a commonly known practice by other indigenous groups such as Aborigines and Torres Strait Islanders in Australia. See for example, K. Ruddle & R.E. Johannes, eds., *The Traditional Knowledge and Management of Coastal Systems in Asia and the South Pacific.* Papers presented at a UNESCO-ROSTEA Regional Seminar held at the UNESCO regional office for Science and technology for Southeast Asia 5-9 December, 1983. See also Lindstrom, *supra*, note 90 at 98 relating to visionary dreams of the people of Vanuatu, South Pacific.

[129] *Ibid.* at 20. See A. Grant, *Our Bit of Truth: An Anthology of Canadian Literature* (Manitoba: Pemmican Publications, 1990); Joe & Choyce, *supra*, note 50.

[130] Ridington, *ibid.* Note that Ridington lived with a Dunne-za group for a while and is speaking as an anthropologist.

[131] *Ibid.* Jenness wrote in 1955 "The mystic relationship between a man and his guardian spirit revealed itself outwardly in several ways. He dared not eat its flesh if it were a food animal; often, but apparently not always, he was forbidden to kill it even for the use of others. In his dancing he frequently simulated its actions so that his audience might feel that he was no longer a mere human being, but that he and his guardian spirit were one." Jenness, *supra*, note 127 at 47.

[132] *Supra*, note 105 at 16.

Thus through dreaming, visionary experiences and storytelling, personal experience is transformed into personal and collective knowledge which will in turn lay the foundation for another person's transforming experience.

The child gradually learns to use the medicine power to focus his or her dreaming on gaining knowledge of, and building relationships with, non-human persons[133] and in so doing, sharpens his or her anticipatory skills.[134] Each medicine animal gives powers and understanding appropriate to its nature[135], which can be used when dreaming, among other things, to gain future[136] and life saving[137] knowledge. The medicine power focuses someone's dreaming for seeing the larger pattern of which every small step is only a part.[138] The power gives the dreamer the vision to see the "clearest path of possibility from among the many paths that may or may not lie ahead"[139] because the person can refer back to the visionary experience as a point of reference, while at the same time draw from the collective cultural knowledge within the narratives. Thus dreaming back to the visionary experience is associated with dreaming ahead to the moment of contact between hunter and hunted: "the present moment is seen to be framed by visions of past and future encounters with medicine power."[140] As Ridington points out, revelatory experience is only informative where a system of information is waiting to be revealed.[141] The stable context featured in many indigenous societies, in which the group's members are tightly bonded by collective experience through narratives, dreams and visionary

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[133] See chapter three.
[134] See for example, the Ojibwa story of "The Orphans and Mashos" in Overholt & Callicott, *supra*, note 48 at 33.
[135] Ridington, *supra*, note 105 at 31.
[136] See for example "The Death of Nanabushu's Nephew, the Wolf" in Overholt & Callicott, *supra*, note 48 at 117-120.
[137] For example, see the story of "Hero" in *ibid.* at 95-6 where the hero "owed his life to both the motivation and encouragement provided by his visionary experience and to certain concrete, this-worldly actions" when on the brink of death from being mauled by a bear.
[138] Ridington, *supra*, note 105 at 31.
[139] *Ibid.*
[140] *Ibid* at 20. "The Beavers' beliefs about dreaming seem to have reflected an understanding that when the mind is released from the task of processing information from the immediate perceptual environment, it may concentrate on processing information generated internally and derived from past experience." *Ibid.* at 91. See chapter three (3.2).
[141] *Ibid.* at 140. Wilson points out that revelation "is like a flash of lightening. But what is important is not the lightening, but *what you see by it.* If lightening explodes in an empty space, it illuminates nothing. If it explodes over a mountain landscape, it illuminates a great deal." C. Wilson, *The Philosopher's Stone* (St Albans: Granada Publishing, 1969) at 72.

experiences, provides the fertile ground from which a revelatory or anticipatory moment may be captured and transformed into unique knowledge applied to the individual's and group's connection with environmental processes.

All societies have a storytelling history, but most early European societies grew to rely more on the written word than the oral word to disseminate (low-context) technical information within an unstable society. Thus the 'myth' became equated with emotional fantasy, useful for bedtime stories but not for 'relevant' knowledge.[142] A written language evolved which could be widely transmitted, because the words' meanings in themselves were unambiguous. The lack of ambiguity stems from the symbols that make up the Greek alphabet which had built upon the alphabet invented by the Phoenicians around 1100BC.[143] The alphabet can be used to transcribe any Indo-European language as it reduces sounds into single letters or syllables.[144] The requirement for mechanical information, as an adaptive tool, addressed the need to facilitate communication within a constantly changing, unstable culture. In North African and European regions, the constant waves of invaders and population shifts necessitated the coding of information within external technology (writing, buildings etc) as a record of life in other times and places. The record is the link between past and future. It facilitates the culturally programmed ability to absorb new influences on its society without losing its own identity while 'translating' and imposing its own identity upon vastly different societies.

Unlike the indigenous narrative, dreaming and visionary experience which return to affirm and incorporate an individual's past, present and future experience, European history was constructed as a lineal recording of events where significant figures and events in the past become meaningful relative to their particular time and place.[145] The patterns inherent in the records are "complex, sometimes contradictory, and beyond the

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[142] Aristotle wrote, "Why should we examine seriously the spurious wisdom of myths?" and Hegel – "The myth, in general, is not an adequate means for expressing thought". Ridington, *supra*, note 105 at 97.
[143] The Phoenician alphabet contained only consonants and so the Greeks invented symbols for vowels in the middle of the eighth century B.C; C. Van Doren, *A History of Knowledge; Past, Present, and Future* (New York: Ballantine Books, 1991) at 25.
[144] *Ibid.*
[145] Deloria, *supra*, note 100 at 122.

apprehension of any one individual."[146] Because the knowledge is beyond the experience of any one individual, the processing of information is institutionalized according to conventional disciplinary categories and "it is up to each individual to integrate as much or as little of this information into his or her reality as seems possible or worthwhile."[147] While western societies may be continuously building copious amounts of information about the world, they arguably lack the coherent, stable knowledge systems from which visions of the past/future, or anticipation, can be rendered intelligible. Because these societies' experiences are carried on "through continual negotiation with new information and emerging patterns of meaning," the culture has not had time to organize information in a form that can be usefully apprehended through dream and vision.[148] Information derived from these internally generated phenomenological phases risks being anomalous or even misleading and cannot arguably be as reliable as information processed within a relatively closed and stable society because western cultural past and future is linked lineally rather than cyclically.[149] It is expected that the new 'worldly' information and insights will (lineally) progress to eventually reveal 'truths' (if not the 'workings' of the world) but not, along the way, reveal the 'future' for more informed present decisions.[150] Thus dreaming and visions as a source of knowledge is assumed *reflective* of worldly experience, not a *category* of such experience.[151]

When a society processes information according to this mechanical, low context process of communication, it may be difficult for its decision-makers to hold information

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[146] Ridington, *supra*, note 105 at 141.
[147] *Ibid.*
[148] *Ibid.* at 140.
[149] *Ibid.* This is not to say of course that people in 'open' societies cannot anticipate. See the discussion on anticipation in chapter three (3.2)
[150] Vine Deloria highlights the different cultural understandings of revelation: in the western tradition, "revelation has generally been interpreted as the communication to human beings of a divine plan, the release of new information and insights when the deity has perceived that mankind has reached the fullness of time and can now understand additional knowledge about the ultimate nature of our world. Thus, what has been the manifestation of deity in a particular local situation is mistaken for *a truth applicable to all times and places*...The structure of (indigenous peoples') religious traditions is taken directly from the world around them, from their relationships with other forms of life. Context is therefore all-important for both practice and the understanding of reality...It was not what people believed to be true that was important but what they experienced as true. Hence revelation was seen as a continuous process of adjustment to the natural surroundings and *not as a specific message valid for all times and places*." (emphasis added) *Supra*, note 100 at 66-67.
[151] Overholt & Callicott, *supra*, note 48 at 148.

clothed in personal experience, as indigenous knowledge of the land often is, in the same esteem as 'provable' information. Arguably, there is a strong belief by the 'governing' bodies of western societies that scientists, employing detached observations and rational methods, are objective explorers of reality, whereas the lay person is trapped (or blinded) by his or her 'cultural world'.[152] Thus the western functional theory of learning suggests a one-way hierarchical ordering of knowledge:

> In this theory, duality of the person translates into a division of (intellectual) labor between academics and 'the rest' that puts primitive, lower class, (school) children's, female and everyday thought in a single structural position vis-à-vis rational scientific thought.[153]

One consequence of such a 'top down' approach to the dissemination of information is the tendency to reduce local environmental knowledge to mere trivia, at best only relevant as cultural data. "Accordingly, sustainable resource use and sensible management become the privileged business of outsiders formally trained in public institutions."[154]

The process of learning within many indigenous societies suggests a multidimensional hierarchical ordering of knowledge. From the above discussion, everyone in society has something to offer and each is listened to.[155] Just as the roles and responsibilities are shared in extended family systems, so too might they be shared within the decision making process.[156] Because no one opinion can be the only 'right' opinion, indigenous communities often operate by consensus. Within these decision-making processes, no one's opinion is ignored or discounted so that no one feels 'bested' by another.[157] Leadership is often maintained through persuasive oratory and an individual's

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[152] Berkes, *supra*, note 62 at 87.
[153] *Ibid.*
[154] *Ibid.*
[155] See Lindstrom, *supra*, note 90 at 52-66 on 'conversational qualification' for the people of Tanna, Vanuatu in the South Pacific.
[156] See Circumpolar Report, *supra*, note 27.
[157] Ross, *supra*, note 87 at 23.

experience, accomplishments and respect from his or her people.[158] The RCAP report writes of the Blackfoot Confederacy:

> The 'chiefs' were 'leaders only by the consent and will of their people'. They had no power except that of personal influence. A head 'chief' was not formally selected; he 'attained his position simply by a growing unanimity on the part of the head men of the bands as to who should hold the position'. If the band headman opposed the desires of the members of his band, the band simply deserted him and got another headman.[159]

Thus 'sustainable resource use and sensible management' become the business of everyone in the society and information flows between young and old, experienced and inexperienced, and leader and community members.

Approaches to consensual decision-making differ between many indigenous societies as well as between indigenous and western societies. Unlike many western 'give and take' discussions, it has been suggested that some Aboriginal discussions tend to take the form of individual speeches repeating significant facts from other speeches, until there is a general agreement on which facts are most significant, and only one conclusion seems reasonable.[160] The decision need not necessarily be articulated because everyone goes away knowing what it is.[161] Arguably the Aboriginal concept of consensus decision-making does not involve arguing competing conclusions until one

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[158] RCAP *Looking Forward, supra*, note 128 at 70.

[159] *Ibid.* "The Siksikawa (Blackfoot), the Kainaiwa (Blood), and the Pikuniwa (Peigan) were members of the confederacy that shared a common language and culture, and they were joined by their allies the Tsuu T'ina (Sarcee) and the Gross Vintres." *Ibid.* at 6. Paul writes, "Micmac leaders had no real power to impose decisions other than those agreed to by the People. If a Micmac leader wanted to undertake a new initiative, he was totally dependent upon his powers of persuasion to convince his fellow citizens of the merit of his proposals." Paul, *supra*, note 34 at 25-6. See Circumpolar Report, *supra*, note 27 at 20. On leadership in the South Pacific see for example; Hviding, *supra*, note 60 in the Solomon Islands; and T. Graham & N. Idechong, "Reconciling Customary and Constitutional Law: Managing Marine Resources in Palau, Micronesia" (1998) 40 *Ocean & Coastal Management* 143-164 in Palau. See a more detailed discussion on leadership in the context of co-management in chapter six and in relation to land tenure systems in chapter four.

[160] Ross, *supra*, note 87 at 22.

[161] *Ibid.* Ridington writes that among the Naskapi in North America, "The leader...must 'be aware of deviating opinions among his followers' and must 'voice his own opinion in relation to that of others'. 'No one ...will either give or take advice, and when consulted usually answer, 'mokko tchin'; that is, 'it's up to you'. Autonomy is equally important for both leaders and followers. In order to be well informed, the follower 'wants to know all the alternatives'." *Supra*, note 105 at 113.

prevails,[162] that is, where everyone agrees in the end, but rather it is a type of *joint thinking* where the process of *arriving at* the decision was communal.[163] However, each community may have a different approach to decision-making which must be understood by all parties within a shared precautionary decision-making structure.[164]

Without a proper understanding of the different cultural approaches for decision-making, participants making a precautionary decision using both indigenous and scientific knowledge as the basis may clash on the procedural issues and the substantive issues may not be reached. The dispute between Canadian Mohawks and the provincial authorities of Quebec in 1990 illustrates the danger of impasse when cultural differences in decision-making are not recognized:

> We Mohawks will talk forever. All First Nation Aboriginal people will talk and talk. The Canadian police said we would not negotiate when we wanted to add 'Ancestral' to their description of the disputed [Ancestral] Pines. They broke off talks, and gave us one phone line to be used only when we were ready to surrender to authorities. We work slowly because we operate by consensus. Even children join our discussions. We listen to what everyone has to say, and only then we know what we must do.[165]

Where both indigenous and government participation is sought, for example in co-management regimes, relationships and ultimately the regime can break down when the parties do not respect the differences in timing and authority for precautionary decisions.[166] Furthermore, many management regimes forcing an indigenous community to change its approach to decision-making can erode indigenous conservation practices by disrupting the whole socio-management structure. For example, Berkes writes, "the incorporation of practices favoring individual decision-making (as opposed to traditional cooperative hunting) among a group of Kotzebue Sound Inupiat in Alaska has coincided

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[162] Note the discussion on value laden noun-based languages such as English where one opinion can be superior to another.

[163] See Ross, *supra*, note 87 at 22. See the discussion in the text accompanying note 132 of 'closed' stable societies in which people share individual as well as communal knowledge.

[164] See chapter six (6.2.1).

[165] R.T. Price & C Dunnigan, *Toward an Understanding of Aboriginal Peacemaking* (Victoria: UVic Institute for Dispute Resolution, 1995) at 188.

[166] See chapter six (6.2).

with sharp declines in the numbers of beluga whales."[167] Thus essential to a functional role for indigenous knowledge within precautionary decision-making structures is the process of understanding each party's decision-making processes for effective communication and relationship building between the parties.

Conclusion

The amount of risk and uncertainty that decision-makers are prepared or able to embrace – the underlying premise of the precautionary principle – depends to some extent on the relative stability or instability of their societies. Indigenous decision-makers operating within a world full of 'relationships between things' are likely to start from the premise of uncertainty because they recognize the human mind cannot understand the multitude of connections between things. Embracing uncertainty underlying the natural world in which they operate, many indigenous societies commonly developed a relatively 'closed', stable social structure in which personal experience and knowledge can be enriched and made meaningful by communal experience and knowledge. To make optimal decisions within an uncertain environment, many indigenous societies have directed the learning process towards sharpening anticipatory capacities. Through collective and individual repetitive experience, the thinker can unconsciously match environmental signs with probable outcomes of a particular action to determine the "clearest path of possibility from among many paths that may or may not lie ahead".[168]

Underlying the process of learning within many indigenous societies is the understanding that there is no one right way of doing things – everyone in society has something to contribute to the knowledge base built up through trial and error. Such

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[167] *Supra*, note 25 at 30. In parts of the South Pacific, rapid population increases and the influx of outsiders and imported ideas "have weakened local traditional authority and the ability to achieve the community consensus needed to agree upon and enforce effective management regulations. The same thing is happening in Vanuatu." R.E. Johannes, "Government-Supported, Village-Based Management of Marine Resources in Vanuatu" (1998) *Ocean & Coastal Management* 165 at 182. See also Lindstrom, *supra*, note 90 regarding consensual decision-making in southern Vanuatu; Graham, *supra*, note 159 on Palau; and Hviding, *supra*, note 60 on the Solomon Islands.

flexibility inherent in the decision-making process creates a management system sensitive to environmental feedback and safeguards against incurring large social and economic costs, should a particular activity be restrained on the grounds of precaution.[169] Furthermore, the flexibility enables the society to take risks, through trial and error, when trying to determine the best management practices for the human-natural ecosystemic relationships within which the practices have evolved, because the social system can respond quickly should the risks not prove beneficial. The consensual nature of decision-making, which is more of a joint thinking process because it is largely dependent upon a collective knowledge base, means that people often internalize the precautionary measures decided upon.[170]

Western decision-makers acting within a world full of 'characteristics of things' are likely to believe that when enough characteristics are gathered, analyzed and pieced together to reveal the laws of nature[171] the impact of a given activity can be predicted with certainty. The social instability of 'open' societies in which copious amounts of information flow through from other societies, led to the evolution of discrete disciplinary categories to organize the information and render it meaningful to society. Bureaucracies evolved as an institution supposedly capable of acquiring all the information necessary to calculate what would constitute the 'greatest good for the greatest number' or provide for new Pareto optimalities.[172] Because each individual in society cannot share the knowledge, precautionary measures must be 'externally' decided upon and policed.[173] Such structures have little scope for taking risks through trial and error when social structures are locked into their decisions based on the erroneous assumption that there can be underlying certainty in nature capable of being revealed if

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[168] Ridington, *supra*, note 105 at 31. For an expansion on the anticipation theme in this thesis, see in particular 3.2 in chapter three relating to implicit and explicit memory and all of chapter five.
[169] This point is developed in chapters four and five.
[170] This point is expanded in chapter three.
[171] That is, laws which are assumed true for all times until displaced.
[172] Pareto optimalities meaning where further improvements would leave no one worse off than before. P. Timmerman, "Mythology and Surprise in the Sustainable Development of the Biosphere" in W.C. Clarke & R.E. Munn, *Sustainable Development of the Biosphere* (Cambridge: Cambridge University Press, 1986) 435 at 448.
[173] See chapter three.

enough information is eventually gathered within a predictive management framework.[174] The conventional scientific-oriented decision-making process is appropriately conservative and unambiguous, but it achieves that by being fragmentary and incomplete.[175] The precautionary principle as understood within this predictive framework is a means of overcoming uncertainty in the sense of lack of scientific information necessary for an accurate prediction, and not necessarily addressing the idea that there is inherent uncertainty within nature's patterns.[176]

The relative instability experienced by early European societies set in place a one-way hierarchical ordering of knowledge in which experience is subordinated to facts and other 'provable' information within precautionary decision-making structures. Experience becomes familiar to people within low-context western societies subject to a lineal flow of information only "after the fact, seldom before it"[177] and the finely tuned anticipatory capacities of a society living within the environmental patterns are often ignored as mere guesswork. Thus characteristics of, and assumptions within, ingrained social learning and decision-making processes must be addressed before a serious attempt can be made to include indigenous knowledge systems into precautionary decision-making structures.

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[174] See chapter five.
[175] Holling *et al.*, *supra*, note 56 at 346.
[176] See chapter five for suggestions on how the precautionary principle can be understood within an anticipatory framework using scientific and indigenous knowledge as the basis for a decision.
[177] Ridington, *supra*, note 105 at 141.

CHAPTER THREE: RELATIONSHIPS TO NATURE, THE ROLE OF EMOTION IN PRECAUTIONARY DECISION-MAKING, AND INTERNAL PRECAUTIONARY MEASURES

Introduction

This chapter argues that anticipatory and predictive frameworks in which the precautionary principle operates are largely the products of a culture's relationship to nature. Specific ways of thinking about human and non-human worlds have evolved out of the way a culture perceives and interacts with nature. At the root of the scientific way of thinking is the assumption that humanity *can* understand nature's processes because there is sufficient certainty within those processes. With the accumulation of more data to test a set of laws, prediction of the impact of a human activity on nature's processes will become more accurate. Many indigenous world-views start from the premise that nature is inherently uncertain, and learning processes are oriented towards developing the capacity to anticipate the effect of a given activity through individual and collective repetitive experience of environmental patterns and signals.

Part one explores the belief expressed in many indigenous societies of the interrelational network of all creation.[178] Living within environmental patterns, many indigenous people understand human survival as dependent upon the good will of non-human persons and complex rituals and standards of behaviour have evolved to strengthen the spiritual and physical relationships. Out of these relationships evolves knowledge about the sustainable use of the non-human world – knowledge which is embedded within the whole social-spiritual system complete with complex rules relating to the rights and protection of certain powerful knowledge as a conservation measure. The relationships to nature outlined in part one provides the basis for the argument in part

[178] For example, Leroy Little Bear explains that the aboriginal relationship to, and use of, the land manifested itself through a "complex interrelational network with all of creation which sees humans as simply a part of creation and not above it, and which has as its goal balance and harmony, and accomplished through constant renewal." Canada, *Royal Commission on Aboriginal Peoples, The Relationship of Aboriginal People to the Land and the Aboriginal Perspective on Aboriginal Title* (Volume 1) by L. Little Bear *et al.* (Ottawa: Supply and Services Canada, 1992) at 7.

three that in some circumstances, using a resource as opposed to preserving it underlies the responsibility to the human-natural ecosystem based on the interdependence of all things. Conceivably, under this relationship, preservation may in some cases 'pose a threat of serious or irreversible damage' because human use is already part of the environmental patterns. A disruption can have adverse effects not only on other interdependent entities[179] but also on the human-nature relationship which must be continued to maintain stewardship responsibilities. The social, environmental and economic costs of a particular human activity may therefore be considered within a completely different framework than that of science-oriented conservation regimes.

The emotional and spiritual responses to the relationships between nature's entities and processes provide the basis for an anticipatory framework in which cultural equivalents to the precautionary principle operate. This framework depends upon the premise that there is inherent uncertainty within nature's processes which the human mind cannot process and understand. Learning processes are therefore directed towards absorbing and matching environmental signals using collective and individual experience. Part of the collective experience is manifested in the form of taboos, discussed in part three, which provide a cultural articulation of knowledge about the effect of human activity upon a particular species or habitat for example. It is argued that such taboos must not be extracted from a culture's ideas about conservation.

Part two shows that rational knowledge processes seeking to determine '*why* X is so' structure many western societies' relationships with nature and consequently guide precautionary decisions. The assumption that humanity can understand nature's processes is possible in a world full of 'characteristic of things' where people, separate from the 'things', can reduce them to their smallest parts for analysis and understanding. The scientific way of thinking with its bias towards rational processes tends to devalue knowledge systems based on personal experience and anticipatory capacities to know *that* X is so. Some scientific fields are, however, confirming the utility of knowing *that* X is so without *why*. The theory of relativity and the theory of atomic phenomena pave

[179] See for example the effect on cod stocks of the moratorium on the seal hunt in part two.

the way for a scientific world-view of 'relationships between things' while studies on limbic resonance and memory systems in the field of psychiatry are currently exploring the development of anticipatory capacities.

The scientific way of thinking can create a decision-making context in which emotions and spirituality cannot be seen to be the basis of a science-biased precautionary principle because they cannot be verified and tested. It is argued in part three, however, that social and individual emotions are the motivation for many precautionary decisions within science-oriented management regimes but are disguised in the form of scientific evidence which may weakly support any decision. The morality underlying what a society views as acceptable killing of particular species is explored as well as social moral values on humanity's responsibilities and duties of conservation. It is argued that science-oriented cultures treat people as being outside the unit conserved and that many indigenous cultures treat people as being within the unit conserved. Part three highlights that many indigenous management systems work on the basis that stewardship responsibilities are manifest in each resource user's approach to mitigating their impact on the ecosystem by internalizing the spiritual and social rules of sustainable resource use. The section uses the phrase 'internal precautionary approach' to mean behavioural controls derived from cultural values, beliefs and conscious or unconscious collective knowledge[180] of the effects that particular human activities have upon environmental processes. In essence: the emotional response to fluctuations experienced within the human relationship to environmental patterns. Thus, it is argued, to achieve a broad-based precautionary principle which holds indigenous knowledge in the same esteem as scientific knowledge, the role of emotion within decision-making processes must be addressed and accommodated.[181]

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[180] And the specific social codes and institutions built upon this knowledge.

[181] This part does not advocate a particular religion that can lead to a successful precautionary regime. As Anderson writes, "(t)he key point is not religion *per se* but the use of emotionally powerful cultural symbols to sell particular moral codes and management systems." Anderson, *supra*, note 17 at 166.

3.1 : Part One - Some Relationships Between Indigenous Societies and Nature

> *The hunter tries to think what the bear is thinking. Their minds touch. The hunter and the bear have parallel knowledge, and they share that knowledge. So in a sense they communicate.*[182]

This part explores some indigenous concepts of the complex web of relationships between all of nature of which human societies are a part. The relationship between human and non-human persons is largely the focus of this part: a relationship based on the understanding that animal persons will offer themselves to humans so long as the humans make the proper offerings to the animal persons and have the proper attitude toward those they intend to hunt. The relationship ensures that humans understand themselves as living within environmental patterns and direct their thoughts towards thinking within those patterns. By seeing the world as 'relationships between things', specific, concrete bonds are built between humans and non-human persons to ensure the sustainability of human use from environmental feedback. The bonds did not entail some misty 'union with nature', but involve specific social codes and institutions.[183] This part lays the religious and ideological foundations for part three on internal precautionary controls.

The interrelational network between all of creation means that for many indigenous peoples, there are logically no distinctions between aspects of nature. Thus indigenous people are heard saying such phrases as the soil "is the dust of the blood, the

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[182] LaDuke, *supra*, note 41 at 128.

[183] Anderson, *supra*, note 17 at 10. The International Institute of Sustainable Development write, "Indigenous people have always been intimately aware of their symbiotic relationship with the earth based upon a delicate balance between all living things...This understanding did not arise from a romanticized version of our relationship to the earth. It developed before contact with other societies and was based upon the basic law. This law was quite simply, life and death...If they failed to consider what the environment had to offer, how much it could give, and at what times it was prepared to do this – they would simply die...All living creatures had to be cognizant of the structure of the day, the cycle of the seasons and their effects on all other living matter...If the people were to deplete the animal or plant resources of their immediate environment, pain and suffering could be expected. This understanding gave rise to a relationship that is intimately connected to the sustainability of the earth and its resources." Clarkson *et al.*, *supra*, note 18 at 4.

flesh, and bones of our ancestors."[184] It is not just metaphor, the soil and animals and other parts of nature may be understood *as* their ancestors. For example, the Ojibwa word for 'grandfather' is not only used to refer to one's human relations but also to certain "spiritual beings who are persons of a category other than human."[185] Most Northwest Coast peoples consider salmon to be people who have human form under the sea and who put on their fish skins only to sacrifice themselves to their friends on land.[186] In Cree, there is no word that corresponds to the English term 'nature', but rather the word *pimaatisiiwin* is used which corresponds to the word 'life' and includes human as well as non-human persons.[187] Non-human persons include the *manitous*, dream visitors and guardian spirits, the sun, moon, and winds, thunder-birds, the 'bosses' of animal species and certain stones, animals and trees.[188] Central to the definition of 'person' appears to be the ability and willingness of such beings to enter into social relationships.[189] These complex interrelationships may be among a variety of the kinds of persons: spirits and humans[190], spirits and animals[191], spirits and spirits[192], humans and humans[193], humans and animals[194], humans and 'inanimate' objects[195]. While some western narratives often show a one-way imposition of characteristics on other life forms

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[184] Deloria, *supra*, note 100 at 148.

[185] R. Tsosie, "Tribal Environmental Policy in an Era of Self-Determination: The Role of Ethics, Economics and Traditional Ecological Knowledge" (1996) 21 *Vermont Law Review* 225 at 280. See Brightman, *supra*, note 114 at 115 where it is explained that the kin term *nimosom* 'my grandfather' is used to address and refer to bears and other spiritually powerful non-humans.

[186] E.N. Anderson, "Fish as Gods and Kin" in Dyer & McGoodwin, *supra*, note 2, 139 at 143 and see Tsosie, *supra*, note 185 at 280.

[187] R. Kapashesit, & M. Kippenstein, "Aboriginal Group Rights and Environmental Protection", 36 (1991) *Mc Gill L.J.* 923 at 929.

[188] Overholt & Callicott, *supra*, note 48 at 161.

[189] *Ibid.* at 143.

[190] See for example "Hero" in *ibid.* at 95-6.

[191] See for example "Star of the Fisher" in *ibid.* at 99-104.

[192] See for example "Nanabushu and the Great Fisher" in *ibid.* at 121-2.

[193] See for example "The Orphans and Mashos" in *ibid.* at 33-54.

[194] See for example "The First Born Son" in *ibid.* at 55-61. Note the different kinds of relationships that can be experienced between human and animals and the different types of behavioural attitudes that follow in "The Boy Who Was Kept by a Bear" (see Appendix IV): "Three major types of social relations between men and bears are presented: first, there is the relationship based on a father-son dyad; second, there is a sorcery fight between the father and the bear; and finally a model of generalized symbiotic relationship between the hero and all bears, which we may see as most similar to 'friendship'. Other kinds of relationships are hinted at: the human hunting groups and the population of bears seem to be treated as two groups of equivalent status to each other, who cannot interact except through the mediation of the hero who is symbolically a member of both groups." A. Tanner, *Bringing Home the Animals: Religious Ideology and Mode of Production of the Mistassini Cree Hunters* (London: C. Hurst and co., 1979) at 150.

[195] See for example, "The Orphans and Mashos" in Overholt & Callicott, *supra*, note 48 at 33-54.

(human characteristics onto animals), indigenous narratives explore human characteristics adopted by non-human persons *and* non-human persons characteristics adopted by humans.[196] A common theme that runs through the narratives relating these entities as persons is that humans are *within* nature, not above it[197] which is central to the idea of the interrelationship of all of creation.

Many early anthropologists studying aborigines from a western viewpoint misunderstood indigenous behaviour as *worshiping* animals, water, plants and stones as deities, which seemed inconsistent with hunter-gatherer and farming behaviour.[198] Many western peoples' belief that humans are situated above nature[199] means that killing certain animals and plants was consistent with society's moral values. To early anthropologists, indigenous hunting behaviour seemed inconsistent with their apparent beliefs because of this 'hierarchical blinkering'. Although the Ojibwa "consider themselves to be in a complex social relationship with other 'persons', they maintain those relationships through norms of respect and exchange, not through 'worship' in the sense that Christians worship God or through treatment as a human being."[200] Rita Joe explains that "(j)ust as we [Mi'kmaw] send off the spirit of our dead with proper rituals and ceremony, we extend a certain amount of recognition of the spirit of the tree, animal, plants and elements we disturb for our own use...*We do not apologize for our needs but accept the interdependence of all things.*"[201] Humans are seen as residing within the complex web of relationships and rather than artificially separating entities from the web for worship, they actively foster those relationships through norms of respect and exchange.

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[196] See for example "Ki'kwa'ju and Ki'kwa'jusi's", a Mi'kmaq narrative recorded by Ruth Holmes Whitehead in Joe & Choyce, *supra*, note 50 at 31-35. There, Ki'kwa'ju's power-shape (a Wolverine) becomes too powerful, takes him over and violates some Mi'kmaq laws because of the nature of his shape. See Appendix V for the story.

[197] For example in "Visitors Who Never Left", Chief Harris retells the Tsimshian story of "The Origin of the Killer Whale" which is shared by many Northwest Coast peoples. He writes of a conversation between an old lady and a girl, "You have been abducted by the bear people because you criticized the *chehu* that was on the path that you slipped on. It was their chief's deposit – the one that you have been brought to. From now on, they plan to keep you and they are going to test you. They are trying to find out why you feel so superior. They are going to compare your *chehu* with their." Chief Harris, *supra*, note 112 at 85.

[198] Tsosie, *supra*, note 185 at 280.

[199] See part two below.

[200] *Ibid.* at 280-1.

Many North American narratives make it clear that human survival is dependent upon the good will of non-humans who offer themselves up if the proper requirements in the human-animal relationship are maintained:

> A hunter always speaks as if the animals are in control of the hunt. The success of the hunt depends on the animals: the hunter is successful if the animal decides to make himself available. The Hunters have no power over the game, animals have the last say as to whether they will be caught.[202]

As the other animals are persons and therefore accepted as endowed with many cognitive abilities, they must recognize their danger when humans are hunting them; if the animals were caught, it must have been by their choice. [203] Game and fish simply disappeared from an area where they were ill-treated.[204] In many narratives non-humans are said to 'pity' humans, in other words, grant them blessings, and such blessings involved protection from danger, aid in a journey and the provision of food.[205] The blessings were withdrawn, however, should humans not observe the obligations surrounding the human-animal relationship outlined in the following paragraphs.

One aspect of the animal-human relationship for many North American groups is the obligation to perform certain rituals before and after the killing of an animal so that animals can be killed and reborn. Hunters must make appropriate offerings to the animals who are said to be 'happy' with the material goods given to them (including utensils, clothing, and earrings) and wealthy because of their accumulation.[206] In the narratives, the pipe is often pictured as playing the role of mediator between humans and

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[201] Joe & Choyce, *supra*, note 50 at 53.

[202] LaDuke, *supra*, note 41 at 129. Tanner argues that bears have sufficient size and ferocity with which to attack the hunter, but since such an attack seldom happens, the animal is believed to lose the 'natural' inclination to hide, flee or attack and instead 'offer' itself to be killed. "In a sense," he writes, "bear hunting epitomizes the ideals on which the religious aspect of all hunting is based." *Supra*, note 194 at 146. He points out at 148 that the Mistassini narratives often take the exchange process a further stage "in which the hunter, using magical power, establishes, in a coercive manner, his ability to cause the animal to come to him against its will." See also Brightman, *supra*, note 114 at 190. Tanner gives as an example "The Boy Who Was Kept by a Bear" 148-150 in which the bear could not resist the boy's father's song calling for the location of the den. See Appendix IV.

[203] Anderson, *supra*, note 17 at 63.

[204] *Ibid.* See Chief Luther Standing Bear's quote in 3.3.2 below.

[205] Overholt & Callicott, *supra*, note 48 at 151. See for example "The Orphans of Mashos" at 33-54.

animals.[207] If the pipe is accepted, then the animal consents to its being killed. Upon being killed, the bones must be placed intact back in the water if they belong to fish or beaver, and in trees, buried, or up on scaffolding if they belong to many other land dwelling animals.[208] If the ritual acts are omitted or performed incorrectly, it is said that animals will fail to be reborn[209] or will withhold themselves from hunters by frustrating their attempts to kill them.[210] Brightman[211] refers to the Cree belief that both human beings and animals possess a *-yaw* 'body' and an *ahcak*, 'soul' which survives after the death of the body. He says the noun *ahcak* also refers to spirits including the thunderbirds[212], the spirits of the four cardinal points[213]and the rulers of the major game species[214]. "In traditional understanding, the souls of human beings travel to a country in the west after the death of the body. The souls of animals, however, are spoken of as

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[206] *Ibid.* at 146. See RCAP *Looking Forward, supra*, note 128 at 64 for a discussion on the significance of the 'Sacred Pipe' for indigenous peoples within the Blackfoot Confederacy, North America.

[207] See for example, "Clothed-in-Fur" in Overholt & Callicott, *supra,* note 48 at 62-73 reproduced in Appendix III and "A Moose and his Offspring" at 81-84.

[208] Joe & Choyce, *supra,* note 50 at 34. See Tanner, *supra,* note 194 at 172. See also "Clothed-in-Fur" in Overholt & Callicott, *supra*, note 48 at 62-73 in Appendix III.

[209] "Some Crees say that animals do not 'really' die when hunters kill them: the soul continues after death and returns to the world either as a foetal animal or a regenerated adult." Brightman, *supra*, note 114 at 76. This latter process is spoken of as *akwanaham otoskana* 's/he covers their bones'. *Ibid.* at 119.

[210] *Ibid.* at 103. These offenses in Cree are called *pastahowin* (noun) "the process through which people antagonize spirit beings by diverse acts of commission or omission and thus reflexively provoke misfortune" The verb *pastahow* is used: 'someone brings retribution on himself'. *Ibid.* Overholt & Callicott point out that "if men keep to the rules, the deaths of the animals are not final. For practical life in the world this means that the instinct toward self-preservation, certainly observable in nature, need not be the most powerful factor influencing animal actions." *Supra*, note 48 at 147.

[211] *Supra*, note 114 at 76. But see Berkes who writes that the Chisasibi Cree did not articulate the notion of reincarnation of animals. Berkes, *supra*, note 25 at 90.

[212] See Chief Harris, *supra*, note 112 at 75-80 for the Tsimshian version of "The Origin of the Thunderbird, *Twe Tjea-adku.*" See "Floating-Net-Stick" for a Cree reference to the thunderbird. Overholt & Callicott, *supra*, note 85-6.

[213] See Tanner, *supra*, note 194 at chapter 5 regarding Cree knowledge of the spirits.

[214] See *ibid.* The RCAP report states, "The Mi'kmaq were taught that the spark of life in living things has three parts: a form that decays and disappears after death; a mntu or spark that travels after death to the lands of the souls; and the guardian spark or spirits that aid people during their earth walk. While the form is different, all mntu and guardian spirits are alike but of different forces. No human being possessed all the forces, nor could human beings control the forces of the stars, sun or moon, wind, water, rocks, plants and animals. Yet they belonged to these forces, which are a source of awe and to which entreaties for assistance are often addressed...Since all objects possess the sparks of life, every life form has to be given respect...Mi'kmaq were taught that all form decays, but the mntu continues. Just as autumn folds into winter and winter transforms into spring, what was dead returns to life. The tree does not die; it grows up again where it falls. When a plant or animal is killed, its mntu goes into the ground with its blood; later it comes back and reincarnates from the ground." RCAP *Looking Forward, supra,* note 128 at 42. The same report at 63 spoke of the Blackfoot Confederacy, "Since the spirit (soul) would return automatically to its maker, the people of the plains did not worry about death or the hereafter but concerned themselves with the care of living things around them..."

renewable: *pimatisiwak kakihtwam* 'they live over and over'."[215] Besides edible parts the waste of which is taboo, many inedible parts of the animals have intrinsic power and are used to show proper respect.[216] If the rituals are properly performed, life cycles will be maintained.

A fundamental requirement for maintaining the animal-human relationship is that humans have the proper attitude toward hunted animals, an internal control on hunting activity, otherwise they risk misfortune invoked by the non-human world. Humans must not think ill thoughts[217] or insult the animal upon whom he or she depends. The principle that people must not mock or taunt animals is the theme of Chief Kenneth Harris' record of the Tsimshian story the "People of *Damelahamid.*" [218] There, the first inhabitants of *Damelahamid* disappeared after they created a sport that involved kicking a stuffed bear's stomach. Similar misfortune met the people in "The *Medeek*" who had caught trout just for the sake of making head-dresses to enjoy themselves. [219] Likewise, the "Move to *Kitsekucla*" illustrates the law that one does not taunt the Great Spirit or flaunt one's goods in His face. [220] The hunter must also not be overconfident in the blessings he or

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[215] Brightman, *supra*, note 114 at 119. Compare what the ethnographer Jenness wrote of the Katzie: "Animals and plants possess shadows, vitality or thought, and special talents or powers, but not souls." Jenness, *supra*, note 127 at 36-7. It is unclear whether he was using a western or indigenous concept of 'soul'.

[216] Tanner writes that "this power is used for a person's benefit in one of three ways: it is kept near the place where the person's head rests at night, thus promoting divinatory dreams; it is displayed outside the dwelling to decorate the camp and please those spirits which aid in hunting; or it is decorated and worn as a hunting charm, in order to show respect to the animal about to be killed, and to give power to the hunter who wears it." *Supra*, note 194 at 141.

[217] For example, " 'Never speak ill of a beaver!'," said a woman to her people after returning from years as the beaver's wife in "The Woman Who Married a Beaver", for " 'should you speak ill of (a beaver), you will not (be able to) kill one.' " Overholt & Callicott, *supra*, note 48 at 74-5.

[218] See Appendix I. According to legend, *Damelahamid* was the region that lay between the Nass and Skeena Rivers in northern British Columbia in which the "earliest inhabitants came to earth from Heaven and brought the unenlightened Indian people then living in surrounding areas their culture". Chief Harris, *supra*, note 112 at xi. According to Chief Harris, in ancient times the Pacific Ocean is believed to have lapped the shores of *Damelahamid* before receding to its present position after the great flood.

[219] "They had been warned again. They had been punished again because they were foolish. They had played with the fishes from the water. They had not taken the fish for something to eat. They used the fish to amuse themselves." *Ibid.* at 59. In Robinson's version of the story, it is the giant grizzly bear that seeks revenge. W. Robinson, *Men of Medeek* (Kitimat: Northern Sentinel Press Ltd., 1962).

[220] In the section "The Big Snowfall", one of the princes of *Damelahamid* called *Deelepzeb* looked up into the sky and said, "Just what is the meaning of this? Hail in the middle of summer? Look at what we have already. We have already got spring salmon. What sort of nonsense is this that it should hail at this time?" The people of *Damelahamid* were punished when the region snowed over and thousands starved to death

she has received (in other words, take them for granted).[221] Rather, he or she must apologize *not for human needs*, but for taking the animal's life.[222] The taker had to thank and explain that he or she genuinely needed the individual for his or her family, not just his or her own welfare.[223] As a corollary the hunter must not credit his or her own hunting abilities too highly since it is the animal that is offering him or herself up.[224] For some Cree peoples, "[b]oasting of one's success is *pastamowin*. The hunter does not announce the kind or number of the animals he has killed, and others...should not attempt to elicit this information."[225] Thus the myriad of rules, including those above that foster within humans attitudes of awe, fear, gratitude, humility and respect, maintain a close relationship of interconnection with the non-human world on which the humans depend. Not only does the non human world respond by making themselves available for human use, but the taboos also generate an internal precautionary policing mechanism to ensure that humans take only what they need or face the wrath of the non-human world.

For many indigenous societies, the non-human world is a wealth of information from which to draw information on how to avoid upsetting multi-equilibrium ecosystems of which humans are a part. Clarkson *et al.* explain that each plant and animal has something to teach humans about our responsibilities to the earth and that "one had only

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except a few who established a new city down river. According to Robinson, Boas mentions eight versions of this story from Tsimshian, Tlingit, Haida, Chilcotin, Shuswap and Kathlamet sources.

[221] In "Nanabushu, the Sweet-Brier Berries, and the Sturgeons" this lesson is brought home by the contrast between Pilferer, who follows all the *manitou's* instructions perfectly but does not aggressively assert his claim to the blessing ("perhaps...we shall yet be blessed" at 110), and Nanabushu, who is disobedient but still confidently claims the blessing ("I have been blessed...By no means a mere morsel have I seen" at 114). Only after coming up empty handed does Nanabushu display the requisite obedience ("Yes, but it is uncertain how it will turn out; for according as I was told so I did." at 115). Overholt & Callicott, *supra.* note 48 at 145.

[222] Anderson, *supra*, note 17 at 64. See 3.3.2 and 3.3.3.

[223] *Ibid.* "You're supposed to say to him that you don't...You don't wake him up for a [without] good reason. But he's your guest, eh? So you tell him he'll be treated good when he comes to stay with people. He's visiting them [after being killed]. So you say that you're going to treat him good. That you don't...make him die for nothing. Kind of like you're thanking him." Brightman, *supra*, note 114 at 115.

[224] In "Clothed-in-Fur" when the beaver came back to life again, they refuse to be killed because the humans made no offering and because they are insulted by the humans' self crediting of their hunting ability (" 'There is very little water where the Beavers dwell, and all we have to do is simply to go to the Beavers,' he (the human) said." See paragraph 13 in Appendix III.). The reverse seems true also. In "A Moose and his Offspring," in Overholt & Callicott, *supra*, note 48 at 81-84, the young moose is warned by his father not to entertain an arrogant attitude towards humans who subsequently mauls him.

[225] Brightman, *supra,* note 114 at 114. The implications of this taboo on the production of knowledge are discussed in 3.3.3.

to observe and to take the time to see with more than our eyes and our mind" to understand the teachings.[226] Rather than dealing with animals as 'things' over which humans can assume a management function, indigenous ideology incorporates the idea that living as part of the "relationships between things" can guide human actions by the knowledge they obtain from the relationships. "The hunter tries to think what the bear is thinking. Their minds touch. The hunter and the bear have parallel knowledge, and they share that knowledge. So in a sense they communicate."[227]

The hunter may derive knowledge from narrative cultural wisdom validating the personal transformative experiences of dreaming and visionary experiences. Cruikshank highlights this organic knowledge process based on the relationship between human and non-human persons in the following summary of "boy who stayed with fish":

> A youngster, showing hubris by making thoughtless remarks about fish, trips and falls into a river. He is swept into a world where all his normal understandings are reversed. In this world, fish occupy the human domain, and all the cultural behaviour he has come to take for granted is shown to be foolish and wrongheaded. Gradually he becomes initiated and properly socialized into his new world, and when, the following year, he is able to return to the human world through shamanic intervention, he brings back an understanding of the fundamental relationships enmeshing humans and salmon in shared responsibilities for the health of salmon stocks.[228]

Other specific ecological knowledge that was taught by narrative includes methods of remedying,[229] and the consequences of,[230] unsustainable practices. While narratives are often dismissed by science-biased managers, they contain valuable collective knowledge about how to obtain and best use knowledge about the 'relationships between things' which can be 'updated' through retellings as these relationships change.

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[226] *Supra*, note 18 at 4-5. See the limbic resonance paragraph for a western cultural version of this idea.
[227] LaDuke, *supra*, note 41 at 128.
[228] *Supra*, note 111 at 57-8. See Jenness for another version of this story by the Katzie in Jenness, *supra*, note 127.
[229] Anderson points to a story where a hero destroying the weir that is taking all the salmon and "decrees henceforth weirs shall allow salmon to escape" *Supra*, note 17 at 66. See Maud, *supra*, note 107.
[230] Common are stories of bad children of the village killing animals wantonly and all are destroyed in the village except those who warned against such behaviour. Anderson, *ibid.* See Chief Harris, *supra*, note 112.

Complex rules relating to the protection of and rights to knowledge are often a feature within indigenous societies and can be a valuable conservation mechanism. While in many North American indigenous societies there is a taboo against a hunter revealing the source of his knowledge and power, he may reveal the content of the knowledge.[231] Tanner writes that this is a significant distinction, "since in the practical world it is the old men who have most of the magical knowledge and power, and the young men who do most of the hunting. The myth ["The Boy Who Was Kept by a Bear"] provides ideological authority for this state of affairs, by showing a division of labour between magical power, and the use of divinatory knowledge."[232] It is arguably dangerous to give a novice access to certain knowledge on which the security of a society depends before they have developed the social skills safeguarding against misuse. Johannes[233] notes similar secrecy observed by the indigenous peoples of Palau, South Pacific. He argues that secrecy probably functions as a conservation measure because if the knowledge needed to exploit a particular area or species is restricted, he writes, the likelihood of overexploitation is lessened. "Conversely, the 'stealing' of a method helps to reduce the risk of it being lost if its legitimate owner dies without heirs."[234] Zann made a similar argument about the secrecy observed by the peoples of Kiribati and Tuvalu in the South Pacific.[235] Thus knowledge is a valuable form of technology to be guarded and used according to strict social and religious rules for the protection of the social-natural ecosystem.

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[231] A taboo illustrated in "The Boy Who Was Kept By a Bear" in Tanner, *supra*, note 194 at 151. See Appendix IV.

[232] *Ibid.*

[233] Johannes, *supra*, note 95 at 89. See Lindstrom, *supra*, note 90 at 130 regarding secrecy and knowledge restriction in Vanuatu.

[234] Johannes, *ibid.*

[235] L.P. Zann, "Traditional Management and Conservation of Fisheries in Kiribati and Tuvalu Atolls" in Ruddle & Johannes, *supra*, note 128, 53 at 62. He goes on to write at 63 "Reef fishermen, particularly those who tend their fish weirs daily and those who regularly glean reefs at night, have acquired an extensive knowledge of the migration and spawning aggregations of many reef fishes, and have correlated these with the lunar and seasonal cycles to predict optimal fishing areas and times. This knowledge is passed from father to son and is kept secret, making documentation difficult." Note that this was written several years ago and practices have been changing on the two atolls in recent years.

Like many indigenous peoples of North America, the Maori of New Zealand also built their identities around the idea of being not masters of the environment but members of it, thinking within its patterns and processes.[236] Durie writes:

> The environment owed its origins to the union of Rangi, the sky, and Papatuanuku, the earth mother, and the activities of their descendant deities who control all natural resources and phenomena. The Maori forebears are siblings to these deities. Maori thus relate by whakapapa (genealogy) to all life forms and natural resources. There are whakapapa for fish and animal species just as there are for people. The use of a resource, therefore, required permission from the associated deity. In this order, all things were seen to come from the gods and the ancestors as recorded in whakapapa.[237]

"Maori were the land."[238] The land is mother earth's placenta or *whenua*, and the term *whenua* means both land and placenta.[239] "Maori are born out of the whenua. There are whakapapa today that trace living persons from Papatuanuku."[240] Thus all of the natural elements, including humans, are the descendents of Rangi and Papatuanuku, all are related, and this interconnectedness by way of *whakapapa* moves Maori people to relate to the environment from a position of "parity rather than ascendancy."[241]

According to Tunks,[242] the focus of the Maori world is *utu*, or balance, through the protection and maintenance of *mauri*. Marsden writes:

> Wairua (Spirit) or Hau (the Breath of the Divine Spirit) is the source of existent being and life. Mauri is the elemental essence imparted by Wairua: [I]t is that element that is imminent in all things knitting and bonding them together. [I]t is the basic building block of the universe around which 'Hihiri' – elemental energy coalesces.[243]

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[236] E.T. Durie, "Custom Law: Address to the New Zealand Society for Legal and Social Philosophy" (1994) 24 *Victoria University of Wellington Law Review* 325 at 328.
[237] *Ibid.* See for details of the narrative about Ranginui and Papatuanuku; A Tunks, "Tangata Whenua Ethics and Climate Change", (1997) 1 *New Zealand Journal of Environmental Ethics* 67-123.
[238] Durie, *ibid.*
[239] E.T. Durie, "Will the Settlers Settle? Cultural Conciliation and Law" (1996) 8 *Otago Law Review* 449 at 452.
[240] Durie, *supra,* note 236 at 328.
[241] S. Hayes, "Defining Kaitiakitanga and the Resource Management Act 1991" (1998) 8 *Auckland University Law Review* 893 at 893.
[242] Tunks, *supra,* note 237 at 80-81.
[243] Cited in *ibid.* at 80.

Tunks comments that whereas *hau* is the physical aspect of air, *mauri* is the spiritual source, the essence of life. *Mauri* binds the physical, spiritual and psychological aspects of all life and is the gauge by which the health of a being may be measured. "Everything has Mauri otherwise it could not live; the oceans, the atmosphere, all animal and plant life are possessed of it."[244] To pollute, for example, seriously diminishes "...the...*mauri* of the water, demeans its *wairua* and thereby affects the *mana*, the prestige, of those who use it and its resources."[245] When different aspects are out of balance, the *mauri* becomes exposed to harmful influences and is weakened. By the law of *utu*, what is given is returned or that taken is retrieved.[246] Tunks writes, "(t)he development by our tipuna of strict environmental regulation was to maintain Utu and to safeguard the Mauri of the natural world. This includes respect for the domains of the different Atua and the prevention of acts that are detrimental to the Mauri of co-existing states of living."[247]

The role of *kaitiaki* is central in maintaining the *utu* and therefore the *mauri* of all life and has been defined as the overriding Maori environmental ethic.[248] The concept of *kaitiaki* denotes 'guardianship' in Maori cultural terms and so while all peoples must play a part in the protection of the Earth, only Maori can be *kaitiaki*.[249] Further, the Maori cultural context does not place humans as stewards at the apex of the environmental hierarchy as 'protectors of nature'.[250] According to Kirkwood, "it would be wrong to think that we humans act as 'kaitiaki' of nature – that is a Pakeha view. The Earth

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[244] *Ibid.*
[245] K. Ruddle, "The Role of Validated Local Knowledge in the Restoration of Fisheries Property Rights: The Example of the New Zealand Maori" in Hanna & Manasinghe, *supra*, note 62, 111 at 114.
[246] Durie, *supra*, note 236 at 329. Durie points out that *utu* was not just revenge as popularly portrayed but rather a mechanism for the maintenance of harmony and balance. See for a detailed discussion of *utu;* J. Patterson, "Utu and Punishment" (1991) 21 *Victoria University of Wellington Law Review* 239. Patterson writes at 239, "(t)he practice emerges clearly in the body of traditional narrative when Tawhiri-matea, god of winds, is angered at his brothers for separating his father, Rangi-nui, the Sky Father, from Papa-tuanuku, the Earth Mother, and extracts utu by attacking them. One of the brothers, Tu-matauenga the fierce ancestor of man, is in turn angered at the cowardly way in which his other brothers have left him to fight alone against Tawhiri-matea. He obtains utu by capturing and eating his brother, thus destroying their tapu and reducing their mana. The theme continues through the myths and on into tribal and family histories. Detailed accounts are kept of injury and response, handed down from generation to generation and recited as reminders of what has to be done. Old injuries are kept alive until utu can be obtained."
[247] *Supra*, note 237 at 81.
[248] *Ibid.* at 84.
[249] *Ibid.* Refer to chapter six (6.2.4).

kaitiaki's us; what we must do is respect and nurture the kaitiakitanga of Papatuanuku."[251] Thus *kaitiaki* is a type of responsibility that places humans within nature, protecting the resource from harm while still reaping the benefits of the resource.[252] Hayes writes:

> An intrinsic part of this concept is the recognition that each generation has an inherited responsibility to protect and care for the natural world. Kaitiakitanga carries with it an obligation not only to care for the natural world, but also for each successive generation, by ensuring that a viable livelihood is passed on.[253]

Thus Maori perform their role of *kaitiaki* from within environmental patterns so that human actions and decisions are less likely to violate *utu* and the *mauri* of all life.

In sum, an important point to be extracted from the foregoing discussion is that humans are considered to be intimately connected to other aspects of creation and build their knowledge about the environment from *within* the environmental patterns themselves. The social/spiritual relationships that many indigenous people within these societies build with the non-human world are their guide to the knowledge of what kinds of activity will lead to environmental degradation. Intimate knowledge of environmental patterns are stored within social rituals and beliefs and practiced by those who share this collective knowledge. Through narrative and personal experience, people can learn from the animals what kinds of human behaviour amount to sustainable use because ultimately it is up to the non-human world as to whether it will continue to offer itself to sustain human populations. By constantly adjusting their behaviour according to the response of

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[250] *Ibid.*
[251] Cited in *Ibid.*
[252] Hayes, *supra*, note 241 at 894. For a discussion on some stewardship responsibilities of the Mi'kmaq in Canada see Native Council of Nova Scotia, *Mi'kmaq Fisheries Netukulimk: Towards a Better Understanding* (Truro: Native Council of Nova Scotia, 1993). This report explains the concept of *Netukulimk* as "[a] Mi'kmawey concept which includes the use of the natural bounty provided by the Creator for the self-support and well-being of the individual and the Nation" at 8. For some stewardship responsibilities of the Ojibwa and Cree peoples of the Northern United States and Canada see Tsosie, *supra*, note 185; and LaDuke, *supra*, note 41. LaDuke writes at 128 that *Minobimaatisiiwin* is the basic objective of the Anishinabeg and Cree people. It can be interpreted as the "good life" or "continuous rebirth". "Implicit in the concept...is a continuous inhabitation of place, an intimate understanding of the relationship between humans and the ecosystem, and the need to maintain that balance."
[253] Hayes, *ibid.*

the non-human world, humans are better prepared to restore the balance when a particular human activity becomes unsustainable.

3.2: Part Two - Some Relationships Between Science-Oriented Societies and Nature

> *We should take care not to make the intellect our god: it has, of course, powerful muscles, but no personality. It cannot lead; it can only serve.* – Einstein[254]

Under many conventional science-based management regimes, it is assumed that the most effective precautionary decision would be based on a rational assessment of the evidence, leaving little scope for an emotional assessment. This part argues that knowledge processes seeking to determine *why* X is so are created by, and at the core of, many science-based societies' relationships to nature. In the process, valuable indigenous knowledge '*that* X is so' is demoted to the status of unsupported anecdotal evidence. The idea that humans are separate from nature has permeated western history, as the preceding discussion of language and the following discussion indicate. This part argues that the separation was a necessary precondition for the scientific way of thinking – a way of thinking that starts from the premise that humans *can* understand nature. It argues that people often confuse 'science as a discipline' with 'science as a way of thinking' (a knowledge process) by showing that several scientific disciplines are moving away from the reductionist approach of seeking *why* X is so and affirming the utility, even the supremacy of knowing *that* X is so. The argument opens up the possibility in later chapters of science-based environmental management focusing on 'relationships between things', rather than simply 'characteristics of things', as the basis for common ground between indigenous and science-based management regimes when using adaptive management strategies. Ultimately it paves the way for a self-conscious reassessment of the scientific way of thinking about, and relating to, nature conservation.

The origins of scientific thought can be traced back to, *inter alia*, the influence of the philosophers of ancient Greece and Rome and the ideas that the Christian church

inherited from its Jewish origins.[255] Many thinkers deduced from the world around them that every part seemed to have a role and purpose within an overall plan.[256] The question remained 'what was the position of humans within this plan that must have been conceived by a God or Gods?' The overall consensus was that everything had been provided for the sake of man. Neither Aristotle,[257] Plato[258] nor Socrates[259] questioned the idea that the most important being in the world was 'man'.[260] The Great Chain of Being which conceptualizes the cosmos as a pyramid erected to support man on its pinnacle (beneath only a God or Gods) was not a new idea; thinkers in Ancient Egypt had conceptualized a similar hierarchical structure.[261] The adoption of Christianity as the state religion of the late Roman Empire introduced Jewish thought[262] holding that 'man' is given dominion over all creatures and things and is enjoined to subdue the earth. [263]

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[254] Lewis *et al.*, *supra*, note 16 at 32.
[255] C. Ponting, *A Green History of the World* (New York: St. Martin's Press, 1991) at 141.
[256] *Ibid.* at 142.
[257] In the *Politics*, Aristotle argues that plants are made for animals and concludes with the statement that, 'Now if Nature makes nothing incomplete, and nothing in vain, the inference must be that she has made all animals for the sake of man.' *Ibid.* 142.
[258] Plato (427 BC) and his follower Plotinus, had argued that the "universe was created by a generous god who, out of his love for his creation, filled it to the brim with being. Under their doctrine of plenitude, everything that can exist must exist. There can be no gaps on the ascending scale that extends from the lowest beings – stones, grains of sand, and the like – through the plants and the animals to man and beyond man to the angels and finally to God at the apex of the great chain of beings." Van Doren, *supra*, note 143 at 229.
[259] Xenophon in his *Memorabilia* attributes to Socrates the argument that 'everything about humans (such as the eyes and hands) has a purpose and that the gods have also provided everything carefully for the benefit of man.' Ponting, *supra*, note 255 at 142.
[260] Van Doren, *supra*, note 143 at 44.
[261] Egypt was organized on hierarchical principles; the gods were at the top, below them were the dead and below them was humanity. In this hierarchy of beings, the pharaoh occupied a powerful position, being the sole link between the living human world and the world of the spirits. *Ibid.* at 5.
[262] Within particular religions, there can be identified a multitude of turning points towards the western society's present relationship to nature. For example, Albert Camus hypothesized: "Christianity, no doubt, was only able to conquer its catholicity by assimilating as much as it could of Greek thought. But when the Church dissipated its Mediterranean heritage, it placed the emphasis on history to the detriment of nature, caused the Gothic to triumph over the romance, and destroying a limit in itself, has made increasing claims to temporal power and historical dynamism. When nature ceased to be an object of contemplation and admiration, it can be nothing more than material for an action that aims at transforming it. These tendencies – and not the real strength of mediation, which would have comprised the real strength of Christianity – are triumphing, in modern times, to the detriment of Christianity itself, by an inevitable turn of events." Albert Camus, *The Rebel* (New York: Vintage Books, 1956) at 299.
[263] "And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth." (Genesis 1:26). "Thou hast given him (man) dominion over the works of thy hands" (Psalm 8). God says to Noah and his sons, "And the fear of you and the dread of you shall be upon every beast of the earth, and upon every fowl of the air, upon all that moveth upon the

Nature was not seen as sacred and was therefore open to exploitation by humans without any moral restraints; what mattered was the relationship between the individual and God and not with the natural world.[264]

Science as a knowledge process is a particular way of thinking about the world and about human's place within it. As the following paragraphs outline, the idea of a divine plan and design within nature was dominant in western European thought until developments in scientific thought following the Renaissance served to undermine it.[265] However, the idea that man is above nature persisted and gained a new vital force from the 'scientific revolution'. Scientific knowledge is consistent with, if not premised on the idea that humans are separate from, and can objectively study through reason and rational processes, nature. Thales, in around 600 BC, is reputed to have been the first to make the assumption that the world was a thing whose workings the human mind *can* understand.[266] The distinction between knowing *that* something is so and knowing *why* (that is, the cause) was drawn by Aristotle at around 340 BC and while the Athenians explanations have metamorphosed into myth, their hierarchy of knowing endured: "real knowledge, true knowledge, comes from knowing *why*."[267] The medieval definition of *scientia* encapsulates this concept of knowledge: *cognitio per causas,* or, 'knowing the cause'.[268] John Burnet noted that it "is an adequate description of science to say that it is 'thinking about the world in the Greek way.' That is why science has never existed except among peoples who came under the influence of Greece."[269]

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earth and upon all the fishes of the sea; into your hand are they delivered." (Genesis 9: 2). King James Version of the Holy Bible (Cleveland: The World Publishing Company, 1945)

[264] Ponting, *supra*, note 255 at 144. There were of course some voices of dissent over this idea for example, Francis of Assisi offers the view that religious literature confers divine importance on human kind, placing them only a little lower than the angels but that the fates of individual people were "scarcely more significant than the falling of sparrows." That is, people are "only one more finite, mortal creature of no consequence." E.F. Murphy, *Governing Nature* (Chicago: Quadrangle Books, 1967) at 4.

[265] Ponting, *supra*, note 255 at 142.

[266] Van Doren, *supra,* note 143 at 33. In other words, he had not turned to animistic explanations by saying he had no explanation other than the gods made it happen.

[267] Lewis *et al.*, *supra*, note 16 at 111-112.

[268] *Ibid.* at 112.

[269] Cited in Van Doren, *supra,* note 143 at 33.

The emerging scientific method was a fragmented knowledge process trying to digest the complex information piece by piece, forming fragmented knowledge of the empirical world. Following Copernicus' hypothesis in the sixteenth century that the earth circled the sun, European society began to question many teachings of the Christian church. Under Galileo's telescope, it was open to all to see that the heavens were basically no different from "the sublunary world."[270] The 'scientific method' emerged to fill the vacuum created by the doubt about the knowledge base that had been built upon for centuries. Descartes concluded in *Discourses on Method* that all might be doubted except one thing – that he, the doubter, existed *because* he doubted. To achieve similar certainty in other realms, he 'discovered' the scientific method which was a technique that used mathematics to measure and quantify, together with a process of analysis designed to reduce wholes to their constituent parts.[271] Thus unlike indigenous knowledge, science tends to focus on the characteristics *of* things rather than the relationship *between* things. The scientific method was developed to study manageable parts in isolation, preferably under a controlled environment, so that the results may be verified, fragmenting human's understanding of the subjects. 'Science' itself, as a discipline, has been fragmented into manageable components according to subject matter. While there are sciences that explore how systems work, for example ecology and chemistry, even these systems are rarely studied together to get an overall idea of how the systems relate. While the conventional scientific knowledge process evolved as a means of understanding the workings of the world, it necessarily alienates itself from that world (in other words, put humans outside the workings so that they could be picked apart) and in doing so, is flashed fragmented, sometimes misleading revelations to add to its knowledge base.

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[270] *Ibid.* at 200. When Christian ideas about humans being the center of the universe (who are gradually fed information to eventually understand the Master Plan) began to wane, humanity simply moved over to become the center of the universe using its own scientific knowledge processes to discover principles of the earth's movement. P. Taylor, *An Ecological Approach to International Law: Responding to the Challenges of Climate Change* (New York: Routledge, 1998) at 30.

[271] Ponting, *supra*, note 255 at 147.

The widespread adoption of this reductionist approach to scientific inquiry had a profound impact on the shaping of European thought in general, [272] inspiring a cultural morality that sanctioned domination over a *material*, 'objectified' world. Reductionism led to a fragmented, mechanical world-view in which nature, society and the human body were composed of interchangeable atomized parts that can be analyzed, repaired or replaced from outside.[273] As Descartes believed that only humans had souls, he said, "I do not recognize any difference between the machines made by craftsmen and the various bodies that nature alone composes."[274] Thus whatever new intellectual methods Descartes was trying to pursue, humans still occupied a special place in God's scheme, set apart through the possession of minds and souls which enabled them to dominate nature, guilt free.[275] Descartes' method could not deal with the spiritual world, and the western world over the next few centuries was reduced to a material realm, in many respects devoid of spirit.[276] In separating mind from matter, Descartes saw the world as having 'objective' properties independent of the mind which inspired the cultural assumption that science was an objective process revealing 'truths'. The rest of the western world caught on and the term 'objective' became synonymous with 'in scientific terms'. Thus rather than questioning humanity's domination over nature, the shift to a scientific, mechanistic world-view enshrined this fundamental premise on which the Greek, Roman and Christian worlds had been based. By being able to 'objectively prove' human kind's superiority through the use of the scientific method, the idea of humanity's domination could be taken for granted and permeated the psyche of popular western thinking.

Economics, as part of the scientific way of thinking, ascribes an instrumental value to nature, considering her 'resources' free for the taking with no obligations

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[272] *Ibid.*
[273] Merchant, *supra*, note 59 at 277.
[274] Ponting, *supra*, note 255 at 147.
[275] *Ibid.* Descartes "saw the purpose of science and increasing human knowledge as being part of a wider struggle so that, 'we can...employ them in all those uses to which they are adapted, and thus render ourselves the masters and possessors of nature'" *Ibid.* at 148. Newton's physical laws that attempted to explain the workings of the universe launched a popular image of the relation ship between God, humans and nature; that of God as the great designer of a machine "the workings of which humans could, through their god-given intellectual faculties, seek to understand." *Ibid.* at 147.
[276] Van Doren, *supra*, note 143 at 205.

attached other than to allocate the 'resources' rationally. Economics is often defined as the rational allocation of means among conflicting ends.[277] A fundamental flaw within classical economics and the systems derived from it (including Marxist[278] and Keynesian) is that they ignore the problem of resource depletion and deal only with the secondary problem of the distribution of resources between different competing ends.[279] Classical economics is unable to enter into the equation the fact that 'resources' are not merely scarce but *finite* and so the economic systems based upon it encourage both the producer and consumer to use up available resources at "whatever rate current conditions dictate."[280] Thus economic systems ascribe to nature an instrumental value; it is valued as a means to an end, as a capital for the benefit of humanity, and is not perceived to be valuable in itself. The price of a 'resource' is the cost of extraction and its conversion into marketable commodities.[281] Of course other systems such as ethical and social systems can attempt to ascribe a value to elements of nature that do not have an immediate economic value to slow down environmental destruction. However, Taylor articulates succinctly the problem with the fragmented approach to a society's interactions with nature (driven by economic systems yet restrained by other systems):

> The dilemma that arises with increasing regularity...involves our encountering a threatened part of nature that we value for reasons we cannot easily articulate and for which we can find no humanistic reason for preserving. The result is often a frantic search for rational reasons for attaching aesthetic, recreational, scientific or cultural value to that part of nature, so that the non-resource can be transformed into a resource. It is an approach that is doomed to failure. Its key failing is that it reserves the notion of value to human benefit, and this is a criterion that will never be satisfied by much of unmodified nature.[282]

This thinking plays itself out in the understanding of nature's gifts as simply 'resources'. They are to be produced, exchanged, used and expended.[283] Environmental damage is

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[277] Anderson, *supra*, note 17 at 88.
[278] Marx argued that the "great civilizing influence of capital is that it rejects the deification of nature so that nature becomes, for the first time, simply an object for mankind, purely a matter of utility." Ponting, *supra*, note 255 at 157.
[279] *Ibid.* at 155.
[280] *Ibid.* at 156.
[281] *Ibid.*
[282] *Supra*, note 270 at 47.
[283] Clarkson *et al.*, *supra*, note 18 at 14.

considered external to the dominant mainstream economic systems just as the environment is external to human culture.

There are some strains of contemporary scientific disciplines, examples of which are given in the following three paragraphs, that are confirming the utility of knowing *that* X is so without *why* thereby placing humanity back into the natural environment. Einstein's theory of relativity and the theory of atomic phenomena (which was to become a characteristic of quantum theory) was the turning point towards a scientific world-view in which the universe is understood as one indivisible, dynamic whole "whose parts are essentially interrelated and can be understood only as patterns of a cosmic process."[284] It was discovered that subatomic particles were not 'things' but *interconnections between things*: that the particles, and therefore all parts of the universe, cannot be understood as isolated entities but must be defined through their interrelations.[285] Capra argues that modern physics has undermined the classical ideal of an objective description of nature. He explains that in atomic physics, the observed phenomena can only be understood as correlations between various processes of observation and measurement and that the consciousness of the human observer always lies at the end of this chain of processes (in other words, that humans are *within* the processes).[286] According to this theory then, the Cartesian division between the observer and observed (mind and matter) cannot be maintained which leads to the conclusion that we cannot speak about nature without at the same time, *speaking about ourselves*.[287] Since, as Capra points out, the patterns that scientists observe in nature are intimately connected with the patterns of their minds (concepts, thoughts and values), it is difficult to hold that science can be value free.[288] Einstein's theory of relativity proposed that the flow of time depends on where you are, and that different observers might not agree even about the chronological order of the

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[284] Capra, *supra*, note 54 at 78. James Jeans wrote in the 1930s, "Today there is a wide measure of agreement...that the stream of knowledge is heading towards a non-mechanical reality; the universe begins to look more like a great thought than like a great machine." *Ibid.* at 86. The term 'quantum mechanics' has been pointed out as a misnomer.

[285] *Ibid.* at 81. Thus it seems that the chaos theory shares with indigenous ideology the understanding of stochastic uncertainties.

[286] *Ibid.* at 86.

[287] *Ibid.* at 87.

[288] *Ibid.*

events they witness.[289] Heisenberg followed to propose the uncertainty principle; that the more precisely we determine the position of an atomic particle, the less we can know about its speed and the more exactly a particle's velocity is measured, the more elusive its location becomes.[290] Heisenberg was said to have concluded, "Science does not describe and explain nature [but rather] nature as exposed to our method of questioning."[291] Thus concentrating on causal relations (searching for the 'why') may make sense in a mechanistic world full of 'things' but it has little value in a world full of 'relationships between things'.[292]

It is becoming increasingly apparent within the field of psychiatry that "comprehension's proper role is icing on the cognitive cake."[293] In other words, knowing *that* X is so is more important to knowledge growth than knowing *why*. According to Lewis *et al.*,[294] explicit memory is made known by, and is a process of, conscious reflection. Implicit memory escapes our notice because in it lies knowledge that we cannot describe, explain or recognize. The authors use the following study as an illustration of the complexity of implicit knowledge and how it can guide human actions. People were given the task of anticipating weather in a simple computer model. On each trial, a computer screen showed one, two or three symbolic cues and the subject's job was to anticipate whether the hints combined to determine particular weather. After the subject typed in an answer, the computer would then state whether it was right or wrong and the person would try it again. The relationship between the cues and effect was a complex, probabilistic function too difficult for logic to unravel. Despite the fact that none of the subjects figured out the scheme relating cues to weather anticipation, the

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[289] Lewis *et al.*, *supra*, note 16 at 16.
[290] *Ibid.* at 17.
[291] *Ibid.*
[292] Note that while these changes in scientific disciplines may appear to explain indigenous concepts in scientific terms, the two knowledge processes and resulting concepts are still vastly different. For example, Tunks notes, "Like the new physicists, the Maori perceived the Universe as a "Process". But they went beyond the new physicists' idea of the real world as simply "pure energy" to postulate a world comprised of a series of interconnected realms separated by aeons of time from which there eventually emerged the natural world. This cosmic process is unified and bound together by spirit." *Supra*, note 237 at 70-71.
[293] Lewis *et al.*, *supra*, note 16 at 112. The scientific study of intuition is just beginning as it seems therapists are focusing more and more on the relevance of emotional bonding and developmental theories.

authors write that the people nevertheless honed their forecasting abilities. After a mere fifty trials, the average subject was right seventy percent of the time. The authors write that while the subjects could not understand what they were doing and why it worked, they were still able to *do* it. "They had gradually developed a feel for the situation, and intuitively grasped the essence of a complex problem that their logical brains could not crack."[295] Thus, the authors conclude that when confronted with *repetitive experiences*, the brain unconsciously extracts the 'rules' that underlie them.[296] In a similar study, it was found that conscious attempts at problem-solving got in the way of 'intuition' and actually impaired the subjects' performance while in another, the clues improved how well the subjects *understood* the task, but not how well they *did* it.[297] How such knowledge develops is not destined for translation into words and capable of comprehension, but it does drive humans toward a more reliable knowledge source on which to base actions. As Lewis *et al.* point out, "behind the familiar bright, analytical engine of consciousness is a shadow of silent strength, spinning dazzlingly complicated life into automatic actions, convictions without intellect, and hunches whose reasons follow later or not at all."[298]

While a mechanistic world-view may set people apart from other aspects of nature, some disciplines of science are trying to grapple with the undeniable connection felt between humans and some other life forms.[299] The field of psychotherapy is coming to focus on the human capacity to read minds. One theory offered centers around a

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[294] The following discussion is based on *ibid.* at 106-112. It appears that explicit and implicit memory are located within different parts of the brain because one can be impaired while the capacities attributed to the other are still functional. See 110.

[295] *Ibid.* at 108.

[296] See narrative section above relating to training for the kind of skills of anticipation essential for a person living within an uncertain natural environment. To avoid reducing indigenous knowledge to scientific terms and theories, I am not drawing conclusions about indigenous knowledge processes from the proceeding discussion. The discussion is simply to illustrate how science is moving away from its bias for reason which can be translated into more holistic environmental management concepts and practices.

[297] *Ibid.* at 109. See also Ross' theory of patterned thinking drawn from observational learning in Ross, *supra*, note 87.

[298] Lewis *et al.*, *ibid.* at 112. This idea is not foreign to some strains of the 'Greek way of thinking'. The Greek Philosopher Paracelsus made the same observation in the 5th century BC; "Magic has power to experience and fathom things which are inaccessible to human reason. For magic is a great secret wisdom, just as reason is a great public folly." Tyler, *supra*, note 110 at 4.

[299] This discussion does not cover connections with nonliving forms.

mammalian capacity known as limbic[300] resonance – "a symphony of mutual exchange and internal adaptation whereby two mammals [including human and non-human persons] become attuned to each other's inner states."[301] Lewis *et al.* suggest that limbic resonance supplies the wordless harmony that we see and feel everywhere – between mother and infant, between a child and a dog - but take for granted simply because it is so much a part of us. Because limbic states can leap between minds, feelings are contagious, while ideas are not; if "one person germinates an ingenious idea, it's no surprise that those in the vicinity fail to develop the same concept spontaneously. But the limbic activity of those around us draws our emotions into almost immediate congruence."[302] Lewis *et al.* propose that limbic resonance is a necessary precondition for limbic regulation where mammals capable of bridging the gap between minds will, among other things, tune and regulate physiological patterns of the other. Limbic regulation "carves enduring patterns of knowledge into the developing circuits of the mind." Such regulation is life sustaining.[303] Thus while the mainstream neocortical brain is largely conditioned to see the world made up of discrete, independent entities so that it can 'understand' them through rational, reasoning processes, the limbic brain is building essential knowledge processes drawn from the experiences of surrounding life forms, regulating behaviour for efficient functioning within a complex world. Knowing that

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[300] According to Lewis *et al.*, the limbic brain is the emotional center of a person which lies between the reptilian brain (which houses vital control centers – neurons that prompt for example, breathing) and the neocortical brain is the center for *inter alia*, will, abstraction and other aspects of conventional intelligence.

[301] Lewis *et al.*, *supra*, note 16 at 63.

[302] They give an example of the difference in atmosphere when watching a movie at the theatre and at home – "it is not the size of the screen or the speakers (as the literal minded home electronics industry would have it) – it's the *crowd* that releases storytelling magic, the essential, communal, multiplied wonder." *Ibid.* at 64. Arguably many two dimensional methods of communication such as the written word and movies make their way into the neocortical brain to provide the learner with 'knowledge' but bypass the limbic brain where it would have connected the learner with the internal world of the storyteller, leading to a deeper learning experience.

[303] *Ibid.* at 98-99. The authors point out that this is why pets can not only make people feel better but also live longer. "Several studies have shown dog-owning cardiac patients die at one quarter to one sixth the rate of those who forgo canine companionship" at 98. The authors also cite examples of where babies who were given food, shelter and clean clothes but minimal human contact died within the first few years of life largely because, the studies suggest, of the lack of regulatory teaching that naturally occurs between infant and constant companion – usually a parent. Isolation is physically, emotionally and mentally damaging and has been used in many indigenous societies in Australia as an effective punishment for someone who is disrupting social harmony. Arguably it is a rude awakening to an individualistic society that people depend on other people [including non-human people] to survive not just on a sustenance level but also on a fundamental regulatory and emotionally nourishing level to keep those physical processes in motion.

something 'just is' comes from a myriad of complex processes between inhabitants of this planet which simple reason cannot comprehend.

Notwithstanding the scientific disciplines that are moving away from the reductionist way of thinking, the Cartesian view of living organisms as machines, constructed from separate parts, still provides the dominant conceptual framework within most of the biological sciences.[304] Underlying most contemporary biological thinking is the belief that organisms can be understood by reducing them to their smallest constituent parts and by studying the mechanisms through which these interact.[305] Spectacular results in certain fields continue which is arguably why there is little concern among most biologists about the limitations of the reductionist approach.[306] Capra claims that the "fact that [the reductionist approach] is inappropriate for solving other problems has left these problems neglected, if not outright shunned, even though the proportions of the field as a whole are thereby severely distorted."[307] One such problem is how to organize empirical data as the basis for an anticipatory framework within the precautionary principle.

To conclude, the self-legitimization of the scientific way of thinking of objective truths and rational arguments makes it difficult to realize that it is one knowledge system out of many that guides human activity in relation to nature's processes. As Lewis *et al.* write, "(t)he capacious and monocular neocortical brain tells us that ideas perpetuate civilization. The thick marble walls of libraries and museums protect our supposed

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[304] Capra, *supra*, note 54 at 102. But note the paradigm shift within the field of ecology focused on in chapter five. Also note that biological sciences are moving towards integration of other scientific fields. Holling *et al.* write, "The critiques of reductionist biology, or, for example, neoclassical economics, are now becoming dated. Those bodies of scholarship are being superseded by true innovative integration of economics and ecology...and ecology and social sciences." *Supra*, note 56 at 345. In general see E.O. Wilson, *Consilience: The Unity of Knowledge* (New York: Alfred A. Knopf, 1998)

[305] Capra, *ibid.* Capra points out at 103 that "Biologists are busy dissecting the human body down to its minute components, and in doing so are gathering an impressive amount of knowledge about its cellular and molecular mechanisms, but they still do not know how we breathe, regulate our body temperature, digest, or focus out attention. They know some of the nervous circuits, but most of the integrative actions remain to be understood."

[306] *Ibid.* at 104.

[307] *Ibid.*

bequest to future ages. How short a vision."[308] Reliance on rational processes to direct human behaviour in relation to nature has impoverished and distorted the knowledge derived from the immediate environmental feedback of living within nature. To gain a long-term vision of people's relationship to their surroundings, scientists and the broader society must be open to the knowledge processes that link in with environmental patterns. While noun-based languages and lineal two-dimensional processes of knowledge transmission make it difficult to see relationships between things, people from science-oriented cultures are endowed with the capacity, as part of nature, to know they are there. People are far from rational when making precautionary decisions simply because of the lack of information from which to draw a conclusion, and often make decisions without always knowing why. As Shakespeare aptly wrote in *Much Ado About Nothing*, "What men do! What men may do! What men daily do not knowing what they do!" If humans think within environmental patterns, they are less likely to make a decision violating the processes and sustainable use of a human-nature ecosystem.

3.3 : Part Three - The Emotion Underlying Precaution

Introduction

A society's relationship to the environment obviously impacts upon how it regulates the activities of its people in relation to nature, the basic function of the precautionary principle. While environmental signals and other information may be pointed to as justification for a precautionary decision, often the decision is motivated by emotion – either individual or societal emotion – about the 'rightness' or 'wrongness' of a given activity. Thus the morality of killing animals[309] and the morality of conservation are deeply embedded in precautionary decision-making within a particular management regime. Explaining the precautionary principle as a *rational* method of decision-making in the absence of *scientific* information, as many legal and policy guidelines on the

[308] *Supra*, note 16 at 225.

[309] This discussion limits itself to animals although other animate and inanimate entities obviously carry with them moral significance for humans.

principle do,[310] devalues emotion which may be dressed up as scientific evidence to justify a particular decision, even where there exists contradictory indigenous knowledge. The moratoria on whale and seal hunts are classic examples of societal emotion driving the application of the precautionary principle based on western moral values in relation to what species of animals it is 'wrong' to kill and when it is the duty of humanity to protect certain valued species. It is shown that these moral values are largely the result of treating people as outside the unit being conserved. Unfortunately, it appears that the western approach to the precautionary principle is also to view resource users as outside the decision-making process and policing controls must externally enforce precautionary decisions. It is argued that emotion is used as a political tool by governments and some environmental organizations but that in general, urban populations are too far removed from nature's processes to have their actions motivated by precaution, except when the media is used to stir up feelings. Sections 3.3.1 and 3.3.2 provide the context for the discussion in the final section by showing the impact of a particular society's morality on precautionary decisions from either within or without environmental processes.

Section 3.3.3 explores how religion is recognized within many indigenous societies as a powerful force for internalizing precautionary decision-making to protect the human-natural ecosystem. Anderson questions why common sense by itself would not be sufficient to guide effective management practices and responds, "(t)he answer, simply put, is that religion involves emotions, involves the community, and reaches people in ways that logical, rational argument cannot do."[311] While not advocating any particular religious structure, this section refers to religion in the broad, spiritual sense whereby an institutionalized complex of symbols used in rites, myths and beliefs reveals a level of reality normally hidden from a rational world.[312] It is argued that such a predominantly emotional belief system is the foundation for 'internal precautionary approaches'. As the

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[310] See chapter one.

[311] Anderson, *supra*, note 17 at 111.

[312] This is based on Tanner's definition of religion; Tanner, *supra*, note 194 at 108. Tsosie points out that 'religion' is a western concept, having defined meanings according to western understandings. He argues that a definition of religion as the "conception of, attitudes toward, and relations with the ultimate source of life" is more helpful to understanding indigenous belief systems than is the "conception of religion as being a spiritual state of human reverence for the divine, as the more popular view suggests" *Supra*, note 185 at 274.

introduction to the chapter states, this section uses the phrase 'internal precautionary approach' to mean behavioural controls derived from cultural values, beliefs and conscious or unconscious collective knowledge[313] of the effects that particular human activities have upon environmental processes. In essence, the emotional response to fluctuations experienced within the human relationship to environmental patterns. Taboos over resource use are explored as one cultural expression of these internal precautionary approaches. The section attempts to show that taboos often do not have a conservation motive recognizable to science-based managers operating under a different 'morality of conservation' in which people are treated as outside the unit being conserved. Understanding precaution as a rational decision-making process is a major impediment to a broad-based precautionary principle within an anticipatory framework because religion, emotion and experience arguably lie at the root of indigenous knowledge systems and anticipatory processes.

3.3.1 - The Morality of Killing Animals

One symptom (or cause) of western society's separation from nature and the morality arising out of this relationship is the dissociation of meat from its animal past and attributing animals an instrumental value according to their proximity to human-like animal traits. According to the Bible, God allowed humans to eat animal flesh after the Biblical Flood, provided that it was bloodless and was taken from herbivorous animals.[314]. Freeman[315] suggests that knowing the herbivores eaten[316] consist of transformed plant material may help with the dissociation process. On the other hand, there exists an aversion in western society to eating carnivorous animals – in particular, *mammals* that eat other animals[317] such as whales, seals and tigers. Freeman reminds us

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[313] And the specific social codes and institutions built upon this knowledge.
[314] God said to Noah and his sons, "Every moving thing that liveth shall be meat for you; even as the green herb have I given you all things. But flesh with the life thereof, which is the blood thereof, shall ye not eat." Genesis 9: 3,4; Bible, *supra*, note 263.
[315] *Supra*, note 45 at 9.
[316] Such as cows, chickens and lamb
[317] Such as whales, seals and tigers.

that the killing of animals is largely concealed from the public eye[318] in an abattoir[319] and because the slaughtering of animals requires bleeding (and therefore the risk of contact with this 'defiling fluid'), slaughtering and cutting up the carcass for human consumption are distinct processes performed by distinct professions.[320] The "urban butcher is henceforth required only to handle an anonymous flesh reduced to its cold materiality".[321] Freeman goes on to say that various symbolic and semantic devices aim to 'vegetalize meat'. For example, in the butchering process, "the carcass is 'flowered' by making cuts that resemble plant fronds (known as 'palm leaves' in the trade)"[322] and a 'carcass' (animal) is 'dressed' (cut up). The meat, not resembling its animal form, is then usually served with vegetables or salad at a meal. All of these processes contribute to a consumer/commodity relationship in which animals are considered a means to an end (here to serve humans) rather than an end in themselves (part of the food chain but living, sensitive creatures themselves). Thus the morality of killing determines which animals should be preserved as being valuable in themselves and which can be exploited as resources valued for human consumption.

For some indigenous societies, animals are not simply brought home as dead chunks of meat and hide but rather, as members of the community, they are brought *home*.[323] Various institutions such as the visionary experience provide the means for sensing that a balance has been realized between people (human and non-human) within the community as a precondition for the complex relationship between human and non-human persons outlined above. Before a visionary experience or first kill, a person "had known the taste of every kind of meat and the warmth of fur against their skin, but not the animal themselves, alive and autonomous."[324] Tanner writes[325] that after a hunter

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[318] Freeman writes that until the middle of the nineteenth century, slaughtering animals took place in open view in the center of most European towns but that in later years slaughtering became an almost clandestine activity in concealed abattoirs. *Ibid.* at 10.
[319] The term 'abattoir' (which has replaced the earlier English word 'slaughter house' and the French term *tuerie* from the verb *tuer*, to kill) comes from the French *abbatre*, a verb primarily used in forestry (meaning to cut down trees), and in mining (meaning to bring down coal or ore from the sides of a mine shaft). *Ibid.* at 9.
[320] *Ibid.* at 10.
[321] Gascar quoted in *ibid.* at 10.
[322] *Ibid.* at 9.
[323] Anderson, *supra*, note 17 at 57. See Tanner, *supra*, note 194.
[324] Ridington, *supra*, note 105 at 16.

established a relationship with the animal world, the animal is on friendly terms with, but far more powerful than, him or her. The act of killing, he writes, becomes an exchange between persons at a reciprocal or equivalent level. After the kill, the rituals used for the purpose of regenerating further animals symbolize a final shift in the social model of the man-animal relationship. "It is the nature of this shift whereby the animal becomes turned into food, offerings and sacred remains."[326] There are elaborate rituals concerning the butchering of animals as a constant sign of respect to the ever present animal spirits, but they do not include hiding the dead body from human view.[327] In many indigenous societies, cooking and serving methods are a constant reminder of the meat's animal past. For example, according to the *apuutina* cooking method practiced by the Mistassini Cree, the animal form is preserved for as long as possible during cooking and serving procedures, to focus the whole group's attention on the animal before them.[328] Seeing food in the animal form is a constant reminder that we are all persons dependent upon each other for sustenance and identity; members of the same community who share the experience of life, death and regeneration.

The impact of the morality of killing animals on precautionary decision-making is well highlighted by international bans on seal and whale commercial and subsistence hunting. The 1982 European Economic Community's invocation of the precautionary principle[329] to place a ban on the sale of harp seal pelts was an exercise of imposing western morality on Inuit who were not consulted prior to the ban devastating their communities. This 'morality' was largely the result of media portrayal of 'bloody cullings' of 'cute' fluffy seals capturing the hearts of people in armchairs across Europe and elsewhere. Freeman[330] points to the widespread western aversion to eating anomalous

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[325] *Supra*, note 194 at 154.
[326] *Ibid.* Berkes writes that the "Cree do not consider the killing of game as an act of violence. The hunter loves the animals he kills; after all, the animals can only be hunted if they agree to be hunted." Berkes, *supra*, note 25 at 91.
[327] See Brightman, *supra*, note 114 at 112-113 for specific rituals that involve the method of bringing back an animal to camp and the rules for butchering and storage and Tanner, *supra*, note 194 in general.
[328] Tanner, *ibid.* at 169.
[329] Of course, the precautionary principle could not be said to be a prominent principle espoused in international law at the time (see introductory chapter) but the decision was nevertheless precautionary in character.
[330] Freeman, *supra*, note 45 at 10.

animals – in particular, marine mammals that are ill-adapted for life on land (the 'normal' habitat for other air-breathing mammals) as contributing to the moral outrage over seal hunting. He argues that the acts of Inuit sealing in which there is no separation between killing, cutting up and eating the flesh (and therefore the graphic bloody images) are by their very natures, anomalous activities in urban dwellers' understanding of what constitutes appropriate meat-handling behaviour. By invoking the precautionary principle largely as the result of the outrage whipped up by the media, little attention was given to the cost-effectiveness of the ban. Apart from the obvious economic, social and cultural costs to societies relying on the hunt, the environmental costs of severing a major 'predator-pray' relationship that has existed for hundreds of years, resulting in a relatively sudden abundance of seals, were largely overlooked. A sudden abundance of seals arguably contributed to a strain on fish stocks, in turn affecting seal and other populations in the region, most noticeably cod stocks which collapsed several years later.[331]

With strong 'moral' backing as support, inadequate scientific information was used as the basis for the International Whaling Commission's (IWC) decision, precautionary in character, in 1977 to ban the bowhead whale hunt. The justification for the ban was the estimate by government biologists that a mere 600 to 1200 bowhead existed while hunters were removing 70-100 whales each year.[332] Freeman writes that the Inupiat whalers believed the scientific evidence used to support the precautionary ban on the apparently fragile population was based on flawed methodology, and placed population figures closer to 6-7000. [333] Scientists at the time believed that whales only migrate in the open water and estimated numbers from census data derived from visual

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[331] Tsoa cites the rising harp seal population resulting from the moratorium as one of two crucial factors leading to the subsequent collapse of Northern Cod stock, the other being the increased harvest of capelin, the major prey of harp seals and cod. A computer simulation showed that seal populations rose by almost a million between 1982 and 1991. Equilibrium was disrupted and seals as the major competitor for cod effectively pushed cod out of the environment. He writes that "while I am not suggesting that overfishing is not a factor, I believe that the word overfishing is meaningful only with reference to predator-prey and other ecological considerations." (an approach discussed in chapter five) E. Tsoa, "The Collapse of the Northern Cod Fishery: Predator-Prey and other Considerations" in D.V. Gordon & G.R. Munro, *Fisheries and Uncertainty: A Precautionary Approach to Resource Management* (University of Calgary Press, 1996) 45 at 57.

[332] Freeman, *supra,* note 12.

[333] The following information is from Freeman, *supra,* note 44 at 141.

sightings in such areas close to shore.[334] The population count was later discounted as unreliable once the Inupiat hunters shared their intimate knowledge of whale behaviour and health of the stock.[335] It was only after a co-management regime was established and millions of dollars were spent to determine whether the indigenous knowledge was accurate that the local indigenous knowledge was accepted as contributing to the basis for future precautionary decision-making for the subsistence whale fishery.[336] Even so, indigenous knowledge and the new scientific information has not displaced the moral stand behind the ban. Despite the advice of the IWC Scientific Committee concluding that some whale stocks could be safely harvested, the moratorium on commercial whaling remained in force.[337] Freeman writes that the majority of the members of the IWC are no longer influenced by the best scientific advice but are taking a preservationist stance that "humankind now has an obligation to 'whalekind' to allow all depleted stocks of whales to increase to their pre-exploitation levels of abundance."[338] Doubleday argues that those who believe whales should under no circumstances be hunted "have adopted scientific arguments as a cloak for their morality, thus shifting the focus to the quality and adequacy of the scientific information."[339] The situation was a good example of the dangers of using the precautionary principle as a political weapon whereupon managers

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[334] *Ibid.*

[335] Freeman writes, "This view contrasts to that of the whalers, who believe that bowhead continue to migrate during and after the time new ice forms in the leads, knowledge derived empirically from the sound of whales' breathing and the presence of breathing cracks subsequently found in such iced-over areas. The Native hunters also believe that whales migrate many dozens of kilometers offshore and distant from the edge of the land-fast ice, a fact later confirmed by airborne census flights up to 300km out from the floe edge, where whales were seen at all distances traversed." *Ibid.* He also points out that Inupiat hunters knew the whales feed during their spring migration, swimming in any direction, while scientists based their figures on the assumption that the whales did not feed on their migration and would only swim past the census point once. Freeman, *supra*, note 12.

[336] Freeman notes an observation by the Chief Scientist of the Alaskan Eskimo Whaling Commission: "We try to combine local knowledge with scientific knowledge. Probably the best example of this [was] in 1981, when we actually took over the counting process. We then basically designed with whole research programme around what a few senior Eskimo hunters told us, and in particular one man, Harry Brower, Sr. He very carefully took me under his wing and explained how the animals move through the ice. [That] didn't make a whole lot of sense to an ordinary biologist, because our viewpoint is 'I'm afraid of the ice; I'm sure these whales are afraid of ice.' But in reality, these whales are not afraid of ice, and that's the key thing. He knew it and the rest of us didn't. We have spent about fourteen years of research and many, many millions of dollars to determine whether or not he was accurate, and he was right every time." *Ibid.*

[337] M. M. R. Freeman, "Science and Trans-Science in the Whaling Debate" in M. M. R. Freeman, & U.P. Kreuter eds., *Elephants and Whales: Resources for Whom?* (Gordon and Breach Science Publishers, 1994) 143 at 146.

[338] *Ibid.*

[339] Freeman, *supra*, note 44 at 224.

seize any scientific evidence, even if contradictory evidence is available, to justify a decision based upon their societies morals.

3.3.2 - The Morality of Conservation

The term 'conservation ethic' has been defined as "an awareness that people can deplete or otherwise damage their natural resources, coupled with a commitment to reduce or eliminate the problem."[340] Berkes[341] highlights the two types of conservation that combine to produce the western modern conservation ethic: 'wise use' conservation and preservation. Modern conservation differs, he writes, from wise use conservation in its rejection of utilitarianism and instrumental values, valuing nature as a commodity. "It differs from preservationism in its rejection (as unrealistic) of a pure hands-off approach to nature, in the form of extensive wilderness areas unoccupied by humans."[342] In essence, he writes, modern conservation aims to sustain species and ecosystems and has come to focus on biodiversity as an overarching goal. The following discussion focuses on whether a society understands people as being within or outside the unit being conserved; an understanding which largely determines the kind and scope of human activity before precautionary measures will be undertaken to safeguard against 'unacceptable' environmental degradation.[343]

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[340] R.E. Johannes, "Integrating Traditional Ecological Knowledge and Management with Environmental Impact Assessment" in Inglis, *supra*, note 22, 33 at 35.

[341] *Supra*, note 25 at 151.

[342] *Ibid.* Eckersley writes that preservationism "offers an essentially anthropocentric justification for environmental protection because it rests on human reverence for, and aesthetic and spiritual appreciation of, untouched nature." Cited in Taylor, *supra*, note 270 at 33.

[343] This part does not argue for or against a particular conservation strategy. Nor should it be interpreted as imposing a romanticized value judgement that indigenous peoples are inherently conservationist. Many commentators have pointed to unsustainable use of resources by some indigenous peoples just as some western people may practice unsustainable use. See for example K. Ruddle, E. Hviding & R.E. Johannes, "Marine Resources Management in the Context of Customary Tenure" (1992) 7 *Marine Resource Economics* 249 at 263-4; Anderson, *supra*, note at 124, 168; and Berkes, *supra*, note 25 at 12. Note that it is difficult for commentators to determine whether a particular practice is unsustainable according to indigenous values and systems. For example, while some have pointed to the Potlatch (feasting by groups on the Northwest Coast of Canada) as evidence of a lack of conservation ethic among some indigenous communities (see Brightman, *supra*, note 114), others have interpreted the practice in a broader, social sense and identified its conservationist merits. "The Feast, as the central and unifying tribal institution, focuses on the control of resource territories and the spiritual, social and economic obligations inherent in proper resource use." Tyler, *supra*, note 110 at 6. See also W. Suttles, *Coast Salish Essays* (Vancouver: Talonbooks, 1987) at 7, 21, 25; J. W. Adams, *The Gitksan Potlatch: Population, Resource Ownership and*

The notion of 'wilderness' is central to both streams of thought making up western conservation: it is the starting point from which to judge humans' relationships to the land and sea, providing moral authority for either its use or preservation. "'Wilderness' is the thought product of a people who see themselves as separate from environment, a value appropriate for a technological-industrial society no longer in direct contact with nature, a value not shared by native cultures."[344] Gomez-Pompa and Kaus point out that 'wilderness' is an urban perception of untouched land, the view of "people who are far removed from the natural environment they depend on for raw resource", ignoring the reality that "the current composition of mature vegetation is the legacy of human use over millennia." [345] People living within the patterns of nature, however, do not see a 'wilderness' needing to be tamed (controlled) to support a civilization, but a landscape that offers food, shelter and identity to a community of beings of which they are part.[346] Chief Luther Standing Bear remarked in his autobiography in 1933:

> We did not think of the great open plains, the beautiful rolling hills, and winding streams with tangled growth as 'wild'. Only to the white men was nature a 'wilderness' and only to him was the land 'infested' with 'wild' animals and 'savage' people. To us it was tame. Earth was bountiful and we were surrounded with the blessings of the Great Mystery. Not until the hairy man from the east came and with brutal frenzy heaped injustices upon us and the families that we loved was it 'wild' for us. When the very animals of the forest began fleeing from his approach, then it was that for us the 'Wild West' began.[347]

Reciprocity (Toronto: Holt, Rinehart and Winston of Canada, Ltd., 1973) at 94; Tanner, *supra*, note 194 at 167; Anderson, *supra*, note 17 at 68; and Clarkson *et al.*, *supra*, note 18 at 57.

[344] Berkes, *supra*, note 25 at 154. Murphy points out that concepts of 'wild' and 'wilderness' are a western linguistic construction derived from the understanding of humans being separate from nature and stem from the idea of common property in the sense of open-access resources. See Murphy, *supra*, note 264

[345] Cited in Berkes, *ibid.* at 11-12. For example, "what Longfellow erroneously referred to as the 'forest primeval'[when early Europeans came to North America], was in most parts of the continent and in varying degrees a human artifact." *Ibid.* at 154.

[346] Chief Robert Wavey writes, "to Manitoba's northern people, there are no frontiers, wilderness or empty lands; the forest is the First Nations homeland." Chief R. Wavey, "International Workshop on Indigenous Knowledge and Community-Based Resource Management: Keynote Address" in Inglis, *supra*, note 22, 11 at 13.

[347] Deloria, *supra*, note 100 at 91.

Thus 'wilderness' is not a state of nature but a state of western culture – it denotes the relationship that people living in an industrial society have with parts of the environment which have not been 'civilized'.

Many high profile examples of the implementation of the precautionary principle such as those relating to sealing and whaling have been oriented towards preservation of 'wildlife' to achieve conservation by 'reverting' the wilderness to a pre-contact state of nature. For some people undertaking these decisions, the imperative for preserving a wilderness stemmed from a 'conservation for intrinsic value' philosophy or simply the belief that any use of certain natural resources is a threat to their longer-term survival.[348] The assumption behind these applications of the precautionary principle – that pre-exploitation levels can be achieved if use ceases – is inherently flawed.[349] Freeman writes,

> The notion that there is a particular pre-exploitation population level that could or should be attained and then maintained is an ecological absurdity. Such notion assumes an ecological stasis that has never existed, and it also assumes a knowable pristine ocean community, the complexity and continuous variability of which are in fact unknowable.[350]

J. Baird Callicott argues that this approach of 'freeze-framing' the ecological *status quo* tends to reinforce a human/nature division, inhibiting the development of a dynamic, symbiotic relationship between nature and humanity.[351] Thus the underlying assumptions within the concept of 'wilderness' are behind several major precautionary decisions which in effect have placed humans outside the unit being conserved.

For many indigenous groups indigenous, conservation strategies take into account the peoples, human and non-human, that live there. Of course there are variety of

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[348] T. Taiepa, *et al.*, "Co-management of New Zealand's Conservation Estate by Maori and Pakeha: a Review", (1997) 24, *Environmental Conservation* 236 at 239

[349] Freeman writes, "The underlying belief expressed by leading anti-whaling governments at the IWC assumes that if human action (including whale-killing) can be stopped, then the cetacean component of the ocean biotic community will in time return to its pre-exploitation (and presumed optimum) size and composition." *Supra*, note 337 at 147.

[350] *Ibid.* See chapter five.

definitions of what conservation means to indigenous people within a particular environment.[352] One unifying factor may be, however, that human use together with other non-human persons' use, are part of the symbiotic relationship between creatures and the planet, and so long as such use is 'sustainable', nature will continue to support the relationships.[353] Taiepa *et al.*[354] write that some indigenous peoples, including Maori, have claimed a 'conservation for future use' ethos. They write that under this ethos, use is not sacrilege but can be an honouring of wildlife, or potentially even an added incentive to good environmental stewardship. "In this view humans are seen as a fully-interacting component of ecosystems and moderate impacts of humans as natural."[355] Berkes points out that not only do the Cree believe that the use of a resource is necessary for its continued productivity, but that use is an obligation.[356] He writes:

> the Cree have difficulty with the Western notions that hunting involves suffering on the part of the animals, and that the best conservation (as some argue) would mean not hunting the animals at all. To the Cree, if the game want to be left alone, they would let the hunters know. Otherwise, the proper conservation of game does include the hunting and eating of animals. The preservationist ethic is not compatible with Cree conservation: "When you don't use a resource, you lose respect for it.[357]

While there are contexts in which indigenous groups may take a preservationist approach to human activity such as in relation to sacred sites,[358] it seems that by viewing humans as within the unit being conserved, many indigenous conservation philosophies can come

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[351] Taylor, *supra*, note 270 at 33.

[352] "The diversity among American Indian people makes defining an 'indigenous land ethic' somewhat difficult. Nevertheless, the similarities among indigenous world-views regarding the environment cannot be discounted." Tsosie, *supra*, note 185 at 268.

[353] See 6.2.4.

[354] *Supra*, note 348 at 239.

[355] *Ibid.* Workshop exploring co-management in the Arctic pointed out that the failure to consider human needs for food when protecting grizzly bears in Kluane National Park meant that the increasing bear population increased competition for salmon stocks which in turn affected, *inter alia*, salmon, bears and humans. Circumpolar Report, *supra*, note 27 at 100. See the discussion of stewardship responsibilities for the Maori and other indigenous peoples in 3.1.

[356] *Supra*, note 25 at 153. See chapter five regarding ecosystemic resilience.

[357] *Ibid.* at 91.

[358] See for example Zann, *supra*, note 235, and Johannes, *supra*, note 95 which mention sacred sites in the South Pacific; Tanner, *supra*, note 194, Overholt & Callicott, *supra*, note 48, and Jenness, *supra*, note 127 in Canada; and J. Colding, & C. Folke, "The Relation Between Threatened Species, their Protection, and Taboos" (1997) 1 *Conservation Ecology*, article 6, 19 (URL: http://www.consecol.org/vol1/iss1/art6) in general.

into conflict with the dominant western conservation ethic premised on humans being outside the unit being conserved.[359]

3.3.3 : Internal Precautionary Approaches to Resource Use

Introduction

While religion often provides sanctions for social rules, for many indigenous groups, it also provides sanctions for ecological management rules and in general, gives a structure to resource management.[360] Although many of the practices of the following section are more juridical than religious in nature, this section argues that an emotional belief system behind the practices is the corner stone for internal precautionary approaches to resource use. Often the internal approach finds form in the placement of taboos over a particular activity or resource, drawn from complex knowledge 'that X is so'. Colding & Folke suggest that taboos may have evolved to increase the resilience, or buffering capacity, of local ecosystems.[361] Such taboos have often been ignored or discounted as irrational by many science-oriented thinkers who, using rational processes, have not been able to make a logical connection between the prohibition and the resource in question. Arguably many science-oriented managers think about a particular problem by attempting to determine 'why X is so', using evidence to back up a conclusion. By doing this, knowledge built through limbic processes is in danger of being suppressed. It is argued that the emotionally powerful cultural symbols necessary for internal precautionary approaches are therefore largely absent in a world viewed through rational information processing. Of course, western societies should (and can) not avoid using information derived from seeking 'why X is so' for a particular decision. This section argues instead that western societies should not discount knowledge based on emotional responses to environmental patterns – especially where it is the best available information or where it challenges rational responses to problem solving.

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[359] See chapter six for the legal implications of the differing philosophies.
[360] E.N. Anderson, "Fish as Gods and Kin" in Dyer & McGoodwin, *supra*, note 2,139 at 140.
[361] *Supra*, note 358.

Central to the following discussion is the idea that species and habitat conservation exists in indigenous societies largely as a means of human survival.[362] As discussed above, many North American indigenous peoples believe that if they do not show the proper respect for non-human persons, the non-human persons will not offer themselves up as part of the reciprocal relationship culturally evident within environmental processes. The prohibition against unnecessary interference with animals is a common component of this reciprocal relationship.[363] Humans depend on animals not only for food but also for identity such as through connection with spiritual guardians[364] or totems[365].

Similar beliefs motivate the conservation of species and habitat in the South Pacific. For example, in a practice that has been declining in the last century, it is forbidden for indigenous people on Kiribati to eat their clan's totem. A person's totem is "held to be flesh of his flesh and to eat it would be a type of incest" and if eaten, it was believed that the spirit of the animal would return and strangle the person while sleeping.[366] Hviding observes that the indigenous people on the Solomon Islands who "hold sharks and/or crocodiles to be their spiritual allies and protectors of their territory are not allowed to harm, kill or eat these animals."[367] Similarly, the disturbance, killing or eating of any *Tridacna* clam is taboo for many people in the Langalanga Lagoon because "their original ancestral shark was protected and nurtured by its human mother in a giant clam valve."[368] Sacred groves are particular habitat patches, set aside for

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[362] *Ibid.* Anderson writes of the Mistassini Cree, "conservation of animals was a burning, emotional, personal issue. A properly socialized individual had a powerful sense that the wild world was feeding him, and he ought to be a grateful and as anxious to act decently as he would to any human who fed him out of sheer kindness. Naturally, wanton killing was virtually tantamount to murder, and ungrateful murder at that." Anderson, *supra*, note 17 at 64-5.

[363] See above. The weight of the prohibition may vary depending upon the resource in question. For example, although Gitksan and Wet'suwet'en peoples near their spawning grounds may harvest fish if they are needed, the prohibition against unnecessary interference with fish is especially emphasized with regard to spawning fish. This protection also applies to the spawning grounds themselves when eggs are in the gravel and to immature fish in their fresh-water rearing phase. M. Morrell, "The Struggle to Integrate Traditional Indian Systems and State Management in the Salmon Fisheries of the Skeena River, British Columbia" in Pinkerton, *supra*, note 44, 231 at 234.

[364] See above.

[365] See Zann, *supra*, note 235 at 69.

[366] *Ibid.*

[367] *Supra*, note 60 at 263.

[368] *Ibid.*

religious purposes and can serve as important recruitment areas to surrounding ecosystems.[369] One example of current practice is found in the Solomon Islands where it is taboo to fish or even visit 'sacred' reef areas.[370] The known presence of ancestral spirit beings, manifested as certain sharks or saltwater crocodiles, may deter prospective poachers and protect growing *Tridacna* clams.[371] Similarly, in certain villages within Vanuatu, curses placed on the reef threatening anyone who breaks a taboo with supernatural retribution are reportedly still taken seriously.[372] Conservation efforts motivated by factors relating to human survival not only ensure that human activity is carried out *within* environmental processes, but also provides strong motivation based on self-interest to observe the conservation measures. Thus the system *internalizes* the cultural prohibition because it is related to human survival.

A spiritual awareness of the relationship between humans and salmon governed the observance of certain precautionary rituals and norms regarding the taking and conservation of salmon by several indigenous groups on the Pacific Coast of North America. Salmon are described in some narratives as humans who put on fish skins to sacrifice themselves to their human relatives and the various tales of their origins and adventures provide the context for knowledge regarding their characteristics, behaviour and interaction with other species including humans.[373] Boothroyd & Sadler write of the Nuu-chah-nulth:

> The respect for salmon, celebrated in the First Salmon Ceremony at the beginning of each new season, was an illustration of this ecological awareness. If the earliest caught salmon were not properly handled, the trust or mutual respect which must exist between man (culture) and fish (nature) would be jeopardized.

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[369] Colding & Folke, *supra*, note 358.
[370] Referred to in Melanesian pidgin as being *tambu* Hviding, *supra*, note 60 at 263. These areas are to be distinguished from locations over which temporary taboos may be removed when food resources in the area were plentiful. See Colding & Folke, *supra*, note 358.
[371] Hviding, *supra*, note 60 at 263.
[372] Johannes, *supra*, note 167 at 172. Johannes writes at 172 that "one man in a village on Emai collapsed and died while poaching on such a reef and this 'lesson' has reportedly been taken to heart by the rest of the community." He notes that two village leaders have modified the way in which a fishing taboo is formally declared. When the taboos were merely announced, observance was unsatisfactory but he writes that now closures are announced with substantial traditional ceremony. "By thus impressing villagers with the seriousness of these taboos, their observance, according to these leaders, is now much improved."
[373] Anderson, *supra*, note 17 at 57. See chapter two.

> The gift must be acknowledged. The spirit of the fish must be appeased the bones treated with ceremony, the correct formula repeated, and a message sent back to the Salmon People that in this land lived people who could be trusted.[374]

Suttles[375] writes that the Katzie did not catch the first salmon, the sockeye, until August because they believed that the earlier sockeye were supernaturally strong and therefore dangerous. Instead they remained on Pitt Lake and other smaller streams until August when they returned to the Fraser River and celebrated the First Salmon Ceremony. Other rituals centered upon actively ensuring that salmon numbers would be available for the following year. For example, Gilbert Sproat wrote in 1868, "It is a common practice among the few tribes whose hunters go far inland, at certain seasons, to transport the ova of the salmon in boxes filled with damp moss, from the rivers to lakes, or to other streams."[376] Sproat was the first Anglo in the area and so the Nuu-chah-nulth could not have learned the practice from local colonizers.[377] Thus precautionary rituals and norms derived from the knowledge about human effects on non-human persons, embodied within the narratives, underlie the spiritual, or religious, nature of indigenous knowledge systems.

The acute vulnerability of some fish stocks to over fishing lends support to the idea that internal precautionary approaches effectively conserved fish stocks. Anderson[378] writes that the sturgeons were concentrated in a small, shallow area that was easily fished by the experienced fisher people who used almost all the techniques of modern fishers (with the exception of motorized craft) available to them. However, he observes, the

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[374] *Supra*, note 31 at 62. See Morrell, *supra*, note 363, 231 at 231 for a Gitksan and Wet'suwet'en version of these beliefs.

[375] *Supra*, note 343 at 22. See also Jenness who writes, of the various rituals observed by the Katzie Salish upon the arrival of the first shoal of sockeye salmon including forbidding an unclean person (for example a recent widower) from paddling on the river while the shoals were running unless he were ceremonially cleansed of all impurity by a medicine man. Jenness, *supra*, note 127 at 75.

[376] From Sproat, Gilbert Malcolm *The Nootka* (BC: Sono Nis Press, 1987 – originally published in 1868) cited in Anderson, *supra*, note 360 at 144.

[377] Anderson, *supra*, note 17 at 67. See also Anderson, *supra*, note 360 at 144 where Anderson points out that "sailors had repeatedly visited the coast but would hardly have introduced stocking of small inland streams."

[378] Anderson, *supra*, note 360 at 142-3.

relationship between sturgeon and the Katzie[379] dictates that the sturgeon were to be taken under ritual circumstances, regulated by an enormously important religious taboo on taking more than was needed for subsistence.[380] Anderson argues that the taboo was an effective conservation technique as the population arguably could have been overexploited by aboriginal technology and subject to the Northwest Coast custom of competitive feast giving.[381] While the Fraser River Salish were not as dedicated to the potlatch custom as other northwestern groups, they were known to have competitive feasts to display masses of food.[382] Thus Anderson concludes that without a strong countervailing social rule, depletion of the sturgeon would have been almost certain.

Other species have been maintained by way of religious sanction in the face of human population pressures within a particular region. Over eight thousand Haida try to make a living from the Queen Charlotte Islands whose islets have no large rivers and only two streams large enough to accommodate salmon runs.[383] It has been argued that the survival of large populations of salmon and land game on the Charlottes must necessarily be due to careful management and strong social controls since the Haida had the numbers and the technology to "wipe out essentially everything."[384] Thus in situations where even one fisher person could have wiped out a whole population of fish, behaviour has been controlled by something far stronger than legal sanctions. Religious sanctions given weight and structure by cultural values and beliefs, effectively prevented human activity from having serious deleterious effects on fish stocks.

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[379] The Katzie believe that the Creator had a son and a daughter: the son became the ancestor of humanity, the daughter became the ancestor of the sturgeons. Anderson writes "(t)his is related to the fact that the Katzie heartland was formerly the greatest concentration point and breeding ground for the Fraser River sturgeon population. The Katzie drew heavily on this bounty; much of their food was sturgeon flesh. As this was the flesh of their sister, reincarnating herself to sacrifice herself for her beloved family, the bones were treated with reverence and returned to the water." *Ibid.* at 142. See for a version of the creation story Jenness, *supra*, note 127 at 10ff.

[380] See for religious taboos with respect to Salmon for the Ehattesaht people, Anderson, *supra*, note 17 at 57-8; and Boothroyd & Sadler, *supra*, note 31; and regarding the Gitksan and Wet'suwet'en people in British Columbia, see Morrell, *supra*, note 363 at 231.

[381] Anderson, *supra*, note 360 at 143.

[382] *Ibid.*

[383] Anderson, *supra*, note 17 at 67. Anderson writes that the Haida were frequently reduced to real hunger and relied heavily on trade with the mainland and deep-sea fishing.

[384] *Ibid.* Anderson notes that while in some key areas were old beliefs are strong, fish are still conserved, in other areas, creeks have been fished out where the old beliefs have broken down or where western fishers

For the Maori, rules governing conduct are established through the concepts of *tapu* and *rahui* to ensure that human use of a resource does not affect its *mauri*.[385] There are many aspects of *tapu*[386] but this discussion will be restricted to how the concept relates to 'internal precautionary measures'. Williams[387] defines *tapu* as (adjective) "under religious restriction," and (noun) as a "ceremonial restriction; quality or condition of being subject to such restrictions." The restrictions relating to persons, places and objects may occur because of close contact with an *atua* (god) or may be the result of some type of pollution resulting from contact with, *inter alia*, blood and death.[388] *Tapu* can imply an absolute prohibition and if violated would have detrimental consequences, in some cases, death.[389] *Rahui* is a temporary form of prohibition often used to preserve birds, fish or any natural products, particularly during the procreation season to encourage rejuvenation.[390] Infringement was punished by the person who called for the ban, usually a *rangatira* or a person of high *mana*.[391] The punishment was sometimes death and if broken by another *hapu*, warfare would often follow.[392] The *tohunga* were charged with determining the correct procedures for, and observance of, the prohibitions.[393] "The tohunga would interpret signs, such as wave patterns, fish breaking the surface, shellfish digging deeper into the sands, bird movements, and the growth/bloom of trees, to decide when and where harvesting should be conducted."[394]

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do not share the beliefs. Without powerful religious sanctions there is nothing to stop poachers, aboriginal and non-aboriginal. *Supra*, note 360 at 144.

[385] Hayes, *supra*, note 241 at 894. See above for the discussion regarding 'mauri' (essence of life).

[386] See P. Tohe, "Maori Jurisprudence: The Neglect of Tapu" (1998) 8 *Auckland University Law Review* 884 at 885. Tohe argues that *tapu* is the prime Maori concept on which all other Maori concepts rely.

[387] Williams, *A Dictionary of the Maori Language* (7th ed 1971).

[388] D.C. McCan, *Dispute over Resources, Discourse on Rights: Legal Pluralism in New Zealand* Ph.D thesis, Brandis University, 1993, at 47.

[389] Hayes, *supra*, note 241 at 894.

[390] *Ibid.* Firth divides *rahui* into two types, "1) a post set up, often marked with a lock of hair, invested with magical spells so that anyone who meddled with the post, the forest, or its productivity would be slain by these spells, or would be afflicted with a wasting disease; 2) a ban on taking products from a certain area, such as a forest, stream, or fishing ground, but with none of the deadly 'spells' of the above *rahui*." Cited in McCan, *supra*, note 388 at 45. One example is a contemporary rigid adherence to a centuries old *rahui* that denies access to the *manu* (birding grounds) on the Rakiura Titi Islands during the early breeding season and the non-breeding season of titi. Taiepa *et al.*, *supra*, note 348 at 245.

[391] McCan, *supra*, note 388 at 45.

[392] *Ibid.*

[393] *Ibid.* at 46.

[394] *Ibid.*

This system aims to balance human need with the preservation of the resource and the protection of its *mauri*.[395]

Some taboos surrounding rare or 'particularly important' species were explicitly designed for conservation purposes. For example, many peoples in the South Pacific observed in the past taboos relating to human impact on turtle species and habitats.[396] Zann[397] writes that on Funafuti, turtle meat was taboo to all except the king and on Arorae, all but the priests. He points out that on Kiribati the belief that turtles were cowardly animals led to taboo on eating their meat in times of war and pregnancy. However, he observes that the turtle taboo seems to have broken down in recent decades. Johannes makes a similar observation of a turtle taboo traditionally observed by Tobians in Palau.[398] He notes that some parts of Palau are reintroducing conservation measures in the form of taboos over turtle consumption. Thus the turtle taboo widespread in the South Pacific is one of many examples of social controls that are motivated by what also can be understood by science-oriented societies as conservation objectives.

Although many other taboos appear not to have been invoked for reasons of conservation, several researchers have noted that taboos predominantly involve scarce food stocks or stocks vulnerable to depletion. Using rational processes, it may be difficult to make a logical connection between the following examples of prohibitions and the resource in question, or, for that matter, why people's behaviour is controlled by a belief in what appear to be tenuous causal connections. Zann[399] has recorded examples of taboos on marine animals from Kiribati and Tuvalu including a prohibition on boys from eating damselfish as "they are nervious fish and make boys grow into nervous adults" and lagoon bivalves which "prevent them from becoming strong men." Pregnant

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[395] Hayes, *supra*, note 241 at 894.
[396] Zann, *supra*, note 235 at 66. Johannes surveyed 27 villages in Vanuatu and found that all but one employed some form of explicitly conservation-based taboos on their fishing grounds. See Johannes, *supra*, note 167.
[397] *Supra*, note 235 at 66.
[398] *Supra*, note 95 at 90. Johannes observes an effective conservation practice relating to seabirds who help fisher people to find fish. "In a conscious effort to conserve the populations of these birds it was forbidden on Sonsorol to eat them except during the nesting season when they were very abundant." See also turtle taboos on the Solomon Islands in Hviding, *supra*, note 50 at 263.
[399] *Supra*, note 235 at 70.

women may not eat sole or flounder "because they give the baby a malformed face", a certain wrasse because it "gives the baby a small mouth" and cetacean flesh which causes "bad teeth."[400] Colding and Folke note that such species were avoided because of their behavioural patterns and morphological characteristics. They also note that other indigenous peoples may avoid species because of their belief that they are toxic, because they occur in creation myths,[401] because they represent religious symbols, or because they are pet animals.[402] It appears, then, that the taboos were not initially intended for nature conservation.[403] However, Zann notes it is significant that no food taboos of Kiribati and Tuvalu peoples were recorded involving the *abundant* staples including lagoonal bonefish, goatfish, and mullet.[404] Furthermore, in a general literature review revealing seventy currently existing examples of species-specific taboos, about a third prohibit any use of species listed as threatened by the IUCN.[405] Thus while many taboos appear to scientific thinkers not to have been motivated by conservation, the controls as part of a broader social system are oriented towards human survival and in effect, are precautionary in nature.

Colding and Folke suggest that such traditional conservation practices may not be incidental but "may have come about as a result of co-evolution between humans and their natural resources over long time horizons." [406] In the co-evolutionary process, humans increase the chances of their survival and the survival of other species by learning to adapt to their natural environment without seriously deteriorating it:

> In this sense, co-evolution refers to self-organization through mutual entrainment. It is a trial-and-error process, with the continued acceptance of practices that appear to secure the resource base, coupled with the elimination of those practices that appear to destroy it. Such a dynamic process is likely to lead to the

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[400] She also must observe any taboo of her husband or brothers which can be extensive (see the list at 69). It was explained to Zann that cetacean was prohibited to any woman on Onotoa of child baring age because "if once she ate this rare and tasty food she may develop a craving for it when she is pregnant, and then go mad if it could not be provided." The stranding of a whale is an infrequent occurrence. *Ibid.*
[401] In Tuvalu, eels and flatfish are taboo because these were believed to be the creators of the world. *Ibid.*
[402] *Supra*, note 358.
[403] *Ibid.*
[404] *Supra*, note 235 at 73.
[405] Colding & Folke, *supra*, note 358.
[406] *Ibid.*

> development of a whole range of practices, some beneficial for species conservation.[407]

Thus these practices, finding cultural expression in the form of taboos, are not random but rather developed over many years of living symbiotically in the 'community of beings' to maintain the balance on which the 'beings' depend.

Conventional science-based managers often ignore taboos because they do not fit within logical processes determining causal connections for a given human activity. Many indigenous practices began on the basis of beliefs developed from personal and collective experience, transmitted through narratives and observational learning.[408] Because such observations could not be explained by logical process but seemed consistently 'intuitively' valid over time, they were justified by beliefs made meaningful through cultural expression[409] of the material world by a particular society. It is suggested that knowledge derived from emotional[410], experiential knowledge processes find the best expression in emotional, spiritual articulations (taboos) of phenomena made meaningful within the collective unconsciousness. Environmental patterns are too complex for the logical brain to specifically search for all the pieces of the puzzle. Behaviour controlled by 'rational' argument when all the pieces are gathered would be too late. When science-biased managers, gathering information to decide whether a precautionary approach is justified, judge a taboo at face value to have no conservationist merit, they are simply making a value judgement about cultural *expression* of phenomena. By equating the expression as fact in the sense that 'X is what the culture believes to be the truth applicable to all times and places'[411], managers may discount the knowledge by contradicting it with an 'objective' (meaning 'in scientific terms') fact and ignore the observation all together.

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[407] *Ibid.*
[408] See parts 2.2 and 3.1.
[409] For example, prohibiting pregnant women from eating a species of pufferfish because it "prevents large eyebrows" – a sign of beauty for people living on Kiribati. *Ibid.*
[410] Or limbic – see 3.2.
[411] See 2.2.

While taboos may seem alien to science-oriented managers, many science-oriented management techniques seem alien to some indigenous societies. It makes little sense for regulatory authorities to impose measures that, while precautionary in character, are likely to be avoided because they clash with ethical systems. A commonly used technique for science-oriented fisheries management in Northern Canada is the 'catch and release' programme whereby fish below a specified size are to be released back into the water. The technique has been fundamentally problematic for some indigenous people who see the practice as violating ethical principles because it involves 'playing with fish' that have willingly offered themselves.[412] For similar reasons, elders in the eastern Arctic have also questioned radio collaring of caribou[413] and the tagging of fish.[414] 'Secular' management plans that are detached from people's everyday lives may not be the best foundation for precautionary measures when they are not followed because they fall outside belief systems of the users.

Conclusion

A science-biased precautionary principle seeking to rationalize human emotional responses and relationships with the non-human world is a major obstacle facing the movement towards an anticipatory framework embraced by many indigenous cultural

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[412] Cruikshank, *supra*, note 111 at 57. Berkes writes that "the Cree are puzzled and repulsed by live-release sportfishing, currently fashionable in sportfishing management circles. To the Cree fishermen, the basic management rules are: you eat what you catch, you do not kill more than you need, and you approach the task of fishing with basic humility and modesty." F. Berkes, "Co-management and the James Bay Agreement" in Pinkerton, *supra*, note 44, 181 at 195.

[413] Brightman writes, "Crees say that animals resent restraint in the same way that they resent unnecessary suffering. It is said that white researchers who tagged members of the caribou herd north of Brochet offended the animals in such a way as to 'break their hearts.' Tagged animals were allegedly found starving and in a state of shock...Some Rock Crees at Brochet expressed the opinion that the herd no longer comes south into their territory because the animals resented the tagging and the researchers." Brightman, *supra*, note 114 at 112. Radio collaring often gives misleading information. "For example, collared animals may stray from the main herd, leading scientists to conclude that all the herd travels along the same route. This is not necessarily the case. The Inuit people of northern Quebec know that it is normal for some animals to stray from a herd. Aboriginal people can share this type of knowledge with scientists." Circumpolar Report, *supra*, note 27 at 92.

[414] Circumpolar Report *ibid.* at 100. Berkes observes that many Cree "object to the standard scientific study technique of tagging fish. This they regard as showing disrespect to the animal, and they observe that tagged fish usually appear thin and unhealthy." Berkes, *supra*, note 412 at 195. It is to be noted that catch and release practices and tagging are measures involving quantitative data accumulation – an endeavour that seems futile according to many indigenous peoples' beliefs. See 5.2 and 5.3.

equivalents of the precautionary principle. The scientific way of thinking is the process of knowing 'why X' is so and in the process, subordinates knowledge derived from collective and individual experience and emotional responses to the empirical world to know 'that' X is so. The scientific way of thinking evolved from the philosophy underlying predominantly noun-based languages that move a thinker to see the world as full of 'characteristics of things' and capable of detailed analysis to reveal objective truths.[415] The fragmented, mechanical world that evolved out of the scientific way of thinking had little capacity to deal with the spiritual world and there was a tendency within conventional scientific institutions to make 'intellect our God', to use Einstein's phrase. Moreover, people and their cultural institutions, including the economy, were treated as being outside environmental patterns, further alienating people from the emotional or spiritual interconnected relationships of the earth's inhabitants and processes.

Scientific disciplines have emerged, however, confirming the utility and even supremacy of knowing *that* X is so without *why*. Chaos theory focuses on relationships between things and the law of probabilities. Causal relations, determining why X is so, have little use in a world where, the human mind being part of the connections, rational thought processes are unable to unravel and map out the relationships. Scientists in the field of psychiatry are looking at limbic processes that unconsciously extract 'rules' underlying probabilistic functions too complex for the rational neocortical brain to unravel. The capacity to anticipate is seen largely as a limbic (emotional) process finely tuned by repetitive experience. This experience is drawn, scientists argue, from environmental signals unconsciously stored and processed, including from direct emotional responses of other mammals who have the capacity of limbic resonance.

Nevertheless, decision-makers within many precautionary management regimes often go to great lengths to point to verifiable scientific evidence as the basis of their decisions when they are clearly motivated by emotion. The bans on seal and whale hunting, hunts which are central to the Inuit culture and subsistence economy, is a classic

[415] See chapter two.

example of dressing up western social moral values in a shroud of scientific evidence to legitimate the precautionary decision. This 'charade' makes it difficult for other types of evidence based on experience but lacking provable qualities according to the scientific method, to challenge the wall of scientific evidence surrounding a moral argument. Thus decision-makers using the 'scientific way of thinking' risk devaluing indigenous knowledge and restricting its entry into shared precautionary decisions. Valuable qualitative information drawn from environmental signals and repetitive experience may be excluded, impeding the evolution of an anticipatory framework in which to make precautionary decisions.[416]

On the other hand, many indigenous societies recognize that emotion is a powerful force for the implementation and observance of precautionary measures. Indigenous knowledge systems include all aspects of society including spiritual relationships between entities and forces. Information cannot be extracted from its emotional or spiritual context and applied to a science-oriented precautionary decision-making process without distorting the significance of the information. Many indigenous knowledge systems are built upon past, present and future individual and collective experiences of guiding human activity within the interrelational network between all of creation. Needs are not apologized for because the interdependence of all things are accepted.[417] In other words, people, human and non-human, are within the unit being conserved and managed. Human survival depends upon the good will of non-humans and complex rituals and standards of attitude and behaviour to establish and maintain respectful relationships are an essential component of religious beliefs and knowledge systems. The relationships forged with the non-human world are an important basis for deriving knowledge about their sustainable use, the knowledge of which is often subject to complex rules relating to its application and protection as an important conservation measure. From the relationships strengthened by living within environmental patterns, taboos evolve as a culturally significant manifestation of appropriate resource use. The taboos are not necessarily an explanation of 'why X is so', but often a cultural symbol

[416] See chapter five.
[417] Joe & Choyce, *supra*, note 50 at 53.

expressing 'that X is so' based on individual and collective experience. Thus taboos are arguably internalized precautionary approaches to resource use generated by finely tuned anticipatory capacities. This is not to say that science-oriented managers must embrace every taboo as a conservation technique, just as indigenous managers need not embrace scientific techniques. Johannes notes that a "[t]aboo on the hunting or a species, assumed with little reflection by some social scientists to be an obvious conservation measure, may put increased pressure on some other, more easily depleted species."[418] Nevertheless, too often, indigenous mechanisms to facilitate sustainable use of resources are dismissed by decision-makers guiding precaution under the scientific way of thinking as emotional or irrational and important techniques, strategies, tools and knowledge are discarded as anecdotal.

[418] Johannes, *supra*, note 340 at 37.

CHAPTER FOUR: THE SOCIO-POLITICAL CONTEXT FOR THE IMPLEMENTATION OF THE PRECAUTIONARY PRINCIPLE

Introduction: The Object of the Chapter

The precautionary principle cannot simply be understood as a management tool: it must be understood within the wider socio-political and legal[419] frameworks in which it operates. The object of this chapter is to explore certain factors that must be considered when invoking the precautionary principle including: 1) Who will make the precautionary decision? 2) How will a society observe the precautionary rules? 3) What will be the response time for implementing the principle once a danger to the environment has been anticipated? 4) What will be the cost-effectiveness of a particular precautionary measure? This chapter provides a basic understanding of aspects of socio-political frameworks within some western industrialized and indigenous societies that affect the above factors.

Common property regimes are explored in part one, the 'Tragedy of Catchy-Phrases'. The aim of the part is to firstly demonstrate that common property regimes within many indigenous systems are subject to complex but flexible rules of access and secondly to argue that the regime provides the basis for precautionary decision-making based on an anticipatory framework. The above factors will be explored in the context of some western tenure systems operating on the basis of open-access and some indigenous systems oriented towards a common property regime that is communal in nature.

Concepts of sustainable development are explored in part two, 'Development as a Pyramid or Kaleidoscope? Progress and Sustainable Development'. The purpose of this part is to argue that the scientific bias in the precautionary principle goes deeper than simply legal articulation of 'scientific uncertainty' within the principle. The scientific way of thinking with its emphasis on, *inter alia*, lineal time flow and cause and effect spawned the concept of progress, arguably inherent to the dominant understanding of

[419] The subject of chapter six.

sustainable development. The dominant concept of sustainable development recognizes the necessity to protect indigenous cultures but ultimately imports scientific assumptions into the understanding of how to go about such protection. If an indigenous society were to embrace the dominant concept of sustainable development, the way in which their tenure systems approach the above factors could be fundamentally altered towards a version of a science-based precautionary principle. Thus it will be shown that the dominant concept of sustainable development is a major obstacle for a broad-based precautionary principle.

4.1 : Part One - The 'Tragedy of Catchy-Phrases'

'Management' is a prerogative that flows from a system of property.[420] This part explores the implications of Hardin's 'the Tragedy of the Commons' on regimes that do not carry the assumptions about common property[421] underlying the western industrialized system of property. It is acknowledge by many managers and scientists that 'the Tragedy of the Commons' has become "the dominant framework within which social scientists portray environmental and resource issues."[422] However:

> We ought not to fall prey to a 'tyranny of words'...for the 'tragedy of the commons' is such a catchy phrase that we are wont to apply it indiscriminately. We look about us and everywhere find resources being used by groups of people in common and are tempted to say, 'Hha! Here is another 'tragedy of the commons'.[423]

This part argues that the open access nature of many western industrialized nation's concept of common property has focused management on the regulation of the resources

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[420] LaDuke, *supra*, note 41at 146.

[421] McCay and Acheson suggest that common assumptions include that common property is always of the open-access variety; that the users have perfect information; that the users are selfish, unrestricted by social norms of the community, and trying to maximize short-term gains; and that the resource is being used so intensively that overexploitation and depletion are possible. B.J. McCay, B.J. & J.M. Acheson, "Human Ecology of the Commons" in B.J. McCay, & J.M. Acheson, eds., *The Question of the Commons: The Culture and Ecology of Communal Resources* (Tucson: The University of Arizona Press, 1987) 1 at 7. Anderson notes another faulty assumption – that private property regimes protect the resources from waste and abuse. See the example of soil erosion in the United States; Anderson, *supra*, note 17 at 149.

[422] McCay & Acheson, *ibid.*

themselves while the communal nature of many indigenous societies' concept of common property has shaped management (which includes legal, social, economic and spiritual aspects) into a broad system that regulates human behaviour. The implications for the operation of the precautionary principle from this difference in management focus are touched on here but developed in chapter five. The focus here is on the tenure systems themselves and the way in which their common property regimes (open-access or communal property regimes) affect management structures. The discussion here will be restricted to coastal management[424] in the North Pacific (specifically, off the Canadian coast) and the South Pacific[425] to explore how some indigenous and science-based management regimes manage the land-sea interface.

The following part will use the phrase 'customary marine tenure.' Here, as defined by Ruddle *et al.*, [426] 'customary' refers to an institution that has continuous links with the past as it adapts to handling contemporary issues; 'marine' refers to the institution as dealing with reef, coast, lagoon, and open sea, including islands and islets within this overall seaspace; and 'tenure' refers to a social process of activities in maintaining control over territory and access to resources.

The crux of the 'tragedy of the commons' theory is that overexploitation results where resource use is unlimited, where many users are present, and where there is excess demand for the resource.[427] Because 'every property is nobody's property,' each user

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[423] G.G. Stevenson, *Common Property Economics: A General Theory and Land Use Applications* (Cambridge: Cambridge University Press, 1991) at 1.

[424] For discussions regarding tenure systems governing access to land resources; for Mistassini Cree systems see Tanner, *supra*, note194; for James Bay Cree systems see Berkes, *supra*, note 25, F. Berkes, "Cooperation from the Perspective of Human Ecology" in F. Berkes, ed., *Common Property Resources: Ecology and Community-Based Sustainable Development* (London: Belhaven Press, 1989) at 70-88; for the Algonquians see Brightman, *supra*, note 114.

[425] Ruddle *et al.* write that the Pacific Basin is especially rich in excellent examples of complex and elaborate Customary Marine Tenure (CMT) systems, playing key roles in overall social, economic, and cultural contexts. "Although eroded or even broken-down in parts of the region, especially because of colonialism or neo-colonialism, CMT systems are still used to manage coastal fisheries in a wide range of island societies, under broadly similar biophysical and socioeconomic conditions." *Supra*, note 343 at 250-1.

[426] *Ibid.* at 250.

[427] Stevenson, *supra*, note 423 at 1. Folke and Berkes point out that the tragedy of inevitable exploitation is used by Hardin in the sense of ancient Greek tragedies in which the characters know that disaster is coming but are unable to do anything about it. *Supra*, note 62 at 122.

rushes to harvest the resource before the next person does.[428] In Hardin's illustration, when resources are limited, the rational decisions of each individual[429] add up to an irrational dilemma for the group:

> The rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another; and another...but this is the conclusion reached by each and every rational herdsman sharing a commons. Therein lies the tragedy. Each man is locked into a system that compels him to increase his herd without limit – in a world that is limited....Freedom in a commons brings ruin for all.[430]

The two solutions offered by Hardin and embraced by western managers, to avert such a tragedy is public regulation (government control) or private regulation through privatization of the resources.[431] As the theory goes, a secure, exclusive right to resource extraction provides the incentive to the user to use the resource at an optimal rate.[432] Otherwise, human activity will inevitably lead to environmental degradation.

Much of science-oriented fisheries management is misleading, "owing to the widely accepted but erroneous assumption that the misuse of fishery resources stems from the institution of common property."[433] Part of the problem lies with semantics; 'common property' has been applied to any natural resource used in common, whether it is an open access resource or a limited access managed resource, and the belief has grown that any multiple-user system will lead to overexploitation.[434] The misunderstanding is responsible for the condemnation of potentially viable resource use systems, including local community and user group management of common property resources.[435] Stevenson[436] suggests two characteristics that distinguish open access and limited access regimes: limitation of entry and the coordinated management that often comes with

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[428] Stevenson, *ibid.*
[429] That the positive utility of the individual herdsman of adding an extra animal is +1, the negative utility – sharing the costs of overgrazing – being but a fraction of –1. McCay & Acheson, *supra*, note 421 at 3-4.
[430] Hardin 1968 quoted in *ibid.* at 4.
[431] Anderson, *supra*, note 17 at 151. Note that privatization of resources will not be discussed here.
[432] Stevenson, *supra*, note 423 at 3.
[433] Ruddle *et al.*, *supra*, note 343 at 250.
[434] Stevenson, *supra*, note 423 at 3.
[435] *Ibid.*
[436] *Ibid.* at 4-5.

limited entry. He writes that in Hardin's 'commons', or open access regime, the inputs may increase until economic exhaustion of the resource occurs, unrestrained because no identifiable groups have been distinguished as the managers. On the other hand, he says, under 'true' common property regimes (for only when access has been limited can it be called property), where limited entry has been accomplished, the group of included users have the ability to collude and systematize use. As the following paragraphs show, resource depletion within many indigenous communal property regimes is not inevitable because many coastal fishing communities regulate human activity over common property resources.

The examples in the following paragraphs describing customary tenure over land and sea are not tied to concepts of freely alienable property, "but rather to an inalienable, ancestral estate to which 'owners' are considered to stand in a constant custodial relationship."[437] Tyler writes of Gitksan and Wet'suwet'en society:

> The genealogy or trail of song connected with a Chief's name and its associated territories is not a linear chronology or events in the historical sense. Rather, it serves as a warranty of the legitimate authority of a Chief's tribal name and role. This, in turn, reflects the order of tribal society, which through tribal mythology and oral tradition, is related to the order of nature through crediting the Chief's name with a line of direct descent from the spirit powers that created the world. Through the line of Chiefs, the mythical figures and animal spirits of tribal cosmology again stand in relation to one another. The pattern of these relationships are expressed in tribal social structure so that the ethical and political issues affecting Gitksan and Wet'suwet'en communities retain their spiritual and cosmological significance.[438]

Thus obligations to a particular people's territory are shaped by a spatial concept of time and space, linking the territory to the people's responsibilities (developed through

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[437]Hviding, *supra*, note 60 at 260.

[438] *Supra*, note 110 at 6. Ruddle *et al.* write of Pacific Island marine tenure systems that although they "may, in economic terms, be considered a form of fisheries management, at a higher level they form part of large-scale socio-political and spatial relationships." Ruddle *et al.*, *supra*, note 343 at 252. Lindstrom writes that knowledge of land is particularly important across Melanesia for establishing economic rights to land. "Land knowledge, however, does not involve nitty-gritty details of resource distribution, soil types, or the productive capacities of various garden sites. Rather, the information that men put forth to make claims to a plot of land concerns the history of its tenure, its name, and its boundaries." *Supra*, note 90 at

symbiotic existence since the Creation) of nurturing and respecting the reciprocal relationships of the territory's entities, for all times. Selling[439] or transferring the land and sea, therefore, would disrupt the spatial and social ordering of tribal resource territories.

The system of customary tenure of the Ehattesaht[440] provides an example of the complex system of access rights to resources governed by ancestral ties to a particular territory. The basis of the system, the *ha-houlthe*, literally means the "rights of the chieftainship."[441] Berringer *et al.*[442] note that while a hereditary chief has absolute sovereignty within his or her territorial *ha-houlthe*, encompassing the total area within his tribal limits, this did not amount to dictatorship or a disregard of the *ha-houlthe* of other chiefs.[443] They write of two distinct categories of *ha-houlthe*; intangible[444] and tangible[445] (which may be further subdivided into common[446] and specific[447] *ha-houlthe*). Furthermore, each use right and property right is named and referred to a very specific right of access.[448] A person called a *whet-wock*, trained from childhood to intimately

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58. See chapter three for the Maori concept of *whakapapa* (genealogy) which relate Maori to all life forms and natural resources.

[439] Folke and Berkes write that "from North America to Oceania, many traditional cultures cannot accept the idea that land can be bought and sold." *Supra*, note 62 at 126.

[440] A member nation of the Nuu-chah-nulth Tribal Council. The Nuu-chah-nulth Tribal Council represents fourteen tribes on the west coast of Vancouver Island. There are 154 Ehattesaht members with a total of nine reservations and two villages – Chenakint (Queens Cove) and Ehatis (Zeballos). There is much intermarriage with the Nuchatlaht people whose territory overlaps that of the Ehattesaht. "The tribe is presently governed by the elected council system, and administered from an office in Campbell River. Efforts are being made to revert to the hereditary chief system. Part of this effort is reflected in the resettlement of the community of Ehatis. The homes are situated in order of importance according to the traditional practice." Boothroyd & Sadler, *supra*, note 31 at 57.

[441] *Ibid.* at 58.

[442] P.A. Berringer, W. Green & V. Smith, "Ehattesaht Traditional Fisheries Systems" in Boothroyd & Saldler, *supra*, note 31, 56 at 57-69.

[443] *Ibid.* at 58. See chapter two (2.3)

[444] The intangible *ha-houlthe* are unique to each tribal grouping and may include dances, ritual songs, family names, access to manes of longhouses, certain seats in the longhouse at a potlatch, specific cuts of a whale or hair seal or use of certain masks. *Ibid.*

[445] Tangible *ha-houlthe* is territorial and includes mountains, valleys, beaches, watersheds, river estuaries, reefs and offshore waters which provided the essentials for daily living. *Ibid.*

[446] The grouping includes clams, chitons, reef fish, sea urchins, abalone, halibut bands and other non-anadromous species. *Ibid.*

[447] The grouping includes all species of salmon. *Ibid.*

[448] "An example given by an elder illustrates this. On the marriage of her daughter to the chief of a neighbouring village, a Kyuquot woman bestowed most of her rights to an important salmon stream upon her new son-in-law. The woman kept three named privileges, three specified rights of resource use in the river: 1) a chinook fishery on small tributary, 2) a fishery in the estuary, and 3) a gaffing pool for chum

know their hereditary chief's *ha-houlthe* and the natural cycles within the *ha-houlthe* boundaries, holds the authority to forbid or permit harvesting.[449] The decision-makers, therefore, apply collective and personal knowledge to present and future decisions about human impact on their territory. Thus the system of complex rights of access to resources within ancestral lands and waters is based on intimate knowledge of the territory and collective knowledge drawn from social, political, spiritual and spatial relationships of the ancestral groups.

While the decision making and accountability for a groups' activities in relation to their territory rests with one or a few central figures to provide the system with maximum flexibility, the authority is derived from the chief's title and collective support both within the tribe and without. In the Gitksan[450] system, the head Chief of each House, the basic political unit,[451] has ultimate authority and responsibility for the House's fishing grounds while authority and fishing rights at particular sites are often delegated to individual sub-chiefs within the House.[452] While in Wet'suwet'en society ownership of the principle salmon fishing grounds rests with the Clan (a grouping of several Houses), final authority over a fishing ground will always rest with a particular person.[453] "The person with authority over a fishing ground is responsible in the broadest terms for ensuring that the site and its products are used in accordance with the fishing laws and traditions."[454] If all the rules are observed, the fish will continue to offer themselves up. It is not considered an accident if something goes wrong with this relationship and the

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salmon. Each resource opportunity was viewed as discrete event; each had a measurable value." *Ibid.* at 63.

[449] "If the salmon runs in a chief's *ha-houlth* were low, he would instruct his people to take only enough for their winter storage requirements; the chief then took his own share, but nothing extra for feasts and ceremonials, nor for normal purposes of trade. In a bad year, no winter ceremonials were held." *Ibid.* at 65. Berringer *et al.* write that in Nuu-chah-nulth tribes, there was (and is) also a personification of ultimate authority – the head wolf. He virtually had the authority to veto decisions made by the whet-wock or the head chief. *Ibid.* at 59.

[450] The Gitksan and Wet'suwet'en territories include most of the upper watershed of the Skeena River (north-central British Columbia) as well as parts of the adjacent Nass and Fraser River systems. Morrell, *supra*, note 363 at 231.

[451] Houses are extended family units with precisely defined resource territories including fishing grounds on the rivers and lakes. *Ibid.*

[452] This delegation is more or less permanent and can be passed on following the death of the sub-chief. *Ibid.* at 233.

[453] *Ibid.*

[454] *Ibid.*

Chief "in his role as representative of the House in the animal/spirit world, is responsible for determining the reason for the problem and for correcting it."[455] On paper it seems that the Gitksan and Wet'suwet'en fishery management systems give the hereditary Chiefs all of the powers available to a state fishery manager for allocation[456] and regulation[457] of harvest and for habitat protection.[458] However, the ways in which these powers are exercised are worlds apart. Morrell writes that while fishing is governed by customs and traditions having the force of law, the chiefs nevertheless have wide discretionary powers to manage their people in relation to the fishing grounds to give the system the flexibility necessary to adapt quickly to changing conditions.[459] Under the Gitksan and Wet'suwet'en consensual political structure, the discretionary powers are not exercised arbitrarily,[460] however, and a particular decision relating to human activity will carry the force of community sanction. Morrell writes that "(t)he great strength of the aboriginal systems is that the authority of the Chiefs is recognized throughout the Indian community and that the rules are based on the shared philosophy and values of the entire society. As a result rules are self-enforcing and direct conflict is minimal."[461]

Many indigenous peoples' responsibilities and obligations extend to a land-and-sea continuum, exceeding those entailed in western concepts of property, ownership and management.[462] Many languages in the South Pacific classify land and near shore sea under one category which may be termed *asi namo* or *asi hara* ('sea land'), *raoagi ala ia*

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[455] *Ibid.* at 234.

[456] The Chief allocates fish to all members of the House, even those that did not contribute to the cooperative harvesting a processing of fish, according to their needs and it is in the Chief's discretion as to how the remaining fish will be allocated (for example, gifts for feasting and trade). *Ibid.*

[457] While all members of the group are regarded as having the right to use the fishing ground, it is up to the Chief to regulate access to particular spots and to resolve disputes. The Chief also regulates outsider's use of the resources. The Chief has a duty to direct fishing operations and to determine when fishing activities begin and end. That is, temporarily halt fishing when fish can no longer be processed without waste and terminate fishing for the season when enough fish are taken to satisfy the domestic, trading and ceremonial needs for the year. *Ibid.*

[458] For example, not only is there a prohibition on unnecessary interference with fish, particularly those spawning, but also with respect to the spawning grounds where eggs are in the gravel. Members of the group are often instructed to remove obstacles to fish migration and not to leave debris in tributary streams. *Ibid.*

[459] *Ibid.* at 233. See chapter five.

[460] See chapter two (2.2).

[461] *Ibid.* at 235.

[462] Hviding, *supra.* note 60 at 260.

('the cultivated field for fish')[463] or may be translated into 'nurturing soil' "which has nourished ancestral generations, supports those living today, and should provide the source of life for generations to come".[464] The integrated land-and-sea estate has obvious implications for the management of a people's territories. Cicin-Sain and Knecht observe that in many areas of the South Pacific, traditional marine management practices have focused on management of the entire catchment area from the top of a watershed to the outer limit of a lagoon.[465] Nations such as Canada which understand fisheries as open access resources[466] adjacent to state or privately owned property, have jurisdictional and conceptual hurdles to a similar integrated approach to the management of land-and-sea. Thus for many indigenous peoples, far from being free-access resources which may be exploited by anyone, 'marine products' carry with them the responsibilities and obligations of the original inhabitants to maintain the web of relationships within the land-and-sea continuum.

Like North American indigenous systems, many Pacific Island marine tenure systems consist of complex social relationships regulating the access to marine resources.[467] The system in the Morovo area in the Solomon Islands exemplifies a basic

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[463] Phrases used by the Lau of Malaita, Solomon Islands. K. Ruddle, "Local Knowledge in the Folk Management of Fisheries and Coastal Marine Environments" in Dyer & McGoodwin, eds., *supra,* note 2, 161 at 172.

[464] A phrase used in New Georgia, Solomon Islands; Hviding, *supra*, note 60 at 260. Ruddle *et al.* write, "(t)he majority of fishermen and fisherwomen in the South Pacific, as elsewhere in the tropics, are predominantly part-timers, combining fishing and farming. It is typical of this region that land and sea and their associated occupations are seen as economically and nutritionally complementary domains, and no dichotomized along western lines into 'ownable land' and 'unownable sea'." *Supra*, note 343 at 251. Compare Aswani cited in Berkes, *supra,* note 25 at 71 who challenges this view. He argues that people of Roviana lagoon, New Georgia make a clear economic distinction between land and sea. The sea, he argues, cannot be claimed through its physical modification as can land. "For example, the establishment of a small coconut plantation can be used as the pretext for privatizing land, but the sea remains an 'untamed' domain in which communal tenure and access rules are strongly guarded by the chiefs." Berkes notes that these examples illustrate the difficulty in making geographic generalizations.

[465] B. Cicin-Sain & R.W. Knecht, "Analysis of Earth Summit Prescriptions in Incorporating Traditional Knowledge in Natural Resource Management" in S. Hanna, S. & M. Munasinghe, eds., *Property Rights and the Environment: Social and Ecological Issues* (Washington, D.C.: The World Bank, 1995) 105 at 106.

[466] Pinkerton notes that the legal definition of Canadian fisheries is an open-access, common-property resource from which no one with a fishing license can be excluded. E. Pinkerton, "Intercepting the State: Dramatic Processes in the Assertion of Local Co-Management Rights" in McCay & Acheson, *supra*, note 421, 344 at 345.

[467] Ruddle *et al., supra,* note 343 at 252.

type of customary resource management widespread in the South Pacific.[468] Rights of control over resources are held by *butubutu,*(corporate descent groups) mostly in the form of *puava* (land-and-sea estates).[469] "A *puava* in the widest sense includes all areas and resources associated with a *butubutu*...through ancestral rights, from the top of the mainland mountains to the open sea outside the barrier reef."[470] However, areas of reef and lagoon and adjacent lands are often controlled by different groups because of organizational patterns in the relationships between specific groups and territories, usually the outcomes of long and complex historical processes.[471] Thus reef and lagoon rights are held mainly by those descent groups having reefs and sea as the main component of their holdings and who have an historical 'origin' as coastal dwellers (so called 'salt-water' people).[472] Groups that in pre-Christian times were bush dwellers now hold mainly land areas (so called 'bush' people), with little or no control over reef and lagoon, although they have access through well-established rights of use.[473] Hviding[474] writes that generally, primary entitlements inherited on the basis of locally specific complex variations of 'filiation'[475] give indisputable rights to cultivate gardens and to fish and, within varying degrees, allocate resources to others within the boundaries of the customary territory of the group(s). Such rights must be maintained through the continuous support of the descent group, for example through permanent residence in its village communities. He writes that permanent or temporary resource use entitlements may be granted by corporate groups to individuals who become attached through

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[468] *Ibid.* at 254. See Zann, *supra*, note 235 at 64 for a discussion of the exclusive ownership by *utu* (extended families related through a common ancestor) of its marine resources, the rights to control access and the rights to all flotsam. Note that Zann observes that the customary system is breaking down. See for a discussion of the rights-based systems, controlled by village-based institutions of authority in Palau; Graham, *supra*, note 159; and Tyler, *supra*, note 110. See for a discussion of customary marine tenure in Vanuatu; Johannes, *supra,* note 167. A Johannes note that little has been published relating to the details of the systems which vary regionally and even locally. He writes at 173, "Primary tenure rights are transferred via inheritance, which may be patrilineal or matrilineal. These systems are flexible enough to make allowances for such things as the settlement in the community of people from outside. Traditional fishing rights are rarely alienated. Secondary rights may be possessed by those related to the primary rights holders by marriage or adoption. Fishing fights typically extend from shore to the outer reef slope, but in some cases may also encompass deeper offshore waters or shallow offshore banks."

[469] Ruddle *et al., ibid.*

[470] Berkes, *supra,* note 25 at 70 quoting Hviding.

[471] Hviding, *supra,* note 60 at 262.

[472] Ruddle *et al., supra*, note 343 at 254.

[473] Hviding, *supra*, note 60 at 262.

[474] *Ibid.* at 259.

[475] Parent-child links from patrilineal descent, matrilineal descent or bilateral inheritance.

marriage and adoption and to non relatives as part of historical reciprocal exchange or alliance relationships. Thus in the Solomon Islands a complex social system regulates entitlements to marine resources in a regime that is far from open-access.

Whereas the complex rules relating to resource use may appear to inhibit the *systematic* and *scientific* planning and implementation of effective resource management,[476] in effect the flexibility and adaptive qualities of the local systems appear to be keys to the resilience and effectiveness of the systems in the face of commercialization, demographic and political change. Hviding explores the Melanesian concept of *kastom*, or "the selective representations of the past...constructed in and for the present." [477] He writes that *kastom*, an intercultural phenomenon, is a framework for interpreting and dealing with others whose customs are different:

> It may also be argued that the flexible, self-referential 'tradition' of *kastom*, defining as it does the cultural distinctiveness of localized groups while providing the basis for dealing with others in social and political interaction, has a virtually unlimited capacity for accommodating new things.[478]

In the context of customary marine tenure, the capacity of *kastom* to handle the unexpected by generating 'new forms out of old' means that regulations relating to territorial access rights and permitted technologies and target species are continually being negotiated between individual fishermen and descent groups.[479] Hviding writes[480] that while customary managers may impose few, if any, restrictions on activities by relatives and allies, a wide range of prohibitions may 'suddenly' emerge when less predictable parties become involved. Thus, he says "'fishing for food' (subsistence activities) is generally 'free for anyone' (i.e. all except foes or total strangers), whereas 'fishing for money' (i.e. commercial activities) generally requires permission from the chief or other representative of the controlling group." In recent years, reef-and-lagoon holding groups of Morovo have resisted mining and logging developments on the land of

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[476] *Ibid.* at 260.
[477] *Ibid.* at 253-4.
[478] *Ibid.* at 255.
[479] Ruddle *et al.*, *supra*, note 343 at 254.
[480] *Supra*, note 60 at 256.

'bush' people out of "concerns for potential river-borne accelerated sedimentation damaging their reefs."[481] There is widespread local opposition to external large scale fishing because of the perceived limited resource base and the preference for traditional economic strategies based on a high degree of diversity and flexibility, exploiting different resource types and alternating between subsistence and commercial production.[482] Thus Hviding has shown that while some customary marine tenure systems of the South Pacific are being eroded by commercialization, demographic and political change, other highly flexible and adaptive systems of local resource management such as in the Solomon Islands have proved resilient to these pressures.

There are several points from the preceding discussion that are particularly important for the operation of the precautionary principle. Firstly, within a communal property regime like those outlined above, resource users share responsibilities, derived from ancestral connections with a particular environment, to maintain the relationships that their societies have developed around. Management encompasses every aspect of society, including juridico-political and spiritual aspects, so that each resource user is exposed to internal precautionary controls and subject to shaming when acting outside the rules set by the traditional authority but sanctioned by the whole community. [483] Furthermore, management commonly encompasses not merely the immediate marine environment, but land as well so that precautionary measures may address a wider variety of sources for environmental degradation as well as set up a buffer zone for the immediate resource. The complex system of access rights is flexible enough to implement a precautionary measure as soon as it is anticipated that a particular activity would adversely interfere with environmental patterns.[484] Built-in to the system is the capacity to reorder access rights if a precautionary measure is necessary so that the costs to the individual are minimal. The communal nature of the society absorbs hardship

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[481] Ruddle *et al.*, *supra*, note 343 at 254. They note that a number of 'pan Marovo' initiatives, linking most reef-holding groups, have emerged in this process.

[482] *Ibid.* at 255. Ruddle *et al.* write, "As Rodman has observed of rural Vanuatu, so too in Marovo, almost no one is willing to be a 'full-time anything'...The principles of the Marovo CMT system are fundamental in shaping the fishery development potential: Since the rights to fish derive from a person's place in an integrated system of territories and groups, they do not have to be validated by continuous active fishing, as would be the case in a modern fishery cooperative."

[483] See chapter three.

through exchange and redistribution of resources so that cost-effectiveness is likely to be a minimal impediment to the implementation of precautionary measures.

Within an open access regime, management becomes a discrete specialized role often carried out by people other than the resource users – users who, according to the 'Tragedy' scenario, would only act in their self-interest and cannot therefore be trusted to manage for the common good. As the resource users are self-interested (not necessarily selfish) individuals, they lack internal precautionary controls and controls must be imposed externally. The users are subject to change and so the controls are directed towards the resources themselves (for example, restricting numerical intake by allocating quotas) which remain as a 'constant' within the regulatory setting.[485] The bureaucratic management regime, which is the only structure supposedly capable of acquiring all the information necessary to calculate what would constitute 'the greatest good for the greatest number,'[486] is slower to respond to environmental signals and therefore to anticipate that a given activity will cause environmental degradation. Furthermore, it may have limited mandate over surrounding land, restricting an integrated approach to marine management. By controlling the resources, not the users, factors including uncontrolled overcapitalization and heavy investment can act as an impediment to the implementation of a precautionary measure when the costs to the individual and community are too high to prevent environmental degradation.

In sum, the 'Tragedy of Catchy-Phrases' is the wholesale embrace by science-based management of the assumption that "common property is always of the open-access variety."[487] It is assumed that within every common property regime, the users are selfish, trying to maximize short-term gains and unrestricted by social norms of the community.[488] Management measures that are directed towards controlling resources may

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[484] This point is developed in chapter five.
[485] See chapter five for an alternative explanation for why conventional science-based management is directed towards the resources themselves and the effect this has on the precautionary principle.
[486] Timmerman, *supra*, note 172 at 448.
[487] McCay & Acheson, *supra*, note 421 at 7.
[488] *Ibid.* Other assumptions include: that users have perfect information and that the resource is being used so intensively that overexploitation and depletion are possible. Anderson also notes the assumption that private property regimes protect the resources from waste and abuse. *Supra*, note 17 at 149.

be effective for some open-access regimes. But when there is an indigenous common (in the sense of communal) property regime in place, such external controls may serve to undermine the internal[489] and external controls developed by a society to limit resource access by pitting users against one another in a competitive, individualistic regulatory setting. Thus the actual tragedy lies with the assumptions within science-based management regimes that mislead managers about the nature of common property, inspiring precautionary controls directed towards remedying an often absent, 'tragedy of the commons'.

4.2 : Part Two - Development as a Pyramid or Kaleidoscope? Progress and Sustainable Development

> *The real voyage of discovery consists not in seeking new landscapes but in having new eyes.* – Marcel Proust.[490]

Concepts of development and sustainable development are discussed as the context in which precautionary decisions are made. This part argues firstly that what is popularly understood as development is driven by western cultural assumptions about time and human's relationship with nature and may impoverish a society without these assumptions. Regarded as natural, progress is largely accepted without question because it bears its own legitimization.[491] Growth-oriented concepts of development draw from this lineal societal movement and risk confusing modernization for development, taking human society out of the unit being developed.

The major implications of these assumptions for the implementation of the precautionary principle relate to the determination of the cost-effectiveness of a particular decision. When decision-making about the impact of a given activity on the environment

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[489] It appears that internal precautionary controls are most effective within a customary tenure system. See chapter three. See also Johannes, *supra*, note 167 at 168 where it is pointed out that taboos were applied for the first time in living memory in Vanuatu when the customary marine tenure system was restored.
[490] Lewis *et al.*, *supra*, note 16 at 165.
[491] Tucker, *supra*, note 23 at 2.

is out of the ultimate control of indigenous peoples, assumptions about how best to achieve their societies' economic, social and environmental development may encourage a 'weak' precautionary approach to be taken. In other words, an approach where the economic and social costs of a particular 'development' activity will usually outweigh the environmental costs because according to these assumptions, the benefits to the environment will trickle down once the society is 'developed'. It is argued that this approach to development is inherently flawed and a major impediment to a broad-based precautionary principle as a tool for sustainable development.

Secondly it is argued that indigenous systems tend to focus on the development of the people's *relationship* to the earth[492] while western systems tend to focus on the development *of* the earth. An alternative to growth-oriented development strategies using the basic criterion of whether a society is a being in itself is proposed as a means of achieving sustainable development for a society within a particular context. It is argued that cultural societal development is a constantly shifting process in which a society responds to changing environmental patterns, but that dominant current strategies dictate a ready-made pinnacle toward which a system must move. In other words, development should be conceptualized as a kaleidoscope, not a pyramid. Bringing different concepts of development into global discourse is the first step towards a dialogue that facilitates cultural diversity, essential for ecological diversity and sustainable use of the environment. To follow on from what Marcel Proust says above, rather than seeking an industrialized landscape with its fruits of industrialized development, an indigenous society should have the choice to ripen its development potential into a 'being for itself' by discarding or embracing the industrialized world-view of progress. Similarly, sustainable development for some western societies will not be achieved by seeking new ways to change the landscape as tangible evidence of societal development but rather, by seeing itself through another culture's eyes. A self-conscious reassessment of growth-oriented development could inspire new modes of sustainable development, emphasizing horizontal processes to shape a 'being for itself' rather than a vertical process with an unknown destination. These new modes of sustainable development can provide the

[492] Clarkson *et al.*, *supra*, note 18 at 53.

framework for, and be informed by, a broad-based precautionary principle. Both indigenous and western voyages depend upon dialogue about the fundamental assumptions underlying the concept of sustainable development.

The thinkers of modern science constructed the concept of progress.[493] Prior to the rise of modern science, there was little evidence of the concept of progress, at least in the lineal sense of steady 'improvement' over the centuries.[494] Early Christians in medieval Europe "saw the history of the world as one of decline, of innocence lost in the Garden of Eden, never to be regained on earth."[495] In other words, that change was lineal, in a state of regression from a golden era. While retaining the Christian lineal concept of time and space, the steady advance of scientific knowledge and technology began to convince people that history might be a chronicle of progress rather than of decay.[496] European intellectuals became certain that history was a series of irreversible changes in only one direction – continual improvement.[497] Ponting writes, "higher levels of material consumption and greater ability to alter the natural world were regarded as major achievements. Progress was by definition beneficial and something all human societies should aim for in the future, and progress became associated, above all, with economic growth."[498] Thus the western concept of lineal time, a concept not shared by many (if any) indigenous knowledge systems, had largely inspired the assumption that progress was a natural process.

By viewing progress as part of the broader evolutionary process and placing developed nations under the duty to help 'undeveloped' nations on the same path, the foundations were laid for lineal growth-oriented strategies of development to be

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[493] Francis Bacon, said to be a 'father of modern science' and founder of the inductive method, based his work on the belief that "Man, if we look to final causes, may be regarded as the centre of the world, insomuch that if man were taken away from the world, the rest would seem to be all astray, without aim or purpose." Ponting, *supra*, note 255 at 148. Bacon argued that the whole point of scientific endeavour was to restore the dominion over nature that had been lost when Adam and Eve were expelled from the Garden of Eden and that this endeavour was to be called 'progress'. Merchant, *supra*, note 59 at 273.
[494] Van Doren, *supra*, note 143 at 217.
[495] Ponting, *supra*, note 255 at 149.
[496] *Ibid.* at 150.
[497] *Ibid.*
[498] *Ibid.* at 159.

indiscriminately applied to 'undeveloped' societies. Adam Smith in his *Inquiry into the Nature and Causes of the Wealth of Nations* (1776) viewed society as engaged in a process of continual improvement brought about by investment, greater productivity and the accumulation of individual wealth.[499] Gradually, the concept of progress became intuitively self-evident and was believed to be universally valid as a measure of 'civilization', providing a conceptual and moral basis for colonialism and imperialism.[500] In 1919, article 22 of the League of Nations gave the 'advanced' nations responsibility for those 'peoples not yet able to stand by themselves under the strenuous conditions of the modern world', putting the latter officially under the tutelage of the industrial nations 'as sacred trust of civilization'.[501] Thus, as Tucker points out, "not only had Europeans a right to conquer and dominate other people, they even had a duty to do so"[502] and the justification for intervention of a nations development was set up.

Consciously or unconsciously, the destination of development has been defined as what now exists in the 'developed' countries[503] but ironically by definition, growth-oriented development has no final destination. When development is based on a vertical idea of progress, there will always be some way to change the landscape to make human life a little easier. Sutcliffe[504] points out the still prevailing idea of development as being an experience of nations which all start from roughly the same place – an undeveloped country today or a European country in the fourteenth century. In short, that there are two types of societies in the world: modern and traditional. The transfer of labour, he writes, from low-productivity agriculture to higher-productivity industry and modern services pushes all nations along the path, ending up more or less at the same 'destination' where high consumption matches the high productive capacity. The idea is that in the wake of economic progress many other things flow including more education, more access to medical services, longer lives, democracy and human rights. In effect, the change from traditional to modern societies occurs through the diffusion of values,

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[499] *Ibid.* at 155.
[500] Tucker, *supra*, note 23 at 4.
[501] *Ibid.* at 5.
[502] *Ibid.*
[503] B. Sutcliffe, "The Place of Development in Theories of Imperialism and Globalization" in Munck & O'Hearns, *supra*, note 23, 135 at 145.

capital, technology, institutional arrangements and political beliefs from modern societies to traditional ones.[505] The problem now being faced is that the lineal idea of progress and growth-oriented measures of standards of living are dependent upon a forward momentum so that there is no final destination and societies are chasing their tails.

Thus too often, the idea of modernization is confused with the idea of development. Freire writes:

> although [modernization] may affect certain groups in the 'satellite society', [it] is almost always induced; and it is the metropolitan society which derives true benefit therefrom. A society which is merely modernized without developing will continue – even if it takes over some minimal delegation of decision making – to depend on the outside country. This is the fate of any dependent society as long as it remains dependent. ... The basic elementary criterion is whether or not a society is a 'being for itself'. If it is not, the criterion indicates modernization rather than development.[506]

The dominant development strategies seem to build upon a pyramid moving towards industrialization at its peak which artificially constrain the shifting, contextual nature of development as a process of ripening a particular society into the fullest expression of 'being for itself'. In doing so, subsistence economies become devalued as wasting both labour[507] and resources[508] and modern society comes galloping in to free indigenous people from the 'tyranny of subsistence'. In other words, the dominant gauge for development today is not so much a society 'being for itself' but 'being for developed nations'.

Many indigenous societies trapped in cogs of modernization have become impoverished rather than "beings for themselves" from the effects of, *inter alia*, capitalist markets and bureaucratic government interference. Indigenous societies throughout

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[504] *Ibid.* at 135.
[505] J.H. Weaver, M.T. Rock & K. Kusterer, *Achieving Broad-Based Sustainable Development: Governance, Environment, and Growth Equity* (Connecticut: Kumarian Press, 1997) at 152.
[506] Cited in Tucker, *supra*, note 23 at 6.
[507] Clarkson *et al.* write that "Westerners have so devalued our traditional economy that they consider those participating in subsistence economies to be unemployed." *Supra*, note 18 at 56.

history have been subject to appropriation of their economic surplus and unequal exchange in the market place.[509] However, "the experience of Indigenous peoples worldwide demonstrates that control of the economic surplus is critical for development, and that the appropriation of the surplus from one part of the world, and its investment in another area, will lead to underdevelopment in the one and development in the other."[510] There is of course a myriad of reasons why indigenous societies have been impoverished by development strategies outside market forces,[511] one being the displacement of the traditional governing system. As discussed above, the collective ownership of all lands, waterways, forests, and wildlife, non-coercive leadership and full participation and consensus in decision making characterizes many indigenous systems.[512] Modernization can distort or disrupt the whole system and will consequently have an impact on management frameworks which are not simply an isolated component of indigenous society.[513]

Serious questions may be raised about the Brundtland Report's embrace of the 'modernization' approach to the path for sustainable development.[514] The Report states

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[508] For example, the Premier of Quebec was noted to have said that valuable hydro electricity capacity is being wasted by the failure to dam the rivers that run into the Hudson Bay. *Ibid.*

[509] *Ibid.* at 25. Clarkson *et al.* point out the rationale for this process is that development supposedly does not take place when the surplus is left in the hands of the producers because of their propensity to consume rather than to save and invest. They write, "Historically in our territories, the consumption of surplus was institutionalized through such means as feasts, giveaways and the potlatch to ensure an equitable distribution of available resources. While it is true that such societies do not accumulate, it could be argued that by virtue of their participation in an externally generated trade relation, such societies were no longer precapitalist." *Ibid.* at 25-6.

[510] *Ibid.* at 25. Clarkson *et al.* offer the example of the development of the fur trade economy where the unprocessed product was exported to Britain with very little secondary production processing taking place locally. If the producers had retained the surplus, they write, it could have been reinvested in secondary processing industries to provide additional sources of income for consumption goods the majority of which were imported. The surplus could also have been used to diversify the economy, resulting in a greater capacity to respond to a changing economy. Instead, when the fur trade declined, indigenous people were left on the margins of the emerging national economy. *Ibid.* at 26.

[511] See *ibid.* for a detailed discussion of the effects of North American government policy on indigenous societies.

[512] *Ibid.* at 29. See also chapter six.

[513] See chapter five.

[514] The Brundtland Report defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." World Commission on Environment and Development, *Our Common Future* (Oxford: Oxford University Press, 1987) [hereinafter Brundtland Report] at 43. Although the Brundtland Report is not legally binding, it is still one of the most common sources from which commentators draw when exploring the concept of sustainable development.

that, "today's environmental challenges arise both from the lack of development and from the unintended consequences of some forms of economic growth."[515] While the Report issues a clear warning against the hazards of further industrialization, it concludes that we must industrialize (a five- to tenfold increase in global industrial output is envisaged) if poverty is to be overcome.[516] The Report concludes that:

> Environmental stress has often been seen as the result of the growing demand on scarce resources and the pollution generated by the rising living standards of the relatively affluent. But poverty itself pollutes the environment, creating environmental stress in a different way. Those who are poor and hungry will often destroy their immediate environment in order to survive: They will cut down forests; their livestock will overgraze grasslands; they will overuse marginal land; and in growing numbers they will crowd into congested cities. The cumulative effect of these changes is so far-reaching as to make poverty itself a major global scourge.[517]

These types of answers to environmental problems rest with an ingrained, often unconscious belief in the virtue of western industrialized development, if not a belief that there is only one kind of development – lineal. For western decision-makers, an increase in technology equates with an increase in the standard of living which will safeguard against the environmental degradation caused by the 'inefficiencies' of a non-industrialized society.[518] However imposing such a standard on other societies may have the opposite effect:

> People using this Western scale of 'standard of living' fail to understand...that the real cause of environmental destruction, increasing poverty and a growing world population lies in their own prescription of a Western standard of living for everybody, and not vice versa. But all governments today – whether they be

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[515] *Ibid.* at 29.

[516] *Ibid.* at 15-16. At 50 the Report writes: "A necessary but not a sufficient condition for the elimination of absolute poverty is a relatively rapid rise in per capita incomes in the Third World...It seems unlikely that, taking developing countries as a whole, these objectives can be accomplished with per capita income growth of under 3 per cent. Given current population growth rates, this would require overall national income growth of around 5 per cent a year in the developing economies of Asia, 5.5 per cent in Latin America, and 6 per cent in Africa and West Asia." See T. De La Court, *Beyond Brundtland: Green Development in the 1990s* (London: Zed Books, 1990) at 23.

[517] Brundtland Report, *ibid.* at 28.

[518] It is to be noted that a central, governing body (which includes government and corporations) orchestrates development according to a mathematical formula (GDP) which is the main factor in determining an appropriate standard of living.

> democracies, military dictatorships or religious fundamentalist regimes – are united in their efforts to achieve a Western standard of living for their people. And in this process they are ready to sell their nation's soil, water, forests, minerals, air, and even women and children to the merchants and moneylenders of the West. If bringing Western development was so necessary, our governments could have encouraged...a healthy debate on the question, convincing the people of its importance for their own well-being. But they chose the other way – by ridiculing us, by labeling our culture as backward, by branding our simple knowledge as ignorance and superstition and then forcing us to join their elitist race for scientific development to make us 'civilized'.[519]

Thus there should be a kaleidoscope of development strategies, not a pyramid with a predetermined standard of living at its pinnacle from which the benefits of modernization are said to trickle down. Too many resources go into the making of the pyramid for it to be sustainable. When asked whether he hoped to approximate Britain's standard of living after India achieved independence, Mahatma Gandhi replied, "It took Britain half the resources of the planet to achieve this prosperity; how many planets will a country like India require?"[520]

'Development' or, concomitantly, an 'economic system' based on indigenous values of cyclical thinking, reciprocal relations and responsibilities to the earth,[521] by its very nature would often be decentralized, self-reliant, and very closely based on the carrying capacity of a particular ecosystem.[522] The International Institute for Sustainable Development has compiled a report by some North American indigenous peoples that offers guidance for economic development strategies based upon the actual foundation of indigenous cultures; upon the traditional forms of socioeconomic organization, values and practices. [523] In particular, the report says, "mainstream theories of community

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[519] Quote by Anupam Mishra cited in De La Court, *supra*, note 516 at 15.
[520] *Ibid.*
[521] "We are given the responsibility for ensuring that no one aspect of our existence takes precedence over the other. Everything we do has consequences for something else." Clarkson *et al.*, *supra*, note 18 at 14.
[522] LaDuke, *supra*, note 41 at 129. Delores Huff notes the failure of economic development plans which have attempted to change tribal values. Tsosie, *supra*, note 185 at 320.
[523] Clarkson *et al.*, *supra*, note 18 at 79. Tsosie writes that several models have been proposed to facilitate economic development that is consistent with indigenous cultural values including; the 'indigenous rights model' to create conditions for political power; the 'community-based development model' focusing on consensus among community members and self-reliance; the 'culture-based model' where existing governmental institutions will become more responsive to the needs of the community by increased indigenous participation in decision-making; the 'self-government model' for example in Nunavut; and the

economic development should be avoided. It should be realized that, although such theory and practices is usually seen as an improvement over strategies based upon individual entrepreneurship, such practice tends to be assimilationist."[524] The report goes on to argue that strategies are required that will strengthen extended family networks, increasing the ability of family systems to be self-managing and self-reliant. By building a strong economy based upon family exchange, clans, societies and nations can then proceed to be strengthened. Matching harvesting and consumption to need is much more accurate when performed at the extended family level and has traditionally enabled indigenous societies to avoid accumulating surplus.[525] The report states, "(a)lthough many environments that sustain subsistence economies could support increased production and accumulation, as well as larger populations, our people deliberately underproduced; they harvested and consumed only what they needed and conserved the rest for future generations. The underuse of economic capacity minimizes the risk of resource depletion and enhances the resilience of the resource base, thus ensuring the survival of people."[526] Thus development strategies that focus on the family clan system[527] as the nucleus of the indigenous economy can give effect to indigenous values of balancing their needs with the needs of the earth.

To ensure sustainability, indigenous economic strategies could be based upon the principle of convergence to gear production to meet local demand and need, rather than for outside regional, national or global markets.[528] The IISD report[529] argues that a "strategy that works toward convergence of local resource use, demand and need would be an ideal way to counteract the historical processes of underdevelopment."

'traditional way of life model' whereby the market economy is to be adapted to complement indigenous economies. Tsosie, *supra*, note 185 at 320-325.

[524] Clarkson *et al.*, *ibid.*

[525] "Most Indigenous societies deliberately avoided accumulating surplus, and where they did, they had instituted various methods of surplus consumption to ensure that the accumulated wealth was distributed equally among members of their society." *Ibid.* at 57.

[526] *Ibid.*

[527] And many indigenous societies have retained the extended family system, for example the Anishinabeg (Ojibway) Nation currently "functions within a decentralized economic and political system, with much of the governance left to local bands...through clan and extended family system." LaDuke, *supra*, note 41 at 129.

[528] Clarkson *et al.*, *supra*, note 18 at 80.

[529] The discussion in the following paragraph is from *ibid.* at 60.

Dependence on external demand and sources would be reduced, protecting indigenous economies from unstable global markets. The outflow of the economic surplus would be stopped, the report says, and local production structures that will meet the needs of communities will be created:

> Essentially, local economies would be re-structured in such a way that communities would produce what they consume and consume what they produce. The convergence strategy is based upon the notion of basic goods which are products used extensively in the production of other goods. These are characterized by extensive forward and backward linkages; sectors in the local economy both buy from and sell to each other.[530]

The report states that a convergent economy is one that is organized to meet local demand (using a strategy whereby local resources and labour are used to meet the local demand) and only secondarily for export of the surplus to the external market to generate income for importing products that could not be produced locally. Eventually the model would restore traditional trading structures and market mechanisms by converging supply and demand on a regional basis. "Economic linkages between the communities in a particular region would strengthen the ability of local economies to meet the needs of their members."[531] While communities lack the necessary level of control to adopt a pure convergence strategy, the report argues that it is possible to implement a modified version that would begin to reverse the historical dependency of indigenous economies. Thus the self-reliance that would develop at the extended family and clan level is a sound basis for one approach to the sustainable development of indigenous societies.

In sum, western concepts of development importing lineal ideas of societal progress not only tend to marginilize indigenous knowledge as the basis for a particular

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[530] "For example, local forest products are harvested, milled, distributed and utilized in the local construction industry. Local spending power is maximized and leakages are minimized. Money is kept in circulation in the local economy rather than being leaked out through the purchase of necessary products and services from sources outside of the community. A convergence economic strategy could focus especially on achieving local self-sufficiency in forest products and the construction industry, production of household goods, food production, and the support services necessary for these industries." *Ibid.*

[531] *Ibid.* at 61.

precautionary decision, but also disrupt indigenous knowledge systems[532] so that the knowledge does not even make it to the decision-making table. According to the Brundtland Report, "It is a terrible irony that as formal development reaches more deeply into rainforests, deserts, and other isolated environments, it tends to destroy the only cultures that have proved able to thrive in these environments."[533] It is a terrible irony that the Report's concept of sustainable development imports cultural assumptions that threaten to destroy the only cultures that have proved able to thrive in these environments. There must be global recognition of the different cultural assumptions underlying various development strategies which can impoverish societies not sharing these assumptions and degrade the environment from the desperate strategies that follow. Sustainable development is a continual process of shaping a society into a 'being for itself' and must respond to the environment in which it functions.[534] In this way, development strategies are unique to a particular area and culture, constantly shifting according to changing environmental patterns. As Sutcliffe writes, "if the destination is no longer defined as what now exists in the 'developed countries' then development becomes a task for all parts of the globe. Development has not yet happened anywhere."[535]

There is an important caveat, however, to the above discussion. While, as was quoted in the introduction, "(t)he real voyage of discovery consists not in seeking new landscapes but in having new eyes,"[536] western industrialized society must not misappropriate indigenous 'eyes'. In other words, assume that indigenous societies, if they want to develop into 'beings for themselves,' must do so according to what are considered by others to be 'indigenous values.' Chief Robert Wavey makes the point succinctly:

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[532] Including spiritual, economic, management and social components and tenure systems as the framework for internal precautionary approaches.
[533] Brundtland Report, *supra*, note 514 at 115.
[534] As Holling points out, sustainable development is a process, not a final state. "...sustainable development is not a goal, not a condition likely to be attained on earth as we know it. Rather it is more like freedom and justice, a direction in which we strive" *Supra*, note 56 at 349.
[535] Sutcliffe, *supra*, note 503 at 145.
[536] Marcel Proust quoted in Lewis *et al.*, *supra*, note 16 at 165.

> I am concerned that science-based management approaches will use the improved ecological database [that is, including traditional knowledge] not to focus on development-related ecological impacts, but to impose additional regulations and restrictions on the resource uses of indigenous peoples. Science is based on discovery, and has provided the foundation for the industrialization of the earth and the concentration of wealth in the hands of those nations with the greatest scientific capacity. Traditional ecological knowledge is not another frontier for science to discover. When you contemplate the linking of traditional ecological knowledge and science in order to support the healing of Mother Earth, I ask you to resist seeking to discover. I urge you instead to accept what is obvious.[537]

Conclusion

Several conclusions can be drawn from the above two parts about the factors outlined in the introduction relating to the operation of the precautionary principle within some indigenous and western socio-political contexts.

Who will make the precautionary decisions and how will a society observe them? Within many indigenous societies still operating under customary tenure systems, the whole community makes precautionary decisions by way of consensus.[538] While a leader may have absolute authority, this usually did not amount to a dictatorship[539] because they are usually leaders only by the consent and will of their people.[540] Thus the resource users themselves make the decisions and internalize the precautionary approach taken. On the other hand, in an open-access regime operating within many western societies, government regulatory bodies[541] make precautionary decisions. A bureaucratic structure usually gathers and interprets information about the state of the resource and other information relating to the impact of a given activity, setting and policing regulations for the sustainable use of the users. When western sustainable development strategies seek to 'develop' in the sense of 'modernizing' indigenous societies on the ground that the effects will trickle down to ultimately protect the environment, they may disrupt the

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[537] Chief Wavey, *supra* note 346 at 16.
[538] See chapter two (2.3).
[539] Berringer *et al.*, *supra*, note 442 at 58.
[540] RCAP *Looking Forward, supra,* note 128 at 61.
[541] Unless there has been privatization.

customary tenure systems[542] and import the problems inherent to an 'open access' regime. Instead, development strategies must be determined by each society according to how it can best become a 'being in itself'. If this involves retaining or reinstating customary land tenure systems, then decisions relating to human activity should facilitate such a goal. Because humanity and nature are inseparable within a particular ecosystem, precautionary decisions should thus also address the protection of a sustainable society.

What will be the response time for implementing the principle once a danger to the environment has been anticipated? Many indigenous customary tenure systems encompass the whole land-sea interface and so environmental signals indicating a given activity is no longer sustainable may be perceived earlier than if simply the marine areas were observed. Because the system is connected to both land and sea, precautionary changes can be implemented that affect the whole catchment area and the social system would be flexible enough to respond and absorb the change in practice. For example, more land-based food sources may be used while fish stocks are rested. On the other hand, it is usually only marine resources that can be freely regulated within many open-access regimes. For example, in Canada, the Department of Fisheries and Oceans has jurisdiction over fisheries but integration with land-use regulations set by provincial governments is limited.[543] This creates a situation in which the perception of, and response to, environmental signals throughout the land-sea interface 'foretelling' an unsustainable practice is a slow and cumbersome process. Furthermore, the development of more cumbersome structures envisaged by many western sustainable development strategies for indigenous societies may slow down the response time of indigenous systems and disrupt the capacity of a system to facilitate the implementation of an anticipatory precautionary decision.

What will be the cost-effectiveness of a particular precautionary measure? The flexibility inherent to many customary tenure systems to reorder access rights if a precautionary measure is a necessary means to minimize the economic costs for the

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[542] Including the internal precautionary approaches.

[543] But not impossible; see for example, International Ocean Institute, *Final Report of the Canadian Ocean Assessment: A Review of Canadian Ocean Policy and Practice* (International Ocean Institute, 1996)

individual user. The system of redistribution and exchange, as part of the wider approach to resource management, provides the necessary security for an alteration of practices perhaps called for by a precautionary measure. The environmental costs of not fishing a particular stock, for example, the effect it will have on its main prey population, are often factored into a precautionary decision that is based on the understanding of the interrelationship of all things and observations of the whole land-sea interface. Resorting to simplistic conclusions, for example, that over-fishing is the cause of population declines is not likely within a land tenure system in which the users, who are also enforcers of the decision, can observe multiple causes. The bureaucratic structure and social institutions that build up around management directed towards the resource rather than the users can lock in certain management practices, leaving a precautionary decision to alter a practice costly to the individual and society.[544] Therefore, as the following chapter argues, a management regime most responsive to anticipating the affect of a given activity on the environment must include considerations of the broader social system and infrastructure.

[544] See chapter five for a detailed discussion of this point.

CHAPTER FIVE: MANAGEMENT AND THE PRECAUTIONARY PRINCIPLE

Introduction

> *Our knowledge of trapping is a unique knowledge...I believe that it is vitally important because* it expresses our sense and experience of the lands....*Our knowledge has a spiritual and cultural form...*
> *In terms of Anishinabe people, these animals are better understood as our relatives. Many of them are clan dodaems of our people.* We have our own ways of speaking about them and relating to them...*Our knowledge of our animals is often expressed in the language of our ceremonies. But it reflects a great complexity and sophistication which the MNR bureaucrats and scientists do not know about. Our knowledge has arisen out of relationships to our lands and animals.*
> *All of the white man's 'science' used to make management decisions for quotas was based on their relationship to the land. It was against our relationships to our land and each other, as Anishinabe people, on our lands. It still is. This science is not* objective. *It is a tool of the whiteman that reflects his understanding of the land. It reflects* his *social relationships to the land.* – Charlie Fisher[545]

The conventional scientific approach of explaining phenomena in terms of a set of laws continually being tested by more quantified data[546] is a cumbersome, reactive approach to environmental management and inhibits the operation of the precautionary principle. The set of natural laws hypothesized by scientists and environmental processes do not necessarily correspond. Often the 'laws' and processes appear to be one and the same because information is retained or discarded by scientists depending on whether it fits a predetermined end – the law. Periodically, there is a paradigm shift in thinking about the world because it becomes apparent that the set of natural laws diverge from observed environmental patterns and a new set of laws develop and shape the direction of research and decision making. The paradigm shift explored in this chapter is between theories of multistable/multi-equilibrium points and resilience theories. By way of showing that the predictive framework starts from a cultural assumption about environmental processes which is imposed upon the environmental patterns themselves,

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[545] From a paper prepared for a discussion group with the Ministry of Natural Resources (MNR), Ontario, in 1995 cited in Ross, *supra*, note 99 at 261-2.
[546] See Dene Cultural Institute, *supra*, note 31 at 10.

it is argued that the concept of equilibrium emerged from social observations in the field of economics and then transferred onto the natural world.

The conventional science-based approach to management inhibits the operation of the precautionary principle in at least three ways. Firstly, the priority given to *predicting* the effect of a given activity on environmental processes rather than *anticipating* the effect, imposes an artificial emphasis on information that can be quantified and laws proven.[547] The chapter argues that indigenous cultural equivalents of the precautionary principle are predominantly an exercise in anticipation while the conventional science-based precautionary principle operates within a predominantly predictive framework. However, the movement towards resilience and 'surprise' within an adaptive management context is used as an example of how science-based management can move towards an anticipatory framework.

Secondly, the conventional approach with its emphasis on quantitative data accumulation to understand *why* X is so, tends to exclude indigenous knowledge with its qualitative information based on personal experience to know *that* X is so, thus narrowing the knowledge base from which a particular precautionary decision may be drawn. Some basic differences between indigenous and science-based management concepts and strategies will be highlighted to argue that simply applying indigenous knowledge to a science-biased (predictive oriented) precautionary principle will not lead to a more error-free precautionary decision. Indigenous knowledge must be understood as part of a *system* that is rooted in the spiritual health, culture and language of the people and the intimate knowledge of the relationships between all aspects of the environment.[548] This system which includes social, management, religious and political components, arguably exists within a framework enabling a precautionary decision to be guided by anticipation. It is argued, however, that indigenous and science-oriented knowledge systems can complement each other within a resilience-oriented, adaptive

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[547] For an explanation of the distinction this thesis makes between prediction and anticipation, see chapter one (1.1).
[548] Circumpolar Report, *supra*, note 27 at 114.

management framework that facilitates anticipatory capacities, strategies and mechanisms.

Thirdly, the conventional approach operates within a framework that attempts to contain risk for society and industry to operate within a stable environment but as a result, environmental signs are smothered and distorted, reducing the capacity to anticipate (and predict) the effect of a given activity. As Johannes points out, the "aim of precautionary management is not to control the production of living resources, but simply to protect them, to maintain their viability."[549] In trying to contain risk, decision-making becomes reactive contrary to the aims of the precautionary principle, especially when social institutions lock in harmful management strategies (for example by overcapitalization) because of the artificial short-term stability created by matching human activity with a particular set of 'laws of nature'. The chapter argues that risk and uncertainty should be the basis of management and other social institutional structures. This would, *inter alia*, reduce the pressures for error-free management, an unachievable goal within an uncertain environment. Risk-embracing, uncertainty-driven management can arguably speed up the time a management system takes to realign its concepts about environmental processes with the environmental patterns observed, leaving measures to prevent environmental degradation more cost-effective.

5.1 : Part One - Some Fundamental Differences Between Indigenous and Science-Based Management

This part provides the foundations for the argument throughout the chapter that simply applying indigenous knowledge to a science-oriented (or predictive-based) precautionary principle will not lead to a more effective precautionary decision. Indigenous knowledge must be understood in light of the whole management system. It is shown that indigenous management is not a discrete function within indigenous societies but is practiced within the context of the larger cultural system. As part of the

[549] R.E. Johannes, "The Case for Data-less Marine Resource Management: Examples from Tropical Nearshore Finfisheries", 1998 (13) *Trends in Ecology and Evolution* 243 at 243.

social system, management encompasses indigenous concepts that focus on time as cyclical interconnections and the relationships between things.[550] Based on the idea that environmental patterns are too complex for logic to unravel, an assumption derived from, *inter alia*, the above two concepts, many indigenous social (including management) systems have directed their knowledge processes towards developing anticipatory capacities to guide human activity within an uncertain environment. As a corollary, humans are viewed as being within the unit being managed.

'Management' as a *discrete, specialized field* is a western concept, being a prerogative that flows from the western system of property[551] and a necessity that arises out of the massive flow of data within an unstable culture.[552] The conventional management response to Hardin's 'tragedy of the commons' was governmental regulation or privatization of open-access resources (mistaken for 'true' common property resources). Conventional management theory provides that where resource users do not have the incentive to restrain their activities within an open-access resource for the 'common good', a body which represents the common good, must regulate their activities. Because the knowledge that the science-based society has accumulated to sustain complex unstable cultures is beyond the experience of any one individual, only a bureaucracy is supposedly capable of acquiring all the information necessary to calculate what would constitute 'the greatest good for the greatest possible number'.[553]

The customary tenure of many indigenous societies outlined in chapter four incorporates a different concept of management. Within these systems, the hunting and gathering mode of production generally combines technical conditions and the social relations of production, where it is recognized that the concept of production includes an economic, a juridico-political and an ideological level.[554] For example, the traditional fisheries system of the Ehattesaht group of the Northwest Coast is based in a system which integrated spiritual beliefs and a world view, a system of resource ownership and

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[550] See chapter three.
[551] LaDuke, *supra*, note 41 at 146.
[552] This point was explored in part 2.2.
[553] Timmerman, *supra*, note 172 at 448.

access, a socio-cultural system and a political system.[555] While responsibility to maintain relations between the human and non-human world is often shared by the whole community, specific regulation of activities impacting on the environment is usually vested in traditional authority, the nature of which varies according to social organization.[556] The traditional authority often has diverse roles as Berkes points out in the following example:

> The 'manager' in the Cree system, is the senior hunter, called the tallyman. The senior hunter is the observer of nature, the interpreter of observations, the decision-maker in resource management, and the enforcer of rules of proper hunting conduct. He was also the political leader, ensuring for example that no one goes hungry in the group. There is little doubt that in the old days, the steward was a spiritual leader as well.[557]

Thus 'management' is not conceptualized as a discrete function within a society but is considered within the context of the larger cultural system. LaDuke points out that such systems show a high degree of unification of conception and execution, possible because the 'scientist' is the 'resource manager'.[558] For lack of another word, this chapter will use the terms 'management' and 'manager' in relation to indigenous systems but only in the broad sense of regulating human activity, and not in the fragmented science-based sense.

Management systems also differ between indigenous and science-oriented societies in relation to the focus of management strategies. Scientific methods perpetuate

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[554] Tanner, *supra*, note 194 at 10.
[555] Berringer *et al.*, *supra*, note 442 at 57.
[556] K. Ruddle, *A Guide to the Literature on Traditional Community-Based Fishery Management in the Asia-Pacific Tropics, Fisheries Circular No. 869* (Rome: Food and Agriculture Organization of the United Nations, 1994) at 4. Ruddle recognizes four principle types within the Asia-Pacific region: 1] secular leaders including a type of 'village council' or authority exercised by one chief; 2] religious leaders (widespread in the region); 3] specialists for example 'master fishermen'; and 4] rights-holders, often vested in the senior person of a lineage, family or other small social group. See Colding & Folke, supra, note 358 for a discussion of the shaman in Tukanos society of the Colombian northwestern Amazon who is a powerful agent in the control and management of resources. They note that among other ethnic groups, the medicine man, the elders, or other prominent figures may hold the same position with similar responsibility. Most references in this thesis' bibliography relating to indigenous people refer to the juridico-political and ideological structure of indigenous societies within Canada and the South Pacific surrounding resource use.
[557] *Supra*, note 25 at 89.

the idea that 'wild' animals can be managed. That is, that human society is capable of understanding and controlling population levels for maximum sustainable use. Some bureaucrats and managers acknowledge that they do not really manage resources but rather human activities and impacts on 'resources'.[559] However, they generally manage by establishing an arbitrarily defined management unit and then gather information (quantitative or otherwise) about it.[560] In this procedure, then, humans are viewed as outside the unit being managed and causal connections are sought on which to base management decisions.[561] Indigenous management or stewardship practices place humans inside the unit being managed and incorporate the idea of time as cyclical and random interconnections into their management decisions. Indigenous fisheries and hunting grounds are often managed by rules and practices limiting 'how' people fish and hunt through various internal controls (including religious sanctions[562]) and external controls (including land tenure systems[563]) rather than by attempting to regulate 'how much' can be taken.[564] Berkes notes, "(a)s for the biologists' objectives of 'controlling' fish populations and 'predicting' sustainable yields, the Cree thought that these were immodest aims of apparently immature people playing god, given that the success of fishing depended on the fish and the respectful attitude of the fisher."[565] Major differences in management strategies can result from whether the focus is on managing resources or human activities.

Failing to take human behaviour into account can severely distort the information on which precautionary policies are made as illustrated by Tanner.[566] The government introduced a quota system in Northern Ontario using registered traplines to 'control'

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[558] *Supra*, note 41 at 130.
[559] M.G. Stevenson, *Traditional Knowledge in Environmental Management? From Commodity to Process* (Alberta: Sustainable Forest Network, 1998) at 8.
[560] *Ibid.*
[561] *Ibid.*
[562] See chapter three, section 3.3.3.
[563] See chapter four, part 4.1.
[564] Berkes, *supra*, note 62 at 107. In a study of 30 traditional societies throughout the world, Acheson *et al.* found that all the rules and practices regulate 'how' fishing is done and none set limits on the 'amount' of various species that can be caught. J.M. Acheson, J.A. Wilson & R.S. Steneck, "Managing Chaotic Fisheries" in Berkes & Folke, *supra*, note 2, 390 at 397.
[565] *Supra*, note 25 at 118.
[566] The following information is from *supra*, note 194 at 190-3.

beaver populations. Tanner writes that the government regulation of sustained yield wildlife harvest is based on a method of trapping which:

> stated in its ideal form, presumes that the trapper visits all his beaver lodges year after year, harvests only the annual production of each, and leaves behind in each lodge a sufficient number of animals in order that they may reproduce again and maintain the beaver colony for subsequent years. The annual production of each lodge is thus theoretically the additional number of beavers born in previous years which survive to be trapped as mature animals.[567]

Mistassini Cree trappers are required to note each year any new colonies and submit to the government a map showing the location of all occupied lodges. "A quota is then established, based on a theoretical rate of reproduction and survival of beavers in that particular region, and proportional to the number of occupied lodges shown on the map."[568] The problem is, Tanner writes, beaver lodges in the region tend to be widely scattered and because the territories are large, firstly, it is not possible to visit all lodges each year and secondly there can be little seasonal specialization of trapping production. Instead, for reasons of efficiency, traditional practice had been to take *more* than the annual production of each lodge visited, always leaving some animals behind, while visiting a colony only once every few years. "Thus when the leader of a Mistassini hunting group provides the government with a map of the occupied beaver houses he has observed[569] it seldom relates to that part of his territory which he will be using during the following year, and therefore it does not relate to the area where the new quota will be harvested."[570] Humans were outside the unit being managed and distortions from misinformation resulted in an ineffective system in which Crees went through the motions for the benefit of government and at the same time continued their traditional practices.

Failing to take human behaviour into account when imposing science-oriented management strategies can also lead to social breakdown and rigid conservation practices

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[567] *Ibid.* at 191.
[568] *Ibid.*
[569] The trappers needed to participate in the beaver quota system since only the government was permitted to buy beaver hides and each hide had to carry an official seal.

that ultimately undermine the measures that may have been intended as precautionary. For example, the Circumpolar Workshop[571] reports that at the time when the first game warden[572] came to Aklavik in the Mackenzie Delta in 1944, the inhabitants all shared the vast quantities of game. "If a trapper crossed onto another person's trapline, there were no arguments." When the traplines became compulsorily registered, the trapping areas were divided unequally, causing problems for the relationships between trappers. After ten years of this socially disturbing arrangement, the traplines were divided into group areas, and trappers were allowed to trap anywhere from December 1st to May 1st. However, the artificial seasons imposed created further problems for the health of the environment and were usually ignored. The Report states that "November 1st is the official opening day for trapping, but many trappers follow their traditional ways by waiting for the environment to signal when trapping should start."[573] Thus imposing artificial time and spatial restraints on hunting practices can result in either precautionary measures causing social breakdown because other management mechanisms such as internal precautionary controls[574] are disrupted, or can result in the measures simply being ignored.

The implicit assumption apparently "common among marine biologists and marine resource managers that quantitative information about a natural resource is essential for any kind of management... (means that) precautionary management would be impossible in many thousands of square kilometers of heavily exploited tropical marine communities." [575] Johannes notes that countries in the Pacific and South East Asia occupied by millions of people depending upon their nearshore fisheries for their livelihood could not afford such quantitative research and if they could, it would in most cases be grossly cost-ineffective. In the search for any quantitative information on which to guide or justify a particular activity, ecological knowledge gathered in other parts of

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[570] *Ibid.* at 192.
[571] The information in the following paragraph is from Circumpolar Report, *supra*, note 27 at 30.
[572] Now known as a renewable resource officer.
[573] For example, "a warm autumn means that fur is not prime; a cold autumn means prime or good quality fur." *Ibid.* at 130.
[574] See chapter three, part 3.3.3.

the world is often applied to a particular ecosystem while valuable indigenous knowledge is ignored.[576] However, Johannes and other researchers have showed that under some circumstances the creation of management plans using quantitative data yields no fundamental improvements over traditional 'data-less' management already employed.[577] Environments are characterized by annual variations in the abundance and distribution of wildlife and so observations and quantitative data collection by scientists of one or two seasons within a particular ecosystem can be misleading.[578] The knowledge of aboriginal people who have lived year round in an environment well before scientists arrived and well after scientists have left, is unparalleled by that of biologists.[579] Precautionary management *is* possible in any environment if managers move away from the assumption that 'quantitative information about a resource is essential for any kind of management'.

5.2 : Part Two : Matching the Laws of Nature to Environmental Patterns? – Some Science-Based Management Approaches

This part argues that precautionary management is ineffective when couched within a predictive framework. The development of the concept or 'law' of equilibrium is used to illustrate how conventional science-based management, working within a

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[575] Johannes, *supra*, note 549 at 243. See also Johannes, *supra*, note 95 at 81. Note that there must be some information about the impact of a given activity on the environment for there to be an awareness that the implementation of a precautionary measure may be necessary.

[576] Dene Cultural Institute, *supra,* note 31 at 9.

[577] Johannes and other researchers recently completed a research project on groupers in Palau to determine whether data on spawning aggregation sizes would enable them to design a management program improving upon the approach already operating in Palau, "which consisted simply of closing the grouper fishery during the peak spawning months...(W)e found that statistically rigorous monitoring would not enable us to detect stock declines clearly attributable to fishing pressure – or stock increases clearly due to management – in timeframes useful for rigorous management. There was too much interannual variation in aggregation sizes that was unrelated to fishing pressure or management measures, but instead resulted from undetermined 'natural factors'. Nature once again proved too variable." Overall, the quantitative science-based approach yielded no fundamental improvements. *Supra,* note 549 at 244.

[578] Berringer *et al* write that ecosystems are both evolving and subject to long-term cyclical changes. They give the example of how it is now thought that "the returns of sockeye salmon to Barkley Sound are subject to large variations over a 12-20 year cycle which appears to be correlated with changes in nearshore oceanographic conditions (salinity and temperature)." They go on to say that elders often comment in meeting that variations which we now consider extreme and unusual have been observed periodically in the past. It is extremely important to have this historical understanding of the past behaviour of ecosystems and fish stocks as a basis for understanding and predicting current and future changes." *Supra*, note 442 at 68.

[579] Dene Cultural Institute, *supra*, note 31 at 10.

predictive framework, locks in to management strategies its own assumptions about environmental patterns. When such 'laws of nature' are incomplete (in other words, do not match environmental patterns), the strategies themselves force the environment to change qualitatively, and the quantitative data gathered to test the incomplete set of laws is no longer useful for prediction about human activity on environmental patterns. The theory of resilience is offered as a paradigm shift towards anticipatory precautionary management because it can arguably start from the assumption that laws of nature are not useful in a natural world whose workings are beyond the comprehension of the logical brain.

While assumptions about nature's processes have often taken their cues directly from cultural relationships with nature, arguably the key scientific assumption of nature's regulatory process – equilibrium – was created in the world of economics and then transferred back to the natural world.[580] Adam Smith's 'invisible hand' addressed the question of design in the system – that free market forces will eventually stabilize to achieve equilibrium. But, as Timmerman points out, the need for an explanation of order led economics into a "myth of ideal historical equilibrium, i.e., that the system is always at or approaching a perfect stability; and, second, that the mythical model was intolerant of any externalities or alternatives that could not be captured by the mechanism."[581] Similarly the classic equilibrium-centered definition for management strategies rests with stability (*sensu stricto*) as "the propensity of a system to attain or retain an equilibrium condition of steady state or stable oscillation. Systems of high stability resist any departure from that condition and, if perturbed, return rapidly to it with the least fluctuation."[582] Two presumptions underlying management strategies based on equilibrium-centered concepts can be observed. The first presumption is that the best defense against a catastrophic perturbation is to foster stable conditions by, *inter alia,* damping down all oscillations to consistently predictable levels. [583] The second is that nature is infinitely reliable or benign so that when a disturbance is removed, recovery will

[580] Timmerman, *supra*, note 172 at 437.
[581] *Ibid.* at 438.
[582] C.S. Holling, "The Resilience of Terrestrial Ecosystems: Local Surprise and Global Change" in Clarke & Munn, *supra*, note 172, 292 at 296.

be assured.[584] Within this framework, surprises are threats to the consistency and continuity of control on which many of the management schemes in operation are justified.[585] Thus at a time when economic activity was changing the landscape at an intensity not seen before, equilibrium-centered stability-oriented definitions of environmental processes served to justify and quell any concerns about the impact on the environment of large scale economic developments.

The management assumption derived from the conventional, equilibrium-centered linear, cause and effect view of a predictive science that resources are in fact manageable and yields predictable,[586] is often responsible for the accumulation of increasingly unpredictable perturbations. The quota system is a classic equilibrium-centered management tool which is based on the premise that populations tend toward some carrying capacity, and that, at population levels below carrying capacity, they generate a certain harvestable surplus.[587] It is assumed that when enough data is obtained about the distribution of populations, then discrete yield levels maximum sustained yields of fish, animals and plants can be calculated and quotas allocated. Short-term objectives of a stable, constant environment are achieved by regulation and locked in by social infrastructure relying on the relative 'certainty' effected by predictive management. However, Holling emphasizes that parameters of the system defining the existence, size and shape of stability domains depend on a balance of forces that may shift if variability patterns in space and time change.[588] Management strategies designed to keep variables (elements of an ecosystem) away from dangerous neighbouring domains are likely to lead to smaller stability regions whose contraction "can lead to sharp changes because the stability boundary crosses the variables, rather than the reverse."[589] Thus data can be

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[583] Timmerman, *supra*, note 172 at 439.
[584] Holling, *supra*, note 582 at 294.
[585] Timmerman, *supra*, note 172 at 439.
[586] C. Folke & F. Berkes, "Mechanisms that Link Property Rights to Ecological Systems" in Hanna & Manasinghe, *supra*, note 465, 121 at 128.
[587] R.B. Rettig, F. Berkes & E. Pinkerton, "The Future of Fisheries Co-Management: A Multi-Disciplinary Assessment" in Pinkerton, *supra*, note 44, 273 at 274
[588] *Supra*, note 582 at 296.
[589] *Ibid.* Folke and Berkes write, "Instead of allowing smaller perturbations to act on the system, management causes the accumulation of larger perturbations, inviting larger and less predictable feedbacks at a level and scale which may threaten the functional performance of the ecosystem, and thereby the social and economic activities dependent on this performance." For example, nearly half of Yellowstone National

accumulated to test a set of laws, in this case, the law of equilibrium, and applied to achieve the desired objective possible within the predictable parameters of the law: constancy. But these laws are a social construction attempting to *understand* environmental patterns. While thoughts that direct management decisions continue to be preoccupied with the laws, the ecosystem may have evolved into an ecosystem that is qualitatively different and more fragile, at risk of increasingly unpredictable perturbations because the quantitative data would no longer support the law designed to explain it.

The inability of the environment to bounce back from perturbations and the increasing unpredictability of natural forces have moved scientists to rethink equilibrium-centered concepts just as economists had done following puzzling periods of involuntary economic destabilization and recession. Keynes argued in the 1930s that market forces might achieve equilibrium, but at a point too low to achieve the benefits it was supposed to produce.[590] If a government facilitated additional investment, the economy would be 'kick-started,' "possibly up to a new, higher full equilibrium" and lift an economy out of recession.[591] Thus it was recognized that unpredictable market trends were the product of neglecting or resisting the multiple levels of stability. Similarly:

> Many of the unexpected consequences of natural-system management are due to the basic assumption that there is one equilibrium point for the system, while, in fact, there may be a number of alternative points. Sudden perturbations or a long-term policy that ignores the underlying dynamics of the system can cause it to fluctuate wildly and unpredictably. In other words, the real danger is in trying to apply a myth of stability – where nature is perceived to be infinitely benign and homogeneous – to a natural situation where (at the very least) a myth of multiple stability may prove more conducive to understanding.[592]

Drawing from this multi-equilibrium model, in the sense of multiple stability points, with its emphasis on nonlinear causation, it is commonly recognized by conventional

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Park burned down in one major fire in 1988 following a century of fire suppression. *Supra*, note 586 at 128.

[590] Timmerman, *supra*, note 172 at 441.

[591] *Ibid.*

[592] *Ibid.* at 442-3.

managers and scientists that fluctuating patterns in, for example, fish populations are jumps from one equilibrium state to another: from one stability domain to another.[593]

However, assuming "that there are a number of resting points in a system is only slightly more dynamic than assuming that there is only one" [594] and there has emerged within ecological thinking a paradigm shift from a stability-centered concept of equilibrium to a concept of resilience. Resilience treats nature as "*natura naturans* – nature naturing – i.e., nature actively altering and responding in various ways to predictable or unpredictable stresses."[595] More specifically, resilience is the ability of an ecosystem to absorb disturbance while maintaining its structure and patterns of behaviour.[596] Holling, writes that while stability emphasizes equilibrium, low variability and resistance to and absorption of change, resilience emphasizes "the boundary of a stability domain and events far from equilibrium, high variability, and adaptation to change."[597] It is important to note that resilience has been treated in a completely different way by one school of ecology. For example, Dodson *et al.* write, " 'Resilience' describes how quickly a stable equilibrium point or stable cycle is approached through time. Therefore, resilience has meaning only in terms of something that is stable."[598] However, the paradigm shift lies in recognizing resilience as being a characteristic distinct from stability. Folke and Berkes treat resilience within a multi-equilibrium context while distinguishing concepts of stability from the uncertainty characteristic of resilient theories.[599] Timmerman points to the following propositions underlying resilience which radically depart from the framework of stability and multiple stability theories: ecological systems are neither in equilibrium nor disequilibrium; chance is not

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[593] See Holling, *supra*, note 582 at 294-5. He writes "behaviour is discontinuous when variables (i.e. elements of an ecosystem) move from one domain to another because they become attracted to a different equilibrium condition." at 296.
[594] Timmerman, *supra*, note 172 at 444.
[595] *Ibid.*
[596] Berkes, *supra*, note 25 at 122.
[597] *Supra*, note 582 at 297. This thesis will not go into details of the concept of resilience but see *ibid.* and Timmerman, *supra*, note 172 for scientific and philosophical discussions of the concept.
[598] S.I. Dodson, *et al., Ecology* (New York: Oxford University Press, 1998) at 257.
[599] They write that resilience "emphasizes conditions in which disturbances (or perturbations) can flip a system from one equilibrium to another. In this case, the important measure of resilience is the magnitude or scale of disturbance that can be absorbed before the system changes in structure by changing the variables and processes that control behavior." *Supra*, note 586 at 128.

only not expelled, but is often a necessary condition for system maintenance; diversity is welcomed, "not steamrollered"; internal dynamics are ruled not just by the competitive microcosm, but by intermediate and whole system factors – and by chance. [600]

Whether the view is taken that resilience is distinct from a stability-centered concept of equilibrium or distinct from concepts of equilibrium altogether, the shift in thinking can have a profound effect on the implementation of the precautionary principle within a particular context. The most obvious is that the principle would be moved from a predictive framework where the impact of a given activity will be predicted using data accumulated to test a particular set of laws, to an anticipatory framework starting from the assumption that environmental patterns are too complex for the brain to unravel. Within an anticipatory framework, a decision-maker intimately familiar[601] with the ecosystem or ecosystems in question, consciously and unconsciously processes and matches complex probabilistic variables or functions.[602] The information that is the basis for an anticipatory, precautionary decision is drawn from quantitative (if available) *and* qualitative[603] information. The ecosystem maintains its resilience by, *inter alia*, learning from past vulnerabilities and crises to build as a defense "the law of probabilities which it has drawn up for itself and stored as information in the form of species, overall structure, or functional availability."[604] It could be argued that the concept of resilience is merely another cultural construction, or law, and therefore data is being accumulated to test the law, which does not necessarily correspond to environmental patterns. However, implicit

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[600] *Supra*, note 172 at 444.

[601] It is the nature of anticipation that it cannot be simulated on a computer (or information submitted to a central authority) removed from the environmental patterns themselves. Reiterated throughout this thesis is the point that anticipation is a human capacity make possible by thinking within, and responding to feedback from, the environmental patterns themselves. It is a process of trial and error whereby the anticipatory capacities become more accurate following repetitive experience within the environmental patterns.

[602] See Lewis *et al.*, *supra*, note 16 at 108 and chapter three, part 3.2 for a discussion about limbic processes and anticipation.

[603] For example, species distribution, state of the habitat and condition of the stock. Berkes writes that "the qualitative model reveals the direction (increasing/decreasing) in which the population is headed; it does not require the quantitative estimation of the population size itself for making management decisions." Berkes, *supra*, note 25 at 109. See below for more detail on qualitative information.

[604] Timmerman, *supra*, note 172 at 445. He writes, "essential to diagnosing the stability or vulnerability of a particular system is a continuing reference to the historical and possible future contexts within which it operates." Thus this concept emphasizes time as random cyclical interconnection rather than the lineal time framework evident in the 'climax' ecosystem equilibrium model.

in the concept of resilience is that there is no point to which the gathering and interpretation of information is directed towards. It starts from the assumption that environmental processes are inherently uncertain and promotes an anticipatory framework more sensitive to feedback from environmental patterns. Information about the 'relationships between things' drawn from qualitative data can be stored and used when there is a match with a proposed activity and the 'rules' unconsciously extracted that underlie the relationships. In other words, resilience lies within an anticipatory framework to get a more accurate 'feel' for determining whether precaution is warranted.

While it might seem that moving away from predictive[605] management strategies results in a lack of control, the concept or "science" [606] of surprise can be incorporated into a precautionary management framework as a practical guide for achieving anticipatory and adaptive strategies. "Surprise concerns both the natural system and the people who seek to understand causes, to expect behaviours, and to achieve some defined purpose by action."[607] A surprise-oriented precautionary management system must be designed with enough flexibility to allow recovery and renewal in the face of unexpected events.[608] Not only must the system account for the internal structure and potentialities of an ecosystem, but also "the external context of chance and unpredictable impacts must be incorporated."[609] Holling writes:

> Surprises occur when causes turn out to be sharply different than was conceived, when behaviours are profoundly unexpected, and when action produces a result opposite to that intended – in short, when perceived reality departs *qualitatively* from expectation. Expectations develop from two interacting sources: from the metaphors and concepts we evolve to provide order and understanding and from the events we perceive and remember. Experience shapes concepts; concepts, being incomplete, eventually produce surprise; and surprise accumulates to force the development of those concepts.[610]

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[605] This is obviously not to say that predictive tools and strategies may never play a role in effective resilience-oriented management systems.
[606] Folke & Berkes, *supra*, note 586 at 128.
[607] Holling, *supra*, note 582 at 294.
[608] Berkes & Folke, *supra*, note 2 at 11.
[609] Timmerman, *supra*, note 172 at 444.
[610] Original emphasis. *Supra*, note 582 at 294.

Thus, aside from the surprises internally generated within an ecosystem itself, surprises can be sparked by concepts (for example, of 'equilibrium') that have been applied to the natural world but, being a cultural construct, do not match environmental patterns. While predictive science commits a bureaucracy to flattening out anomalies and surprises from the perspective of the concept of stability,[611] the 'science' of surprise is arguably a method of understanding the effect of management strategies and structures on environmental patterns. The key to keeping surprises to a minimum, therefore, is to develop various management frameworks and social institutions appropriate to a particular context[612] that can quickly anticipate, detect and respond to natural and social feedback. Accordingly there must be close links between the resource users and decision-makers[613] to enable information to flow freely between them. People must structure their activities on the basis of uncertainty so that hardship (social, financial, and cultural) will not be used as a reason to postpone measures to prevent environmental degradation. In other words, the precautionary principle would not only be informed by those who participate in a given activity, but would also be a guiding principle for *each* participant's role within a given activity.[614]

One branch of resource management incorporating the 'science' of surprise is adaptive management which provides the basis for an anticipatory framework for the operation of the precautionary principle within science-oriented management regimes. Adaptive management focuses on ecosystem processes rather than ecosystem products.[615]

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[611] Timmerman, *supra*, note 172 at 448.

[612] Although community or in the case of some indigenous societies, clan based management would often be more sensitive to feedback than a bureaucratic framework, developing a variety of frameworks depending on the context including co-management, self-management and centralized management would ensure greater diversity in management tools and techniques.

[613] Ideally, in many circumstances the resource users would be the decision-makers.

[614] For example, in a commercial fishery, ideally scientists would embrace uncertainty for the direction of research and managers embrace uncertainty in the formulation of policies. Commercial fishermen would gear production towards an uncertain fish stock (diversify production, incentives to avoid overcapitalizing). Investors would gear investment towards an uncertain fishery (set up tax structures to absorb loss of production). Retailers would gear sales towards an uncertain fish market (tax incentives to diversify supply, promote sales of 'ecofriendly production methods') and consumers would gear consumption to an uncertain fish supply. Of course, local markets and subsistence fisheries are better able to match production with consumption so that responses (for example finding alternative food sources) to an unhealthy fish stock will be faster.

[615] Berkes, *supra*, note 25 at 178. In other words, relationships between things rather than characteristics of things. See chapters two and three.

This branch is "represented by systems approaches and parts of evolutionary biology that extend the analysis of populations, ecosystems, landscape structures and dynamics, to include the interactions of social systems with natural systems."[616] It uses an approach whereby resource management policies can be treated as 'experiments' from which managers can learn.[617] "Organizations and institutions can 'learn' as individuals do, and hence adaptive management is based on social and institutional learning."[618] Environmental feedback is central to shaping policy, followed by further systematic experimentation to shape subsequent policy.[619] Adaptive management starts from the premise of inherent uncertainty in ecological systems, and seeks to uncover a range of possibilities, rather than making precise predictions from a detailed understanding.[620] This approach includes incorporating into management strategies and structure systems theory, quantum physics,[621] gestalt psychology, and ecology.[622] Thus adaptive management which moulds management thinking and social institutions around the premise of uncertainty using non-lineal, resilience-oriented strategies based on social and institutional feedback learning, can provide the foundations for an anticipatory framework for the operation of the precautionary principle within science-oriented management regimes.

In sum, the conventional predictive science-based approach to management attempts to match culturally constructed laws of nature to environmental patterns. Such an attempt is deemed possible because humans are outside the environmental patterns and can theoretically see the whole picture once enough data is gathered to piece together the workings of the world. As humans are outside the environmental patterns, they are outside the unit being managed and regulation is directed towards controlling the *environment* using a predictive framework. The discrete nature of conventional science-

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[616] Holling, *supra*, note 56 at 346.
[617] Berkes & Folke, *supra*, note 2 at 10.
[618] *Ibid.*
[619] *Ibid.*
[620] E. Pinkerton, "Where Do We Go From Here? The Future of Traditional Ecological Knowledge and Resource Management in Native Communities" in Boothroyd & Sadler, *supra*, note 31,69 at 75.
[621] Pinkerton writes that chaos theory "provides a mathematical basis supporting the central idea of adaptive management, in that it suggests an underlying order and range of possibilities, while exposing the basic unpredictability of an ecosystem." *Ibid.*
[622] Berkes, *supra,* note 25 at 178. See chapter three for a discussion of some of these branches of science.

based management relies on a bureaucratic management structure to process and synthesize vast amounts of qualitative data which is reactive to the impact its policies have on environmental processes. The sophisticated analytic power of the bureaucratic management structure can often present to the manager the data indicating that the system is, in fact, based on multiple stability points; "but the social context continues to drive the bureaucracy toward managing the system as if there were only one such point."[623] Fields such as adaptive management are emerging, however, for the creation of a more anticipatory structure for resource management decisions based on the idea of inherent uncertainty within nature's processes and opening the door for knowledge systems directed towards knowing '*that* X is so'.

5.3 : Part Three - Matching Human Behaviour to Environmental Patterns? – Some Indigenous Management Approaches

> *As indigenous people, we spend a great deal of our time, through all seasons of the year, travelling over, drinking, eating, smelling and living with the ecological system which surrounds us. Aboriginal people often notice very minor changes in quality, odour and vitality long before it becomes obvious to government enforcement agencies, scientists or other observers of the same ecological system.* – Chief Robert Wavey[624]

Indigenous knowledge evolving within the environmental patterns of an area works with the assumption that the human mind cannot understand (and consequently control) the multitude of forces affecting the health of a particular ecosystem. It therefore makes little practical sense to many indigenous fishers and hunters to concentrate on the quantitative concerns of population dynamics among animals.[625] Instead many indigenous knowledge systems, being systems directed towards increasing the potential of survival within an uncertain environment,[626] evolve from the necessity for the society to deal effectively with feedbacks from the environment.[627] This part explores how

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[623] Timmerman, *supra*, note 172 at 448.
[624] Chief Wavey, *supra*, note 346 at 12.
[625] Berkes, *supra*, note 62 at 108.
[626] Scientific knowledge systems are obviously also designed to increase the potential of survival, but arguably within a presumed 'certain' environment once enough data is accumulated to reveal its certainty.
[627] Folke & Berkes, *supra*, note 586 at 127.

information is absorbed into and interpreted within some indigenous management systems and used within an anticipatory framework.

After many generations of living and working *within* the environmental patterns of the area, the Chisasibi Cree have married their fishing practices and society with environmental signals. Berkes argues that Cree fishermen in Chisasibi violate nearly every conservation practice used elsewhere by government managers and yet records going back to the 1930's show that *Coregonus* fisheries in northern Canada have been used sustainably while many of the fisheries regulated by conventional management strategies have been proved unsustainable.[628] He[629] points to the concentration of fishing effort on aggregations of fish, the use of mixed mesh sizes and rotational or pulse-fishing as forms of management practices contradicting conventional practices. To avoid wasting time and effort, subsistence fishers concentrate on spawning or pre-spawning aggregations. He says that pulse fishing, which involves fishing intensively in a productive area for a short length of time and then moving on to another area, seemed to be taking place over two different time scales. Productive areas close to the village would be fished intensively at least once a year while outlying areas would be fished every few years. He argues that the practice optimizes the catch per unit of effort while at the same time, helps to maintain a population of large-sized fish in the system. Berkes points out that within Cree society there was a need of a variety of fish for a variety of purposes[630] and so common fishing practice was to use a mix of gill net mesh sizes. One explanation for observed stock failures under conventional management systems is the reduction of reproductive resilience, by the selective removal of larger fish, in populations in which multiple reproductive year-classes provide an adaptation to an unpredictable environment whereby reproduction may fail in a given year.[631] Berkes argues that the Cree's use of a mix of mesh sizes rather than single large mesh sizes

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[628] *Supra*, note 586 at 106.

[629] Berkes, *supra.* note 25 at 119ff. See also F. Berkes, "Indigenous Knowledge and Resource Management Systems in the Canadian Subarctic" in Berkes & Folke, *supra*, note 2, 98 at 113-118.

[630] For example, fish were needed for different food products, bait and social obligations within community exchange networks.

[631] Berkes, *supra,* note 25 at 119. Conventional management systems may employ restrictions on gillnet mesh size and fishing gear used, minimum fish size, season closures and prohibition of fishing at times and

common to commercial fisheries, appears to help conserve population resilience by thinning populations, thereby leaving a variety of fish sizes at various reproductive stages.[632] The combination of these practices did not develop as discrete management strategies to control the resources. Instead, the diverse practices controlling how people fish which had evolved by trial and error, have been sustainable because social needs are interwoven with the collective and individual knowledge of environmental patterns, enabling the whole system to be more responsive to environmental feedback.[633]

In general, some indigenous knowledge and management systems are built upon many indicators, not isolated components or population dynamics. For example:

> A biologist may see moose and an abundance of a preferred winter food species during a summer moose study and assume that it is excellent winter range. However, the Dene hunter/trapper knows the habits of moose and its use of habitat, sees no evidence of winter feeding (winter droppings, browsed twigs, etc.), and deduces that moose do not use the area in winter because of excessive snow depth, crusted snow, or some other factor.[634]

Tanner[635] points out that when the Mistassini Cree hunter leaves camp, he does not rely merely on the chance that he will meet an animal, nor does he take all his hunting gear to be ready for any kind of animal. Instead, he writes, the process of killing animals must be preceded usually by several days, sometimes up to a year or more, by a process of gathering information about the presence and activities of game animals and their habitats (including other animals) to minimize the catch per unit of effort.[636] The Chisasibi Cree fisher's reading of catch per unit of effort was the key environmental signal monitored; "it shaped the decisions regarding what nets to use, how long to keep fishing, and when

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places when fish are spawning. Catch quotas and maximum sustainable yield calculations based on population dynamics of the stock may also be used. Berkes, *supra*, note 25 at 12.

[632] *Ibid.*

[633] For a discussion on some indigenous conservationist management techniques widespread in Oceania including the use of closed seasons and reservation of particular areas for fishing during bad weather, see Ruddle *et al.*, *supra*, note 343 at 262.

[634] Johnson & Ruttan, *supra*, note 30 at 58.

[635] *Supra*, note 194 at 133.

[636] Riddington writes, "hunters did not travel the bush at random in search of game. The trails they followed were already known to them through dreams. They did not take the lives of animals; rather, they received the gift of life from animals that were known to them." *Supra*, note 105 at 23.

to relocate."[637] Other environmental signals that are taken into account by the Cree are species composition of the fish and animal caught (including size, reproductive condition and body fat) and unusual patterns in distributions and behaviour.[638] Monitoring animal body fat content as an index of health of both the individual animal and the school or herd, is a common practice to groups in the Northwest Territories of Canada, the Inuit of Northern Quebec and Labrador, the Innu of Labrador and the Chisasibi Cree.[639] Monitoring body fat is also a component of seabird management by the Maori of New Zealand.[640] Thus a variety of environmental signals are consciously and unconsciously incorporated into precautionary decision-making within an indigenous management system.

It is misleading to neatly categorize indigenous knowledge as focusing on qualitative observations of populations and environments and science based management as focusing on quantitative aspects. Indigenous hunters and trappers 'traditionally' did and do, of course, observe population numbers[641] and conventional managers may gather qualitative data including species composition and unusual behavioural patterns and distributions. Gunn *et al* suggest that the difference between the two knowledge systems lies more in the organization and recording of the observations, than the type of observation *per se*. "Inuit hunters rarely question observations related by others and do not always ascribe more importance to multiple than single observations: both those characteristics are vital in small social groups and in preparing a hunter for often rare contingencies. The same characteristics are, however, the antithesis of science..."[642] In other words, scientific information normally has to be sufficiently detailed to be repeatable or comparable. Science's overarching search for the predictable behaviour of

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[637] Berkes, *supra*, note 25 at 121.
[638] *Ibid.*
[639] *Ibid.* at 108. See also Circumpolar Report, *supra*, note 27.
[640] *Ibid.* at 180.
[641] Pierre Bighetty cited in Brightman, *supra*, note 114 at 312 described practices early last century near the Prayer River hamlet at High Rock Lake: "Q: Did they used to do that [save beavers] when your dad was trapping?
A: Yeah, they always did that. If it's their land, they know how many beaver they got there. If they left the family alive they know there will be little ones there. Sometimes they leave a [whole] house alone. You know when they shoot beavers, the male comes up first. So they saw the male and once they shot that one they leave the female alone. That's how they knew. That's how they worked."
[642] Cited in Dene Cultural Institute, *supra*, note 31 at 10.

each part within a rationally determined system of laws may encourage scientists to gloss over, or rationalize exceptions simply because they are difficult to quantify. For example:

> The Nunamiut...believe that some decisions wolves make are likely to be foolish, 'inefficient,' or ambiguous of interpretation. In contrast, it appears that biologists and even more so, the wildlife-oriented public, look for 'adaptive' value in most details of animal behaviour. The wolves I observed did many things that Western science normally refers to as anecdotal behaviour, but which the Nunamiut believed contained rather significant information.[643]

Thus, conventional science-based predictive management may draw from quantitative and qualitative information but will interpret the phenomena in terms of a set of laws that are continually tested over time through the accumulation of more data. Quantitative information often takes precedence over qualitative information, however, because it appears more reliable within this predictive framework. Similarly, indigenous systems can use both types of information but may only use quantitative data as one of many factors, carrying little weight when the accumulation of other information consciously or unconsciously contradict it. Thus the type of information is not what determines its use within a particular management regime, but whether it can be organized and recorded to make the information meaningful within a particular management focus.

Often both conventional biologist and local indigenous inhabitants observe environmental signs but their interpretations of the signals themselves differ significantly. Conventional managers are often presented with information by biologists who are trained to seek out the most logical cause and effect for population changes and often focus myopically on, for example, overfishing – a cause that is relatively easy to find evidence to support.[644] As a classic example of equilibrium thinking, often only after the presumed disturbance (overfishing) is removed and the stock fails to rebuild are other

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[643] Boothroyd, *supra*, note 75 at 10.

[644] See for example discussions relating to the collapse of the northern cod fishery: P. Underwood, "To Manage Quotas or Manage Fisheries? The Root Cause of Mismanagement of Canada's Groundfish Fishery" (1995) 18 *Dalhousie L. J.* 37 ; M.Harris, *Lament for an Ocean: The Collapse of the Atlantic Cod Fishery. A True Crime Story* (Toronto: McClelland and Stewart, 1998); M. Kurlansky, *Cod: A Biography of the Fish that Changed the World* (Toronto: Vintage Canada, 1998); Tsoa, *supra*, note 331.

factors, for example logging and agricultural activities in the watershed, taken into account and perhaps addressed.[645] Many South Pacific indigenous knowledge systems focus on management of the entire catchment area from the top of a watershed to the outer limit of a lagoon[646] and as a consequence, interpret signals in light of the whole ecosystem.[647] Population changes are usually understood within many North American indigenous knowledge systems in terms of multiple causes, which include environmental factors such as the activities of hunters, surface water, availability of the species' food supply, weather, and forest fires, but which also include "notions of animal masters and other beings who control the movement of particular species, and the ease with which the animals may be killed."[648] Local indigenous inhabitants have lived within the environmental patterns long enough to interpret environmental signals in light of an ecosystem's long-term cyclical changes:

> Elders say that any kind of animal moves away for a while but, according to the government, animals are in decline. To the Inuit, they have moved, but not declined...From what I have heard, there used to be lots of walrus here. Now there isn't, but they're not gone. They have just moved...in our community there is a place called Ullikuluk where there hardly used to be any walrus. Now, there are many. The government says they became extinct when really they have just moved.[649]

Information is drawn from collective experience, for example, from narratives and taboos, and individual experience, and combined with observations of unusual patterns to 'know *that* X is so'.[650] There may be many causes along with data to support each 'cause and effect' but by drawing from random probabilities and synthesizing the information within a complex knowledge system, local indigenous people often reach an interpretation that differs from a more simplistic causal interpretation of environmental signals.

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[645] See Pinkerton, *supra*, note 620 at 68.
[646] Cicin-Sain & Knecht, *supra*, note 465 at 106.
[647] See chapter four, part 4.1.
[648] Tanner, *supra*, note 194 at 44.
[649] Freeman, *supra*, note 12 quoting Peter Alogut.
[650] See chapters two and three.

When precautionary tools developed from a conventional predictive management framework fundamentally change indigenous fishing and hunting practices, they compromise the whole indigenous system of which the practices are an important part. Freeman makes the astute observation that:

> In the Arctic, constant levels of take are very rare, a result of natural variation in numbers or availability of the resource due to extant environmental or social reasons. Quotas that, in effect, require a constant level of take impose an alien artificiality upon the actual human/animal relationship. This, in turn, may compromise the social and ideological norms governing the long-term relationship that forms the foundation of indigenous systems of relating to living resources.[651]

He goes on to say that small community quotas for the Alaskan bowhead hunt have resulted in larger, reproductively active, animals being targeted.[652] As Berkes outlines above, this type of selective fishing can adversely affect a species' resilience by leaving the population vulnerable to 'surprises' (the perturbations that have arisen because of management that is directed towards containing variables), sparking unusual environmental patterns. If however, indigenous practices are forced to change their fishing, hunting and conservation practices, their management/social systems built around the practices are less sensitive to feedback. As outlined above, fishing practices are intimately connected with other social practices and beliefs and outside interference with one practice will interfere with the other. The *whole* indigenous knowledge system is what makes interpretation of environmental signals conducive to anticipating the effect of human activities on environmental patterns. The flexibility inherent within some knowledge systems protects them against a certain amount of interference from science based systems but interference with key practices and beliefs is arguably likely to erode indigenous knowledge and society. Thus, "with various culturally inappropriate or irrelevant concepts such as 'wildlife management', terminology such as 'stock' (and)

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[651] Freeman, *supra*, note 45 at 12.

[652] Freeman writes that "since quotas were imposed in 1978, a four-fold increase has occurred in the numbers of sexually mature females landed during spring hunts (when about 75% of the annual catch is taken)." *Ibid.* at 14. Palsson points to some evidence suggesting that quota management results in the erosion of ecological responsibility through 'high-grading' and indiscriminate 'bycatching'. G. Palsson, "Learning by Fishing: Practical Engagement and Environmental Concerns" in Berkes & Folke, *supra*, note 2, 48 at 57.

'harvest', and 'procedures' such as 'total allowable catches' (and) 'quotas', the state management system is a form of intrusion that threatens to crush the 'tried and true', the dynamic, evolving and effective systems of local management and the knowledge that informs (them)."[653]

Some commentators have noted a "remarkable convergence between adaptive management and traditional ecological knowledge and management systems."[654] Berkes notes the similarities in the Cree fishing system which involves; starting from the premise of uncertainty; a mix of trial-and-error, feedback learning and social learning; no dichotomy between research and management; and, to use scientific terms, non-linear and multi-equilibrium thinking to conserve ecosystem resilience.[655] Pinkerton writes that adaptive management is especially appropriate for attempts "to understand large systems over the long term, much as holders of traditional knowledge see phenomena in terms of their exposure to long natural cycles."[656] Berkes also notes the differences such as adaptive management incorporating elements of experimentation, reductionist thinking and the possibility for large management agencies as the subject of social and institutional learning.[657] Notwithstanding the differences between adaptive management and indigenous knowledge/management systems the similarities of the underlying concepts provide common ground for shared understanding of management practices.

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[653] From a keynote address to the International Seminar on Development and Self-Determination Among Indigenous Peoples of the North. Stevenson, *supra,* note 32 at 11. Note that terms such as 'intake' and 'catch' commonly used in management parlance reflect a view of the world where 'resources' are simply waiting to be drawn out of their 'wild' state and productively put to use by humans rather than as gifts attached to responsibilities. See chapter three (3.1 and 3.3.2). For the philosophy of language see chapter two.

[654] Berkes, *supra*, note 25 at 126. See also Pinkerton, *supra*, note 620.

[655] *Ibid.* He writes, "They are used to an unpredictable, ever-changing environment, and they are experts in using resources at different scales of space and time."

[656] *Supra*, note 620 at 75.

[657] *Supra*, note 25 at 126.

Conclusion

While the conventional approach to science-based management operates within a predictive framework for precautionary decision-making, adaptive management can set up the necessary framework for basing precautionary decisions on anticipation of environmental responses. The conventional predictive approach requires the accumulation of quantified data to continually test over time a set of laws constructed to explain phenomena.[658] More accurate predictions are expected to follow when more information is accumulated. Often, however, not only is the accumulation of detailed quantified data unrealistic or grossly cost-ineffective within many ecosystems, but when it is accumulated to support a set of laws (a human construction about environmental patterns), it does not necessarily follow that the information will be an accurate basis on which to predict environmental patterns. An adaptive management regime can provide a framework in which decision-making will be guided by the proposition that there is inherent uncertainty within environmental patterns. Within adaptive management regimes, observations can be recorded and organized in such a way as to accept and use information that would have been considered anecdotal in a predictive framework.[659] Qualitative data derived from a resource user's intimate knowledge of environmental feedback can therefore be worked into precautionary decisions which focus on strengthening an ecosystem's resilience. By treating policies as 'experiments' from which managers can learn,[660] management strategies, and the social institutions depending on their decisions, would need to operate on a flexible basis so that cost-effectiveness would be less of a reason to postpone measures to prevent environmental degradation. The process of trial-and-error, embracing risk, is essential for fine tuning anticipatory capacities by consciously and unconsciously matching changes in

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[658] See Dene Cultural Institute, *supra*, note 31 at 10.
[659] Where, under a predictive framework, exceptions to the laws of nature are rationalized simply because they are difficult to quantify.
[660] Berkes & Folke, *supra*, note 2 at 10.

environmental signals with probable outcomes through individual and collective repetitive experience.

Adaptive management opens the door for a broad-based precautionary principle operating under an anticipatory framework within science-oriented management regimes. Holling *et al.* point out that adaptive management is fundamentally interdisciplinary and concerned with integrative modes of inquiry and multiple sources of evidence.[661] Thus in management regimes where it is necessary to integrate indigenous knowledge systems into a science-oriented management framework to achieve a broad-based precautionary approach to decision-making, the different knowledge-social systems can find common ground and complement the other within an adaptive management framework. In situations where there has been deregulation of fishing rights subject to overriding conservation principles, adaptive management frameworks used by state management authorities can educate science-oriented managers about indigenous practices unfamiliar to conventional science-based regimes. Government bodies would be less likely to interfere on the grounds of conservation when the broader system of indigenous conservation management is understood.

A broad-based precautionary principle is not achieved by simply inserting the products of indigenous knowledge, devoid of its contextual significance. The paradigm shift within science towards resilience can enable science-oriented managers to hold in the same esteem as scientific strategies, indigenous management strategies and the whole social system in which the strategies operate. The whole system is the response to uncertain environmental patterns and therefore extracting specific information would not be adequate to understand the indigenous practices that have evolved to strengthen, or avoid disturbance of, the resilience of a particular ecosystem. The paradigm shift in thinking has forced a reassessment of rigid, equilibrium oriented management tools such as quota systems, and adaptive management can provide the framework in which resilience-oriented tools can replace them. Above all, the shift towards adaptive management can focus management strategies on treating humans within the unit being

[661] *Supra*, note 56 at 346.

managed. Adaptive management recognizes that the strategies themselves generate surprises, that humans are intimately connected with environmental patterns and that information must therefore be gathered about the impact of human behaviour on ecosystems. Instead of gathering detailed information about the population of a fish stock, for example, to determine how much can safely be fished, information about, *inter alia*, social pressures on the fish stocks and habitat can be gathered to set limits on how people fish. Adaptive management offers a new perspective on information gathering and interpretation and the different management focus, and would accommodate both scientific and indigenous knowledge systems for a shared precautionary decision, and limit state interference with the precautionary decisions made under indigenous knowledge systems successfully operating within customary tenure systems.

CHAPTER SIX: THE LEGAL CONTEXT FOR THE IMPLEMENTATION OF A BROAD-BASED PRECAUTIONARY PRINCIPLE

Introduction

Everything in the world has changed except our thinking. – Albert Einstein.[662]

Western international and national legal regimes are struggling to respond to major changes in world order brought about by the empowerment of indigenous societies with a similar mindset that justified the domination of their knowledge system in the first place. In other words, the scientific way of thinking with its self-legitimating belief that it alone is capable of revealing worldly truths beyond the means of more 'undeveloped' or 'primitive' societies continues to squeeze indigenous knowledge issues into western management systems and legal frameworks. The primary means by which indigenous knowledge systems have gained recognition has been through the human rights field: a process which, this chapter argues, assigns to indigenous peoples a consultative role rather than securing a functional role for the use of the knowledge by indigenous peoples within precautionary decision-making. A consultative or participatory role may include specific indigenous knowledge or even some management strategies into precautionary decisions but the process of extracting components of indigenous systems out of context risks distorting the knowledge taken. Reiterated throughout this thesis is the point that indigenous knowledge cannot be understood in isolation; it is the cultural system that surrounds the knowledge process which gives meaning to the knowledge itself. Mere participation does not give an indigenous knowledge system the chance to have its full value applied to precautionary decisions. A functional role, on the other hand, will only be possible when whole indigenous knowledge systems are held in the same esteem as scientific knowledge systems and capable of displacing science where the two systems conflict, if indigenous knowledge has more authority under the circumstances.

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[662] M.W. Zacher, "The Decaying Pillars of the Westphalian Temple: Implications for International Order and Governance" in J.N. Rosenau & E-O. Czempiel, *Governance without Government: Order and Change in World Politics* (Cambridge: Cambridge University Press, 1992) 58 at 58.

Part one explores international approaches to the recognition of indigenous knowledge. Human rights mechanisms are discussed in section one as an existing avenue for directly applying indigenous knowledge to management decisions through the enforcement, in the sense of political pressure, of a precautionary decision against a state. It is argued that using the human rights mechanisms as means for applying indigenous knowledge to management decisions is an expensive, time consuming round about way of playing a decisive role in state precautionary decision-making. While human rights mechanisms are designed to deal with uncertainty and lack of information, they are unsuited to the particular pro-active nature of environmental precautionary approaches where damage to the environment is not yet evident.

The second section explores the way in which the international community formulates its recognition of indigenous knowledge. The section argues that the recognition comes from a human rights perspective as opposed to recognizing the value of the knowledge systems in their own right. Such recognition inhibits the operation of a broad-based precautionary principle by relegating indigenous peoples input of knowledge to a participatory as opposed to a functional role in a precautionary decision-making process.

Part two explores national attempts in Canada and New Zealand to include indigenous knowledge in precautionary decision-making. Rather than looking at specific mechanics of co-management structures, the part provides examples of where indigenous knowledge has achieved to a certain extent a functional role in existing precautionary decision-making structures. Some operational problems inhibiting a functional role evident within other regimes are also explored. A lack of respectful relations between indigenous and government bodies stemming from ignorance of each other's knowledge systems is identified as a root cause of many obstacles facing indigenous knowledge research at the centre of decision-making. The part goes on to argue that even if a broad-based precautionary principle becomes a reality within management regimes, overriding conservation legislation based on the 'scientific way of thinking' can in effect subvert indigenous participation. Means of incorporating indigenous concepts of conservation

within the decision-making process include firstly the broadening of conservation principles in land claims legislation to cover indigenous world-views, and secondly, explicit inclusion of indigenous knowledge in conservation management legislation, both of which are discussed.

6.1 : Part One - The International Context

6.1.1 : Using Human Rights Mechanisms to Give a Voice to Indigenous Peoples for the Implementation of the Precautionary Principle

Human rights mechanisms provide one avenue for indigenous peoples to prompt states into implementing precautionary management strategies. By safeguarding human rights, the mechanisms enable individuals and sometimes peoples to bring environmental concerns to the attention of the international community and gain the sanction for precautionary measures within a given context. There is a definite movement toward the declaration of an environmental human right[663]: a right which would make it easier to bring environmental concerns to bear on states parties within the current rigid human rights regime. To give meaning to a right to the environment, it must be qualified and various commentators and documents have suggested a multitude of possible qualifications, some of the more common being 'clean', 'healthful', 'sound' and 'decent'.[664] The following part will refer to the 'right to a sound environment'. Because no United Nations instrument expressly states the existence of this right, it may exist firstly because it can be derived from existing human rights treaties or because it exists

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[663] Taylor, *supra*, note 270 at 231 and H. Hohmann, *Precautionary Legal Duties and Principles of Modern International Environment Law. The Precautionary Principle: International Environmental Law Between Exploitation and Protection* (London: Graham & Trotman/ Maritinus Nijhoff, 1994) at 38. The UNEP Group of Legal Experts to Examine the Implications of the "Common Concern of Mankind" Concept on Global Environmental Issues noted in a meeting in Malta in December 1990 that the protection of vulnerable groups, such as indigenous populations, "lay at the confluence of environmental protection and human rights protection, suggesting the need for bringing together human and environmental considerations." R.S. Pathak, "The Human Rights System as a Conceptual Framework for Environmental Law" in E.B. Weiss, ed., *Environmental Change and International Law* (Hong Kong: United Nations University Press, 1992), 205 at 221.

[664] Taylor, *supra*, note 270 at 196.

under customary international law as a specific legal norm.[665] Four rights are suggested as capable of being construed as a right to a sound environment: the right to life, the right to health, the right to an adequate standard of living and the right of persons belonging to minorities to enjoy their own culture. However, as long as no specific right to a sound environment enforceable under the right of individual petition has been codified, the potential for success remains limited to extreme cases of environmental degradation.[666] Ultimately, the part demonstrates that the human rights avenue is a cumbersome, indirect way to incorporate indigenous knowledge into precautionary management.

The first of the four common existing human rights relied upon as giving rise to a 'right to a sound environment' is the right to life. According to the *Universal Declaration on Human Rights* (*UDHR*) "Everyone has a right to life, liberty and security of person."[667] It has been argued that respect for the right to life necessarily requires protection of the earth's environment on which humanity's ultimate survival rests.[668] One of the first international documents to make the connection, but stopping short of declaring an independent right was *the Declaration of the United Nations Conference on the Human Environment* (the *Stockholm Declaration*).[669] The *Stockholm Declaration* provides that "[b]oth aspects of man's environment, the natural and the man-made, are essential to his wellbeing and to the enjoyment of basic human rights – even to the right to life itself."[670] Furthermore, principle 1 provides that "[m]an has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and wellbeing, and he bears a solemn responsibility to protect and improve the environment for future and present generations."[671] It is important to

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[665] *Ibid.* at 197.
[666] M.T. Kamminga, "The Precautionary Approach in International Human Rights Law: How It Can Benefit the Environment" in Freestone & Hey, *supra*, note 6,171 at 176.
[667] *Universal Declaration on Human Rights*, 10 December 1948, A/RES/3/217, article 3 [hereinafter *UDHR*]. See also article 6(1) of the *International Covenant on Civil and Political Rights*, 19 December 1966, 6 I.L.M. 386 [hereinafter *ICCPR*]: "Every human being has the inherent right to life. This right shall be protected by law. No one shall be arbitrarily deprived of his life."
[668] Taylor, *supra*, note 270 at 197.
[669] *Declaration of the United Nations Conference on the Human Environment*, 16 June 1972, 11 I.L.M. 1416 [hereinafter *Stockholm Declaration*].
[670] *Ibid.* paragraph 1 of the preamble.
[671] *Ibid.* principle 1.

note that the right to life is not limited to individuals. Both the UN General Assembly[672] and the UN Commission on Human Rights[673] have unequivocally taken the view that not only individuals but also all *peoples* have an inherent right to life.[674]

Invoking the right to life to 'enforce' precautionary decision-making is limited because of the timing and extent of the damage required before the right will be considered violated. For example, environmental concerns were successfully raised under human rights complaints procedures through the invocation of the right to life by a group of indigenous peoples in the *Yanomami Indians* case.[675] The case's importance for the operation of the precautionary principle is limited because in the case, extreme environmental degradation had already occurred to satisfy violation of the right to life. Furthermore, if the right to a sound environment were based on the right to life under article 3 of the *UDHR*,[676] the environmental right would only be violated under circumstances where human life was threatened.[677] "Thus there is no protection against the serious environmental degradation which can occur prior to, or without causing, a threat to human life."[678]

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[672] Resolution 37/189A, of 1982.
[673] Resolutions 1982/7, adopted on 19 February 1982, and 1983/43, adopted on 9 March 1983.
[674] Ramcharan writes that in its resolution 1982/7, "the Commission had expressed its firm conviction that all peoples and all individuals have an inherent right to life, and that the safeguarding of this foremost right is an essential condition for the enjoyment of the entire range of economic, social and cultural, as well as civil and political rights." The statement was repeated in resolution 1983/43. B.G. Ramcharan, "The Right to Life", (1983) 30 *Netherlands International Law Review* 297 at 301.
[675] Res. No. 12/85, Case No. 7615, March 5, 1985, *Annual Report of the Inter-American Commission on Human Rights* 1984-1985, p. 24. Kamminga writes that in the *Yanomami Indians* case, the Inter-American Commission on Human Rights established that the construction of the Trans-Amazonian Highway and the consequent invasion of their territory by settlers had caused epidemics and forced many indigenous people into becoming beggars and prostitutes. Violent conflicts had erupted between indigenous peoples and minors after the discovery of tin and other metals. By reason of the failure of the Government of Brazil to take timely measures on behalf of the group, the Commission concluded that a situation had been produced, resulting in the violation of inter alia the right to life recognized in Article 1 of the *American Declaration on the Rights and Duties of Man*. Kamminga, *supra*, note 666 at 175.
[676] *UDHR, supra*, note 667.
[677] Taylor, *supra*, note 270 at 200.
[678] *Ibid.*

The human right to health[679] is closely connected with the health of the environment and could be interpreted as a right to a sound environment. For example, article 12(1) of the *International Covenant on Economic, Social and Cultural Rights* (*ICES*) provides that "The States Parties to the present Covenant recognise the right of everyone to the enjoyment of the highest attainable standard of physical and mental health."[680] Article 12(2)(b) goes on to say that the "steps to be taken by the States Parties to the present Covenant to achieve the full realisation of this right shall include those necessary for...the improvement of all aspects of environmental and industrial hygiene."[681] Taylor writes that article 12 has not been authoritatively interpreted but that a similar article in the *European Social Charter*[682] has been held to require states to provide "measures aimed...at the prevention of air and water pollution..."[683]

The right to an adequate standard of living may be interpreted as a right to a sound environment but may also import a western bias of modernization and undermine indigenous knowledge, social and management systems at the core of their claim against a state for precautionary action. This right is recognized in Articles 11-12 of the *ICES*, following Article 25(1) of the *UDHR*.[684] Article 11(1) of *ICES* declares:

> The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions.[685]

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[679] "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services." *UDHR, supra,* note 667, art. 25(1).
[680] *International Covenant on Economic, Social and Cultural Rights,* 16 November 1966, 6 I.L.M 360, art. 12(1) [hereinafter *ICES*].
[681] *Ibid.* art. 12(2)(b).
[682] Article 11; "Everyone has the right to benefit from any measures enabling him to enjoy the highest possible standard of health attainable", *European Social Charter* 529 U.N.T.S. 89, art. 11 (cited in *supra*, note 270 at 198).
[683] Taylor, *ibid.* See also the *United Nations Convention on the Rights of the Child,* 20 November 1989, 28 I.L.M. 1448, art. 24 (c) which, Taylor writes, explicitly connects environment and health by requiring States Parties to take appropriate measures "To combat disease and malnutrition, including within the framework of primary health care, through, inter alia, the application of readily available technology and through the provision of adequate nutritious foods and clean drinking-water, taking into consideration the dangers and risks of environmental pollution."
[684] *ICES, supra*, note 680; *UDHR, supra*, note 667.
[685] *ICES, ibid.*

As chapter four has indicated, however, the meaning of an adequate 'standard of living' must be determined with caution. On one hand, an adequate 'standard of living' for an indigenous group may pave the way for strict precautionary measures to prevent degradation of the environment on which the group heavily depends for their existence. On the other hand, 'standard of living' may import assumptions about sustainable development, for example, that industrialization is the path towards sustainable use of the environment by breaking the cycle of poverty within some indigenous communities, and provide little protection against policies that seek to achieve this end.[686] In any event, a right to an adequate standard of living is an ambiguous, value charged measure against which precautionary action may be judged and may ultimately undermine a precautionary decision.

One final right that might import the right to a sound environment is the right of persons belonging to minorities to enjoy their own culture under Article 27 of the *International Covenant on Civil and Political Rights* (ICCPR).[687] In 1994, the Human Rights Committee observed that "culture manifests itself in many forms, including a particular way of life associated with the use of land resources, especially in the case of indigenous peoples. That right may include such traditional activities as fishing or hunting and the right to live in reserves protected by law."[688] The Committee has decided several cases following this approach including *Ominayak and the Lubicon Lake Band* v. *Canada*,[689] and *Kitok* v. *Sweden*.[690] *O.S. et al.* v. *Finland*,[691] is an example of where the

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[686] See chapter four (4.2).

[687] "In those States in which ethnic, religious or linguistic minorities exist, persons belonging to such minorities shall not be denied the right , in community with the other members of their group, to enjoy their own culture, to profess and practise their own religion, or to use their own language." *ICCPR, supra*, note 667 art. 27.

[688] General Comment No. 23(50), adopted April 6, 1994, UN Doc. CCPR/C/21/Rev.1/Add.5. Cited in Kamminga, *supra*, note 666 at 173.

[689] *Ominayak and the Lubicon Lake Band* v. *Canada*, *Annual Report of the Human Rights Committee 1990*, UN Doc.A/45/40, Vol.II, App.A. (1990) [hereinafter *Ominayak Case*]. There the Committee decided that the way of life and the culture of the band had been threatened by land expropriations for the purpose of oil and gas exploration, in a manner incompatible to Article 27. Kamminga, *supra*, note 666 at 174; and D. McGoldrick, "Canadian Indians, Cultural Rights and the Human Rights Committee" (1991) 40 *International and Comparative Law Quarterly* 658 at 660.

[690] *Kitok* v. *Sweden*, No. 197/1985, dec. of July, 1988, UN Doc.A/43/40, p. 1. The case concerned reindeer husbandry which the Committee said could, as an essential element of the culture of an ethnic community, could fall under the protection of Article 27 but decided that the restriction on husbandry was permissible in the circumstances. Kamminga, *supra*, note, 666 174.

Commission was willing to import precautionary measures to prevent environmental degradation because road construction related to a logging program would have a negative impact on the reindeer population in the area. The development would have violated the 'authors' (four Finnish citizens of Sami ethnic origin) right, as members of a minority, to enjoy their own culture and the Commission requested the Finnish Government to "adopt such measures, as appropriate, to prevent irreparable damage to the authors."[692] While three years later the decision was reversed and the application declared inadmissible on the grounds of non-exhaustion of domestic remedies, it nevertheless indicates an important avenue for indigenous peoples' knowledge systems (the whole cultural system) impacting on a state's management structures. While Article 27 has been successfully invoked by persons belonging to indigenous peoples to protect their traditional way of life against activities that degrade the environment,[693] the Article is clearly limited in scope in that it accords rights to individuals rather than to a group or minority.[694]

A right to a sound environment may evolve under customary international law as a specific legal norm by, *inter alia*, coming under the category of a third generation right.[695] Marks argues[696] that a right to a sound environment demonstrates all the features of a third generation human right. Firstly, there has been an elaboration of a specialized body of environmental law. Secondly, there is an "easily identifiable international

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[691] *O.S. et al.* v. *Finland*, No. 431/1990, dec. of March 23, 1994, cited in *ibid.* at 171.
[692] Ibid. Note that in the *Ominayak case*, the Human Rights Commission had, under rule 86 of its rules of procedure, requested Canada, during consideration of the communication, to take interim measures of protection to avoid irreparable damage to the author of the communication and other members of the band. McGoldrick, *supra*, note 689 at 663.
[693] Kamminga, *supra*, note 666 at 173.
[694] McGoldrick, *supra*, note 689 at 659.
[695] Taylor writes that the label of 'third generation rights' comes from Karl Vasak's use of a chronological method to classify groups of rights. "Drawing from the inspiration of three themes of the French Revolution, the first generation is civil and political rights (*liberte*), the second generation is economic, social and cultural rights (*egalite*) and the third generation are the new solidarity rights (*fraternite*). It is suggested that the third generation rights include: "the right to political, economic and cultural self-determination; the right to participate in a benefit from the common heritage of mankind; the right to peace; the right to a healthy environment; and the right to humanitarian relief." *Supra*, note 270 at 201.
[696] S.P. Marks, "Emerging Human Rights: A New Generation for the 1980s?" (1980-81) 33 *Rutgers Law Review* 435 at 442-3.

legislative process." Principle 1 of the *Stockholm Declaration*[697] is cited as an example where the environment is referred to in human rights terms by an international instrument. Article 24 of *The African Charter on Human and People's Rights*[698] and Article 11 of the *Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights*[699] are two more examples. Thirdly, there has been incorporation of the right as a human right within municipal legal systems.[700] Finally, there is a "need for concerted efforts of all social actors."[701] While the categorization of a human right to a sound environment as a third generation right is not persuasive of the right's actual existence at customary international law, it nevertheless contributes to the process by which a right gradually gains the *opinio juris* of the international community.[702] Thus a right to a sound environment is arguably in the process of becoming a recognized human right and may be used to incorporate indigenous knowledge into precautionary decision-making.

"[H]uman rights bodies have gained considerable experience in coping with uncertainty"[703] and therefore have the procedural framework to implement the precautionary principle. Kamminga[704] writes that the purpose of the international

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[697] *Stockholm Declaration, supra,* note 669. In 1977 the OECD Secretariat said, "These various statements [of the *Stockholm Declaration*, including Principle 1] may seem unduly general. Yet they reflect the determination, albeit as yet ill-defined, to associate protection of the human environment with a kind of *new Right of Man to the protection of his environment*." Taylor, *supra*, note 270 at 203. Marks writes, "That text does not state explicitly that there is a human right to a clean and ecologically balanced environment, but it does express the issue in human rights terms. This is typical of the process of the emergence of human rights." Marks, *supra*, note 696 at 443.

[698] "All peoples shall have the right to a general satisfactory environment favourable to their development." *The African Charter on Human and People's Rights,* 20 June 1981, 21 I.L.M. 59, art 24.

[699] "1. Everyone shall have the right to live in a healthy environment and to have access to basic public services.

2. The States Parties shall promote the protection, preservation, and improvement of the environment." *Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights*, 17 November 1988, 28 I.L.M. 156.

[700] Here he writes, "the constitutions of numerous nations and states – for example, Spain, Portugal, Peru, Yugoslavia – have already affirmed it [a right to a healthy environment] expressly. Others less explicit formulations exist in the constitutions of Illinois, Rhode Island, Poland, and Hungary, and other constitutions – those of Greece, Switzerland, Czechoslovakia, the German Democratic Republic, the Peoples Republic of China...Sri Lanka, and Bulgaria – stipulate that the government shall protect the environment." Marks, *supra*, note 696 at 443.

[701] *Ibid.*

[702] Taylor, *supra*, note 270 at 205.

[703] Kamminga, *supra*, note 666 at 176.

[704] *Ibid.* at 176-7.

complaints procedure is to obtain redress for the individual victim, rather than to obtain a criminal conviction of the state complained against. Thus states are obliged to provide evidence that may be used against them because if they become parties to the complaints procedures under for example the *ICCPR*[705] and the American and European Conventions on Human Rights,[706] they have specifically agreed to co-operate with the supervisory bodies. In other words, the burden of proof is not entirely on the applicant.[707] Furthermore, Kamminga says, as a general rule, the level of proof required of the parties is closer to 'a balance of probabilities' than to a standard of 'beyond reasonable doubt'. He writes that the courts are used to dealing with uncertainty because governments often fail to observe the degree of co-operation required of them under the individual complaints procedure. He concludes that the supervisory body may be forced to decide whether a breach has occurred solely on the basis of incomplete information supplied by the applicant. Thus the precautionary approach to decision making is already well entrenched in human rights mechanisms.

In general, however, the complaints procedures of the main human rights treaties were designed to provide *ex post facto* redress for "human rights violations that have actually occurred"[708] contrary to the operation of the precautionary principle. Kamminga writes, "applications anticipating violations that might occur in the future are likely to be declared inadmissible on the grounds that the authors do not meet the requirement of being victims of violations of human rights protected by the convention in question."[709] However, he writes, if it can be demonstrated that there is a 'real risk' of a future

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[705] *ICCPR, supra,* note 667.
[706] *American Convention on Human Rights*, 22 November 1969, 9 I.L.M. 573; *Council of Europe, European Convention on Human Rights, Collected Texts* (1987), p. 3 cited in Kamminga, *ibid.*
[707] For example, the Human Rights Committee provided in *Bleier* v. *Uruguay*, dec. of March 29, 1982, No. 30/1978: "With regard to the burden of proof, this cannot rest alone on the author of the communication, especially considering that the author and State party do not always have equal access to the evidence and that frequently the State party alone has access to relevant information..." Cited in *ibid.* An approach which Kamminga argues approximates a reversal of the burden of proof, has been adopted by the Inter-American Commission on Human Rights (see Article 42 of the *Regulations of the Inter-American Commission on Human Rights*) and the Inter-American Court of Human Rights (see for example, *Velasquez Rodriguez*, judgement of July 29, 1988, *Inter-American Yearbook on Human Rights* (1988), pp. 970-974, paras. 147-148.)
[708] *Ibid.* at 180.
[709] *Ibid.*

violation resulting in serious, irreparable harm,[710] such complaints may be admissible and in urgent cases, interim measures may be ordered.[711] While provisional measures ordered by the Inter-American Court of Human Rights are binding, those ordered by other bodies[712] are probably not binding.[713] Thus it would be difficult to argue that precautionary measures must be taken unless it can be proven that there has been serious, irreparable harm to an individual's culture or life, and even then, it would be difficult to hold the state to the precautionary measures.

In sum, while human rights mechanisms may be useful for the enforcement of precautionary measures where no other avenue exists, it is a roundabout, often cumbersome way to give indigenous peoples a voice in the implementation of the precautionary principle.[714] The human rights avenue does not address the question of what type of knowledge should be used to assess the claim that precaution is warranted. Without specific guidelines, arguably the western human rights bodies might favour scientific criteria which can be verified and more easily justified as the basis of a particular decision. The parties must voluntarily enter into the complaints procedure and the decisions are often not binding, meaning there is wide scope for a state to avoid the precautionary measures when such measures are not cost effective.[715] A further drawback

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[710] Kamminga notes two broad categories of case that can be distinguished from the rule. The first concerns complaints in which the petitioners allege "to be running the risk of becoming a victim of the application of an existing piece of legislation or an existing policy. Complaints declared admissible in this category were directed *inter alia* against laws and practices discriminating against homosexuals, illegitimate children and unmarried mothers." The second category consists of cases "in which applicants claim to be risking cruel, inhuman or degrading treatment if they are deported, extradited or expelled to another state." *Ibid.* at 181.

[711] See *O.S. et al.* v. *Finland*, *supra*, note 691. The supervisory bodies established under the *American Convention on Human Rights*, the *European Convention on Human Rights*, and the *ICCPR* are all entitled to request states to apply interim measures. See *ibid.* 182 for the relevant rules of procedure.

[712] For example the Human Rights Committee, the European Commission and the European Court of Human Rights.

[713] *Ibid.* at 184.

[714] But note that linking environmental rights to human rights may drive home the idea that humans and the earth are interconnected and encourage a shift in human/non-human relations. Taylor notes raising the awareness of the importance of a sound environment, in general, may encourage in all areas of law, politics and policy a "shifting of the burden of proof from the need to prove that acts cause environmental harm to the need to prove that acts do not cause environmental harm." *Supra*, note 270 at 216.

[715] International human rights law has distinctly considered that "an international system for the 'supervision' of States' compliance with international human rights obligations is sufficient to satisfy the requirement of 'enforceability'." A.A. Cancado Trindade, "The Contribution of International Human Rights Law to Environmental Protection, with Special Reference to Global Environmental Change" in

for employing the human rights avenue for indigenous voices in precautionary policy making stems from the "individualistic bias of prevailing paradigms of human rights".[716] Modern understandings of human rights persist with the view of the individual person as being "separate from and endowed with inalienable rights held primarily in relation to society, and especially the state".[717] Indigenous people by virtue of membership in the group hold indigenous knowledge, and human rights theorists have been reluctant to recognize collective rights as authentic human rights.[718] In light of the fact that the precautionary principle is a guiding principle for policy rather than a normative rule, the human rights avenue is limited because precautionary measures demanded by indigenous people are secondary to human rights issues. Furthermore, a human rights approach where indigenous issues are only brought to the attention of the international community when there has been an abuse of power may marginalize indigenous knowledge systems by its association with paternalistic mechanisms for redress.

6.1.2: International Instruments Calling for Recognition of Indigenous Knowledge

Most international instruments addressing indigenous knowledge come from a human rights perspective.[719] However, to achieve a functional role for indigenous knowledge systems[720] within the precautionary principle, international recognition of the systems must move away from the paternalistic approach of protection as a human rights issue and towards a positive recognition of the their value *in their own right*. By arguing that indigenous knowledge systems should be recognized as valuable systems in their own right, this part does not seek to artificially separate humans, their rights and the

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Weiss, *supra*, note 663, 244 at 303. But note that international awareness and condemnation can be "potent forces from the perspectives of both prevention and enforcement." Taylor, *supra*, note 270 at 217.

[716] A.R. Chapman, "Human Rights Implications of Indigenous People's Intellectual Property Rights" in T. Greaves, ed., *Intellectual Property Rights for Indigenous Peoples: A Sourcebook* (Oklahoma City: Society for Applied Anthropology, 1994) 211 at 212.

[717] *Ibid.*

[718] *Ibid.* Except perhaps for the right to life (see above). Note that cultural rights are still challenged in a field dominated by concerns over civil and political rights.

[719] For example Article 27 of the *ICCPR*, *supra*, note 667 provides that, "[i]n those States in which ethnic, religious or linguistic minorities exist, persons belonging to such minorities shall not be denied the right, in community with the other members of their group, to enjoy their own culture, to profess and practice their own religion, or to use their own language."

[720] Including management, judicial, economic, religious systems.

cultural institutions they have created. Rather, it is an attempt to move *beyond* restrictive human rights mechanisms for the implementation of indigenous knowledge systems into state or local policy. In other words, valuing the indigenous systems in their own right would help give them the weight, by way of international sanction, to be held in the same esteem as scientific systems and the capacity to displace those systems under circumstances where indigenous systems have the greater authority. The goal for the role of indigenous knowledge within the precautionary principle is not simply to insert indigenous knowledge about a particular species, for example, into a science-based management regime. Nor is the goal to be consulted when implementation of the principle affects indigenous communities. Rather, the goal is to provide international support for a functional role in which the *whole* knowledge system can inform precautionary management in concert with other state and local management regimes. Several attempts that have to some extent achieved this goal are explored later in the section.

The 1980 World Conservation Strategy[721] was one of the catalysts to spark the international surge of interest in traditional knowledge.[722] It suggested that part of the means to achieve sustainable development is to recognize traditional knowledge as an important source of ecological information and to involve local people directly in the management of local resources.[723] Since then, there has been 'world-wide' exploration of indigenous knowledge systems including within several international initiatives undertaken through the United Nations system[724] and a strengthening of a global network of indigenous knowledge resource centers focusing mostly on agriculture and sustainable development.[725]

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[721] Developed by the IUCN, UNEP, UNESCO, WWF and FAO.
[722] Dene Cultural Institute, *supra*, note 31 at 7.
[723] *Ibid.*
[724] Berkes writes that one was UNESCO's program in traditional management systems in coastal marine areas. A second was UNESCO's Man and the Biosphere (MAB) Program, part of which resulted in scientific investigations of traditional systems. "A third was the work undertaken by the United Nations Research Institute for Social Development (UNRISD), which included an examination of the role of indigenous knowledge in the context of participatory management, for example, in protected areas." Berkes, *supra*, note 25 at 18.
[725] See *ibid.* at 18-19 for a list of the global network of twenty-seven national centers as of 1998.

Indigenous issues featured prominently in the *United Nations Conference on Environment and Development* (*UNCED*)[726] discussions and agreements[727] alongside the principles of sustainable development but by coming from a human rights angle, prescriptions for a functional role were arguably not achieved. Principle 22 of the *Rio Declaration* provides that:

> Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.[728]

Cicin-Sain and Knecht emphasize three dimensions in the principle that are echoed in other parts of the *UNCED* agreements.[729] The first is recognition of the special knowledge that is vital in development and environmental management. The second is a prescription to states to support this special knowledge and thirdly, a prescription to states to ensure the effective *participation* of indigenous peoples and their communities in the achievement of sustainable development. The latter prescription is wholly dependent on how wide or narrow the definition of sustainable development is going to be construed in each case,[730] and only prescribes participation in any event. Thus the inclusion of indigenous peoples in environmental policy *formation* is not necessarily implied.[731]

Arguably Chapter 26 of *Agenda 21* was drafted from a human rights perspective and in effect, devalues indigenous knowledge systems.[732] The Chapter begins with the statement that "indigenous peoples and their communities shall enjoy the full measure of human rights and fundamental freedoms without hindrance or discrimination," and that

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[726] *UNCED* took place in Rio de Janeiro, Brazil June 3-14, 1992.
[727] There is one reference to 'indigenous' in the *Rio Declaration, supra,* note 9; 166 in *Agenda 21*, 16 June 1992, UN Doc. A/Conf. 151/26, Vol.III (1992); none in the *Climate Change Convention, supra,* note 10; four in the *Biodiversity Convention, supra,* note 10; and five in the *Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests,* 13 June 1992, 31 I.L.M. 881. Cicin-Sain & Knecht, *supra*, note 465 at 114.
[728] *Rio Declaration, supra*, note 9, principle 22.
[729] *Supra*, note 465 at 107.
[730] See chapter four (4.2).
[731] Tunks, *supra*, note 237 at 105.

therefore the implementation of sustainable development policies should "recognize, accommodate, promote, and strengthen the role of indigenous people and their communities".[733] It is to be noted that none of the verbs in this paragraph invite the type of indigenous participation which may displace government policies affecting indigenous communities. Explicitly, by linking rights with participation, and implicitly, by preventing the violation of existing rights to participate, rather than attributing a functional role to participation, the Chapter does not leave room for traditional knowledge to be accepted in its own right as a basis of policy. Furthermore, it seems that to fit within the western idea of 'valid' knowledge, the framers referred to the "holistic traditional *scientific* knowledge of their lands, natural resources, and environment."[734] By implication, the choice of words excludes knowledge that would not fit neatly within a western, science-based decision-making process. Furthermore, to ensure that the rights of indigenous peoples are respected, *Agenda 21* directs governments to:

> [d]evelop or strengthen national arrangements to consult with indigenous people and their communities with a view to reflecting their needs and incorporating their values and traditional and other knowledge and practices in national policies and programmes.[735]

Here, the weaker commitment to consultation, as opposed to collaboration, should be noted. Arguably 'commitment' is intended as a mechanism to avoid infringing existing land and self-determination rights, rather than seriously contemplating that indigenous knowledge should override limited scientific knowledge under specific circumstances. Thus indigenous knowledge is relegated to a participatory, in the sense of consultative, role in relation to scientific knowledge systems and decision-making.

Some of the *UNCED* documents do, however, seek to ensure that indigenous knowledge benefits the knowledge holders which may ultimately facilitate indigenous

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[732] *Agenda 21*, *supra*, note 727 refers to indigenous issues in 24 of the 40 chapters with most references occurring in Chapter 26 dealing with "Strengthening the Role of Major Groups."
[733] *Ibid.* paragraph 26.1
[734] *Ibid.* paragraph 26.1(emphasis added)
[735] *Ibid.* paragraph 26.6(a).

peoples to bring their knowledge systems to joint indigenous-government precautionary decision-making structures. In paragraph 15.4(g) of *Agenda 21*, parties are called to:

> [r]ecognize and foster the traditional methods and the knowledge of indigenous people and their communities, emphasizing the particular role of women, relevant to the conservation of biological diversity and the sustainable use of biological resources, and ensure the opportunity for the participation of those groups in the economic and commercial benefit derived from the use of such traditional methods and knowledge.[736]

'Ensuring the *opportunity* for the *participation*' of indigenous people in economic and commercial benefit derived from the use of indigenous methods and knowledge once again prescribes a weak, participatory role for the protection of the knowledge. There may still be an abuse of knowledge where there is no tangible benefit derived by outsiders from the knowledge *per se* as the Inuit whaling example in chapter three showed, where a romanticized version of the Inuit's ideology was ultimately used against them to ban whaling.[737]

However, a stronger approach for ensuring that indigenous knowledge benefits the knowledge holders is found in Article 8(j) of the *Biodiversity Convention* which provides:

> Subject to its national legislation, [each contracting Party shall] respect, preserve and maintain knowledge, innovations, and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations, and practices.[738]

While intellectual property rights in relation to indigenous knowledge are beyond the scope of this thesis, ensuring that the knowledge benefits the knowledge holders can

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[736] *Ibid.* paragraph 15.4(g) regarding the conservation of biological diversity. See also paragraphs 16.39(a) with respect to biotechnology and 17.82(c) with respect to marine living resources.
[737] See chapter one (1.3) for this point.
[738] *Biodiversity Convention, supra*, note 10.

encourage the functional involvement by indigenous peoples in precautionary decision-making processes.

There are at least three international documents moving beyond the protection of indigenous rights, recognizing that indigenous knowledge, spiritual and management systems should valued as essential systems in their own right. The first is the *Convention (ILO no. 169) Concerning Indigenous and Tribal Peoples in Independent Countries*.[739] With respect to 'resource' use, state parties recognize "the rights of ownership and possession of the peoples concerned over the lands which they traditionally occupy," as well as their right to continue to use the resources on lands which they may not occupy, but "to which they have traditionally had access for their subsistence and traditional activities"[740]. Natural resource rights include "the right of these peoples to participate in the management and conservation of these resources"[741] and the maintenance of traditional land tenure systems.[742] Article 13 provides that in applying these provisions, "governments shall have due regard to the special importance for the cultures of the peoples concerned of their relationships with the lands and territories they occupy, and in particular the collective aspects of this relationship."[743] Thus the Convention goes further than recognizing sustainable traditional uses of resources by referring to the protection of the whole institutional system of indigenous land-tenure law and management.[744]

The second document, while recognizing that indigenous knowledge and management systems should be valued as essential systems in their own right, risks separating management systems from indigenous politico-judicial and economic systems that are the essence of management strategies. The Brundtland Report states that indigenous groups':

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[739] *Convention (ILO no. 169) Concerning Indigenous and Tribal Peoples in Independent Countries*, 27 June 1989, 28 I.L.M. 1382 [hereinafter *Convention no. 169*].
[740] *Ibid.* art. 14.
[741] *Ibid.* art 15.
[742] *Ibid.* art. 17.
[743] *Ibid.* art. 13.
[744] See I. Attridge, ed., *Biodiversity Law and Policy in Canada: Review and Recommendations* (Canadian Institute for Environmental Law and Policy, 1996) at 52.

> own institutions to regulate rights and obligations are crucial for maintaining the harmony with nature and the environmental awareness characteristic of the traditional way of life. Hence the recognition of traditional rights must go hand in hand with measures to protect local institutions that enforce responsibility in resource use. And this recognition must also give local communities a *decisive* voice in the decisions about resource use in their area.[745]

However, the context of this call for recognition of the management systems must be taken into account. The report notes that "[t]hese communities are the repositories of vast accumulations of traditional knowledge and experience that links humanity with its ancient origins."[746] By equating indigenous societies with humanity's ancient origins, the report distinguishes 'traditional' and 'modern' to justify a normative 'development' path whereby societies that deviate from the "European techno-economic standards are designated as 'traditional' or 'primitive' despite the fact that they are contemporaneous with those who label them as such."[747] Thus while the report recognizes that indigenous systems as a whole should be valued as essential systems in their own right,[748] the type of sustainable development it advocates does not seem to recognize that management is intimately linked to every aspect of indigenous society – including how the society chooses to become a 'being in itself'.[749]

The right to self-determination[750] could open the door for indigenous people to freely apply their knowledge systems to their cultural equivalents of the precautionary

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[745] *Supra*, note 514 at 115-6 (emphasis added).
[746] *Ibid.* at 114.
[747] Tucker, *supra*, note 23 at 8. See chapter four, part two which argues that the process of sustainable development articulated by the Brundtland Report emphasizes industrialization as the key to lifting 'developing' nations, including indigenous nations, out of poverty and preventing environmental degradation. In other words, policies should be implemented that create a similar standard of living to that enjoyed by 'developed' nations will encourage a trickle down effect that ultimately safeguards the environment.
[748] The report notes that "(t)heir disappearance is a loss for the larger society, which could learn a great deal from their traditional skills in sustainably managing very complex ecological systems..." Brundtland Report, *supra*, note 514 at 114.
[749] See chapter four, part two.
[750] Article 1(2) of the *Charter of the United Nations*, 26 June 1945, 145 U.K.F.S. 805, [hereinafter *UN Charter*] lists as one of the purposes of the United Nations the principle of self-determination. Article 55 of the UN Charter calls for the promotion of a number of social and economic goals, "[w]ith a view to the creation of conditions of stability and well-being which are necessary for peaceful and friendly relations among nations based on respect for the principle of equal rights and self-determination of peoples." The

principle. The *Draft Declaration on the Rights of Indigenous Peoples (Draft Declaration)*[751] provides for indigenous rights to extend to the right to self-determination and by virtue of that right, allows indigenous peoples to freely determine their own political status and their economic, social and cultural development.[752] Accordingly, the *Draft Declaration* proposes to recognize *inter alia* indigenous rights of autonomy and self-government, rights to territory, education, language and cultural property, the right to manifest, practice and teach spiritual and religious traditions, and the right to maintain and develop indigenous economic and social systems.[753] Articles 25 and 26 are particularly relevant to environmental protection and together reflect a basic value held by most indigenous peoples: the natural world is sacred, and indigenous communities are part of the natural world.[754] Article 26 provides:

> Indigenous peoples have the right to own, develop, control and use the lands and territories, including the total environment of the lands, air, waters, coastal seas, sea-ice, flora and fauna and other resources which they have traditionally owned or otherwise occupied or used. This includes the right to the full recognition of their laws, traditions and customs, land-tenure systems and institutions for the development and management of resources, and the right to effective measures by states to prevent any interference with, alienation of or encroachment upon these rights. [755]

ICCPR, *supra* note 667, art 1, and the *ICES*, *supra*, note 680, art. 1.1 provide that "[a]ll peoples have the right of self-determination...[and to]...freely determine their political status and freely pursue their economic, social and cultural development."

[751] Commission on Human Rights, *Draft Declaration on the Rights of Indigenous Peoples*, UN Doc. E/CN.4/Sub.2/1994/2/Add.1 (20 April 1994) [provisional] [hereinafter *Draft Declaration*]. Text in A.P. Morrison, ed., *Justice for Natives: Searching for Common Ground* (Montreal & Kingston: McGill-Queens University Press, 1997).

[752] *Ibid.* art. 3.

[753] P. Macklem, "Normative Dimensions of an Aboriginal Right of Self-Government" (1995) 21 *Queen's Law Journal*, 173 at 201.

[754] Suagee *et al.* write that Article 25 "acknowledges both the spiritual nature of the relationship that indigenous peoples have to their territories and their widely shared belief in responsibility to future generations." They write that article 26 makes it clear that indigenous peoples have human rights to make use of many aspects of the natural world for the good of human communities. D.B. Suagee & C.T. Stearns, "Indigenous Self-Government, Environmental Protection, and the Consent of the Governed: A Tribal Environmental Review Process," (1994) 5 *Colo. J. Int'l Envtl. L. & Pol'y*, 59 at 63.

[755] *Draft Declaration*, *supra*, note 751 art. 26. Article 25 provides that "Indigenous peoples have the right to maintain and strengthen their distinctive spiritual and material relationship with the lands, territories, waters and coastal seas and other resources which they have traditionally owned or otherwise occupied or used, and to uphold their responsibilities to future generations in this regard."

Thus the *Draft Declaration* advocates a 'whole system' context in which indigenous knowledge systems are freely applied to indigenous resource management and their cultural equivalents of the precautionary principle.

It is unclear what the effect of a right to self-determination would have on state precautionary management regimes. Of course, if the *Draft Declaration* is accepted,[756] self-determination could enable indigenous peoples to freely practice their cultural version of the precautionary principle if they choose to implement this right by the establishment of a sovereign and independent state. In other words, achieve external self-determination as one way of implementing the right of self-determination stated in the *Declaration on Principles of International Law Concerning Friendly Relations and Cooperation Among States in Accordance with the Charter of the United Nations* (*Friendly Relations Declaration*).[757] However, the *Friendly Relations Declaration* categorically states that any attempt aimed at the partial or total disruption of national unity, the territorial integrity of a state, or its political independence, is incompatible with the purposes and principles of the *Charter of the United Nations*.[758] An explanatory note accompanying an earlier version of the *Draft Declaration* makes it clear that the right of external self-determination is contingent upon the failure of the state in which indigenous peoples are located to accommodate indigenous aspirations for internal self-determination.[759] In any event, an indigenous people must be recognized as a nation-state

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[756] International law has yet to explicitly extend the right of self-determination to indigenous peoples living within the confines of a nation-state. Macklem, *supra*, note 753 at 199. See the *Declaration on the Granting of Independence to Colonial Territories*, G.A. Res. 1514, UN GAOR, 15th Sess., Supp. No. 16, UN Doc. A/4684 (1960) 66.

[757] *Declaration on Principles of International Law Concerning Friendly Relations and Cooperation Among States in Accordance with the Charter of the United Nations* 24 October 1970, 9 I.L.M. 1292 [hereinafter *Friendly Relations Declaration*], article 5.

[758] *UN Charter*, *supra*, note 750. J. Sanders, "The International Community and Self-Determination" in Morrison, *supra*, note 751, 93 at 95. Sanders writes that in the same resolution, there is a caveat relating to how far this right should extend and an indication of what kind of support the United Nations would give a people seeking to exercise its right to self-determination.

[759] "Internal self-determination includes rights to maintain and promote indigenous cultural difference through independent political institutions." Macklem, *supra*, note 753 at 201-2. The note states, "Once an independent State has been established and recognized, its constituent peoples must try to express their aspirations through the national political system, and not through the creation of new States. This requirement continues unless the national political system becomes so exclusive and non-democratic that it no longer can be said to be 'representing the whole people.' At that point, and if all international and diplomatic measures fail to protect the peoples concerned from the State, they may perhaps be justified in creating a new State for their safety and security." Commission on Human Rights, *Explanatory Note*

by the international community[760] and meet the fundamental characteristics of nationhood[761] to exercise the right to external self-determination rendering internal self-determination the most probable avenue in most cases. Some ways of implementing this right according to the *Friendly Relations Declaration* include; the free association with an independent state; integration with an independent state; and emergence into any other political status freely determined by the peoples.[762] Thus the question of the role of indigenous knowledge systems within state precautionary management regimes comes down to the degree of control by a nation-state over indigenous independent political institutions.[763]

To conclude, the international legal directives on incorporating indigenous knowledge into a country's decision-making structures, assign a participatory role for indigenous people to safeguard their human rights. A participatory or 'consultative' role is inadequate for a broad-based precautionary management regime to receive the full value of indigenous knowledge systems. 'Participation' does not call for any major structural changes to a state's science-based management regime but merely to be open to indigenous knowledge, should it be deemed relevant by scientific knowledge systems. Or more to the point, participation is a requirement to not *appear* to infringe an indigenous person's right to be heard. To achieve a broad-based precautionary principle, the *whole* indigenous knowledge system (including social, spiritual and economic components) must be assigned a *functional* role for the use and protection of a given resource or habitat. A functional role would require governing authorities to recognize and deal with an indigenous knowledge system *in its own right*: as knowledge and

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Concerning the Draft Declaration on the Rights of Indigenous Peoples, U.N. Doc.E/CN.4/Sub.2/1993/26/Add.1 (19 July 1993) para.21 [provisional].

[760] Sanders, *supra*, note 758 at 98.

[761] See for example, the *Declaration by the International NGO Conference on Discrimination Against Indigenous Populations in the Americas*, U.N. Doc. E/Cn/.4/Sub.2/1986/7, which states, "1. Recognition of Indigenous Nations. Indigenous peoples shall be accorded recognition as nations, and proper subjects of international law, provided the people concerned desire to be recognised as a nation and meet the fundamental characteristics of nationhood: namely, (a) Having a permanent population (b) Having a defined territory (c) Having a government (d) Having the ability to enter into relations with other States." Cited in Macklem, *supra*, note 753 at 201.

[762] *Friendly Relations Declaration*, *supra*, note 757 art. 5. Cited in Sanders, *supra*, note 758 at 95.

[763] The various degrees of control exercised by Canadian governments are outlined in part two.

management practices that are equally as valuable as, and capable of displacing, science-based knowledge and management.

6.2 : Part Two - The National Context. Co-Management as a Forum for a Broad-Based Precautionary Principle?

6.2.1 :Introduction

At the national level, nation-states and indigenous peoples can enter into power sharing arrangements to bring together traditional and scientific knowledge, as well as traditional and state resource management methods.[764] This part focuses on co-management arrangements as one option commonly taken in Canada and the South Pacific. Co-management is participatory joint decision-making in which at least two political communities share the management of natural resources by means of a specific institution: it is a way of sharing power and responsibility.[765] The practice of formulating co-management agreements needs to be location-specific, and must incorporate the concerns of all major interest groups associated with the particular ecosystem concerned.[766] Pinkerton[767] writes that sharing responsibility for enhancement of, for example, fish stocks is an excellent starting point for more comprehensive co-management because support from government and community is widespread for such activities. She says that co-management is not simply about new institutions but more fundamentally about the new relationships resulting from them. Therefore, she writes, once the relationship between stakeholders has changed by establishing an area of co-

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[764] M. Klippenstein, "Co-Management: Sharing the Land" in Morrison, *supra*, note 751, 274 at 275.

[765] *Ibid.* Osherenko defines a co management regime as "an institutional arrangement in which government agencies with jurisdiction over resources and user groups enter into an agreement covering a specific geographic region and spelling out: 1) a system of rights and obligations for those interested in the resource; 2) a collection of rules indicating actions that subjects are expected to take under various circumstances; and 3) procedures for making collective decisions affecting the interests of government actors, user organizations, and individual users." L.N. Binder & B. Hanbidge, "Aboriginal People and Resource Co-Management: The Inuvialuit of the Western Arctic and Resource Co-Management Under a Land Claims Settlement" in Inglis, *supra*, note 22, 121 at 123.

[766] Taiepa *et al.*, *supra*, note 348 at 238.

[767] E. Pinkerton, "Introduction: Attaining Better Fisheries Management Through Co-Management – Prospects, Problems, and Propositions" in Pinkerton, *supra*, note 44, 3 at 8.

operation, fostering communication, trust, and willingness to risk innovation, then enlarging co-operation to other management functions becomes easier.

True cooperative management can only take place when the values and systems of management of both parties are able to influence management decisions.[768] Such systems are rare but possible and in sections 6.2.2 and 6.2.3, some Canadian co-management arrangements that have and have not successfully incorporated indigenous knowledge and management systems into research and the decision-making process are discussed. Section 6.2.4 goes on to explore the overriding principles of conservation enacted in legislation in Canada and New Zealand which can displace indigenous knowledge as the basis of a precautionary decision. The problem highlights the point that indigenous knowledge and management systems cannot effectively inform a precautionary decision when operating outside the belief system of the society. In other words, many indigenous societies' belief systems based on the idea that humans are within the unit being conserved and managed, face a serious obstacle in the form of state conservation philosophy that humans are largely outside the unit being managed and conserved. Several options for incorporating indigenous knowledge systems into conservation regimes are focused on, ranging from inserting principles of conservation into land claims agreements and legislation, to explicit language within national conservation legislation requiring indigenous knowledge to be 'taken into account'.

Ultimately, co-management can be considered an interim strategy for indigenous people to secure short-term political and economic gains: it may be a route to community-based development, decentralized decision-making and participatory democracy.[769] To avoid the imposition of western culture over indigenous culture, one option is to consider separate or complementary jurisdiction in which each party has well defined, rather than shared, responsibility.[770] Such a regime could be a community- or clan-based[771] structure in which varying degrees of self-management can be exercised.[772]

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[768] Stevenson, *supra*, note 32 at 13.
[769] *Ibid.* and Pinkerton, *supra*, note 767 at 5.
[770] Stevenson, *ibid.*
[771] See chapter four (4.2).

Under a community-based management regime, there would need to be a "re-emphasis of the government's role from one of 'commander-and-control' to one of service provider, facilitator and partner with the community."[773] Above all, there would need to be a 'lending' or 'delegation' of power by the government to the community.[774] However, in most cases, there would not be a total delegation of power because community systems are intrinsically linked and connected to larger systems.[775] As shown in the following sections, even where there is a delegation of authority, the government is reluctant to give up their overriding power to intervene where principles of conservation appear to be violated.

6.2.2 : Paths for Indigenous Knowledge Systems to Have a Functional Role in Precautionary Decision-Making

The creation of a formal and recognized role for indigenous knowledge and management systems within a precautionary decision-making process often have weak foundations because the institutions are usually initiated as an *ad hoc* solution to a crisis,[776] for example, a severely depleted resource or land claims litigation. This part explores the Canadian experience of the recognition of the functional role of indigenous knowledge in the management of natural resources; from judicial recognition of resource rights, to political recognition by way of agreements, to legislative recognition of land claims agreements.

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[772] See S. Jentoft, "The Community: A Missing Link of Fisheries Management" (2000) 24 *Marine Policy* 53-59.

[773] L.P. Hilderbrand, "Introduction to the Special Issue on Community-Based Coastal Management" (1997) 36 *Ocean and Coastal Management* 1 at 2. See J.P. Ellsworth, L.P. Hilderbrand & E.A. Glover, "Canada's Atlantic Coastal Action Program: A Community-Based Approach to Collective Governance" (1997) 36 *Ocean and Coastal Management* 121 at 137 for a more detailed discussion of the changing role of government experienced under ACAP, a community-based coastal management initiative that has been underway on Canada's east coast since 1991.

[774] Hilderbrandt, *supra*, note 773 at 2.

[775] As James Acheson writes, "even traditional societies are systems within systems". R. Rivera & G.F. Newkirk, "Power from the People: A Documentation of Non-Governmental Organizations' Experience in Community-Based Coastal Resource Management in the Philippines" (1997) 36 *Ocean and Coastal Management* 73 at 86.

[776] Pinkerton, *supra*, note 767 at 5.

Case law in Canada has affirmed the rights of indigenous people to a greater share of conservation decision making and has also recognized that valid conservation concerns are entitled to priority over treaty and aboriginal rights.[777] A detailed discussion relating to land and resource claims is beyond the scope of this thesis. However, a brief discussion of *R.* v. *Sparrow*,[778] *R.* v. *Marshall* no.1[779] and *R.* v. *Marshall* no.2[780] is instructive for highlighting the management implications of recent case law. In 1990, the Supreme Court of Canada, interpreting section 35(1) of the *Constitution Act* of 1982 in *Sparrow* held that there exists a priority Aboriginal right on the defendant's part to fish for subsistence, social or ceremonial purposes.[781] In a six to two decision, the Supreme Court in *R.* v. *Marshall* upheld a priority Treaty right held by Marshall to fish for commercial purposes.[782] Treaty and aboriginal rights can be regulated if the infringement of the right can be justified by showing a valid legislative objective.[783] The various tests to determine validity include:

> Whether the aboriginal group in question has been consulted with respect to the conservation measures being implemented. The aboriginal peoples, with their history of conservation-consciousness and interdependence with natural resources, would surely be expected, at the least, to be informed regarding the determination of an appropriate scheme for the regulation of the fisheries.[784]

One example of a legally justifiable legislative objective given in *R.* v. *Sparrow* and *R.* v. *Marshall* no.1 and no.2 is conservation of the environment and resources but the question of precisely what measures constitute conservation and environmental management is

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[777] See Taiepa *et al.*, *supra*, note 348 at 242.
[778] *R.* v. *Sparrow* [1990] 1 S.C.R. 1075. See Taiepa *et al.*, *ibid.* for a more detailed discussion of *Sparrow* and the management implications.
[779] *R.* v. *Marshall* [1999] 3 S.C.R. 456 [hereinafter *Marshall no. 1* cited to S.C.R.].
[780] *R.* v. *Marshall* [1999] 3 S.C.R. 533 [motion for rehearing and stay] [hereinafter *Marshall no. 2* cited to S.C.R.].
[781] F. G. Cohen, A. Luttermann & A. Bergin, "Comparative Perspectives on Indigenous Rights to Marine Resources in Canada and Australia" in L.K. Kriwoken, *et al.*, *Oceans Law & Policy in the Post-UNCED Era: Australian and Canadian Perspectives* (The Hague: Kluwer Law International, 1996) 389 at 391.
[782] *Marshall no. 1*, *supra*, note 779, and reiterated in *Marshall no. 2*, *supra*, note 780, the Court stated that this right is limited to a right to trade for necessaries and is not a right to trade generally for economic gain.
[783] *R. v. Sparrow*, *supra*, note 778 at 1113.
[784] *Ibid.* at 1119. The court in *R.* v. *Badger* [1996] 1 S.C.R. 771 extended to treaties the justificatory standard developed for aboriginal rights in *R* v. *Sparrow*.

controversial and complex.[785] Nevertheless, the cases have opened the door to the deregulation of fishing rights subject to overriding conservation objectives.[786]

The *Sparrow* decision sparked further developments in co-management regimes both in Canada and abroad. In New Zealand, for example, the principle of a greater share in conservation decision-making by aboriginal peoples whose rights could be overridden by valid conservation concerns have been applied by the New Zealand Courts and the Waitangi Tribunal (1990).[787] A hierarchy of interest in the management of natural resources has resulted, based on the twin concepts of Crown sovereignty and *tino rangatiratanga* (absolute authority).[788] In Canada, several key changes in government approaches to fisheries management resulted from the decision including the Aboriginal Fisheries Co-operative Management Program as a pilot project[789] and the Aboriginal Fisheries Strategy (AFS)[790]. Further negotiation and settlement of Comprehensive Land Claims Agreements and Self-Government Agreements have been effected to avoid the uncertainty and cost of litigation in recognition that indigenous peoples have a functional role in the management of their region's resources.

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[785] Cohen *et al., supra,* note 781 at 392. They write, "The process for justifying regulations for conservation purposes can be extremely complex as there are numerous variables to consider. For example, if fish stocks are depleted in part through habitat destruction caused by industrial activities, is it then justified for the government to limit Aboriginal fishing for the sake of conservation? Is the government not then failing it its duty to protect Aboriginal fishing rights by more effectively regulating industry?" See below for a discussion on the philosophical problems relating to conservation.

[786] It is beyond the scope of this thesis to explore the implications for rights to other types of resources.

[787] Taiepa *et al., supra*, note 348 at 242. For an indepth discussion on the Waitangi Tribunal and Maori claims, see A. Sharp, *Justice and the Maori: The Philosophy and Practice of Maori Claims in New Zealand Since the 1970s* (Auckland, Oxford University Press, 1997). For a discussion on how Maori traditional knowledge was used in the Tribunal hearings see Ruddle, *supra*, note 245.

[788] Taiepa *et al., ibid.*

[789] Under the project, the government and 150 Aboriginal communities across Canada "entered into agreements which involved Aboriginal groups in the management of the fisheries including habitat rehabilitation activities, and assisted all parties in gaining experience in co-management." Cohen *et al., supra*, note 781 at 392.

[790] The AFS, under which the federal Department of Fisheries and Oceans enters into partnerships with Aboriginal communities, is designed to *inter alia* increase indigenous management of a fishery, extending to control over assigning fishing opportunities within the quotas allocated to communities, including licensing, monitoring, reporting and developing fishing plans. *Ibid.* at 393.

Under the co-management regime created by the *Western Arctic (Inuvialuit) Claims Settlement Act*[791] the Inuvialuit have played a strong role in resource management and have taken the lead in management initiatives and decisions.[792] It seemed from the management framework that there would be little deregulation of indigenous fishing and hunting rights (subject to a conservation principle).[793] After all, the power to regulate, allocate, and control public access and Inuvialuit participation rests with the joint Inuvialuit-government Wildlife Management Advisory Councils[794] and Fisheries Joint Management Committee[795], whereas the wholly Inuvialuit bodies, the Hunters and Trappers Committees and the Inuvialuit Game Council, are left with the mandate to provide harvest data and enforce.[796] Nevertheless, experience has shown that traditional knowledge plays a strong part in the Inuvialuit co-management regime, from data collection and general wildlife observation to decision-making, to implementation and enforcement of decisions.[797] The Royal Commission on Aboriginal Peoples writes that co-management boards established through the IFA "have achieved some measure of effectiveness, mainly because of the flexibility of management options and processes set up on the agreement."[798] Thus the Inuvialuit co-management experience offers some lessons about how indigenous knowledge and management systems can have a functional role in decision-making within their region.

The James Bay experience highlights some fundamental problems with incorporating indigenous knowledge systems into present decision-making processes. Anniturvik, a multi-party Hunting, Fishing, and Trapping Coordination Committee was established under Chapter 24 of the *James Bay and Northern Quebec Native Claims*

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[791] *Western Arctic (Inuvialuit) Claims Settlement Act*, S.C. 1984, c. 24 (unrepealed and unconsolidated) often referred to as the Inuvialuit Final Agreement [hereinafter IFA].
[792] Circumpolar Report, *supra*, note 27 at 8.
[793] N.C. Doubleday, "Co-Management Provisions of the Inuvialuit Final Agreement" in Pinkerton, *supra*, note 44, 209 at 221.
[794] The Wildlife Management Advisory Council for the Northwest Territories and the Wildlife Management Advisory Council for the North Slope.
[795] Note that there are two other co-management committees created by the IFA: the Environmental Impact Screening Committee; and the Environmental Impact Review Board.
[796] Doubleday notes that this is mandatory, not an option. She writes, "The weight within the joint management bodies will be on the side of regulation acceptable to government, rather than deregulation of Native harvesting rights." *Ibid.*
[797] Binder *et al.*, *supra*, note 765 at 131.

Settlement Act,[799] to manage the region's resources.[800] The Committee's 17 members represent the Inuit, Cree, Naskapis, provincial and federal governments and the James Bay Development Corporation.[801] Anniturvik has been described as a "white man's institution run by white man's rules" which in effect prevents the 'traditional' fishermen-hunters from participating, limiting representation to articulate, southern-educated people comfortable in committee settings.[802] Language differences have been identified as a major restriction regarding who can be appointed as a representative.[803] RCAP[804] observes that appointees must come from the bilingual aboriginal population because the working language is English. Thus older unilingual hunters, who generally have the most extensive traditional environmental knowledge, the report writes, are effectively prevented from being appointed to the board. The Circumpolar Co-Management workshop of 1995 concluded that non-aboriginal parties within Anniturvik were reluctant to accept Inuit traditional knowledge on an equal level with scientific knowledge in the event that indigenous knowledge even made it to the decision-making table.[805] The most fundamental obstacle facing indigenous knowledge as a basis for decision-making stems from the fact that Anniturvik is only an advisory committee with limited decision-making powers: all decision can be overridden by the provincial or federal governments.[806] Thus

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[798] RCAP *Perspectives, supra*, note 28 at 452-3.

[799] *James Bay and Northern Quebec Native Claims Settlement Act*, S.C. 1976-77, c. 32 (unrepealed and unconsolidated). The James Bay and Northern Quebec Agreement (JBNQA) is found at http://www.inac.gc.ca/pr/info/info14_e.html

[800] Chapter 24 makes provision for training aboriginal conservation officers but as of 1995, only one trainee out of six who had successfully completed the conservation officer course was hired, and only then on a seasonal basis. Circumpolar Report, *supra*, note 27 at 9.

[801] *Ibid.*

[802] F. Berkes, "Co-management and the James Bay Agreement" in Pinkerton, *supra*, note 44, 181at 195. Note that there are few explicit provisions for giving a functional role to indigenous knowledge and management systems under the JBNQA. Two such (albeit relatively weak) provisions include firstly that decision-making bodies "may give due consideration to nine guiding principles, the sixth being "the involvement of the Cree people in the application of this regime."[22.2.4(f)]. Secondly the Coordinating Committee in its operation shall recognize and give due consideration to, *inter alia*, the principle that a minimum of control or regulations shall be applied to Native people. [24.4.38(e)] Berkes argues at 192 that certain elements of the Cree system of management of fish and wildlife harvest are *recognized* in the Agreement, specifically the fishing-hunting territory system and the authority of the Tallyman.

[803] RCAP makes this point of co-management boards in general, including under the JBNQA. RCAP *Perspectives*, *supra*, note 28 at 454.

[804] *Ibid.*

[805] Circumpolar Report, *supra*, note 27 at 10.

[806] Except for those dealing with maximum kill levels for caribou, moose, and black bear. *Ibid.* Note that the James Bay experience is an illustration of the broader concern with co-management that the government participating in Committee deliberations are generally at a low level in their bureaucracy and

even if indigenous knowledge was used as the basis for a precautionary decision, it is unlikely that the ultimate decision-makers would understand or support the information when interpreted and reviewed out of the knowledge system's context.

The James Bay experience showed that lack of legal authority for community-level structures gives such structures little influence on decision-making by indigenous people. According to the Circumpolar Co-management Workshop Report,[807] no community-level structures to represent the Inuit on wildlife management were created under the JBNQA. Nevertheless, Anguvigaq Wildlife Management Inc. was established to provide the Inuit with a direct role in managing their resources at the community and regional levels.[808] The Report concluded that government agencies did not work effectively with Anguvigaq because it had no legal basis under JBNQA and political and financial problems resulted[809], ultimately causing its dissolution in 1988. Another attempt to establish a community-based organization has since been made. It has been argued that legal co-management agreements and committees do not always "succeed in obtaining community involvement or incorporating traditional knowledge in decision making" while on the other hand, some informal co-management structures achieve a high level of community involvement.[810] In this case, however, lack of legal authority for community-level structures has been a major impediment for indigenous knowledge systems entering the decision-making process.

Coming to an effective precautionary decision is difficult, if not impossible, when the minds of the decision-makers do not meet on the basic terms of the purpose of a particular decision and how it should be made. The RCAP Report[811] argues that the problems experienced by co-management boards stem from the fact that the Aboriginal

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have little autonomy. "Indeed, most present co-management institutions only have an advisory function, so that the concerned minister is under no obligation to implement their recommendations. This indicates a lack of real power in the co-management structure." Klippenstein, *supra*, note 764 at 277.

[807] Circumpolar Report, *supra*, note 27 at 10.

[808] The federal and provincial governments have no obligation to provide funding so it was provided by the Makivik Corporation and the Kativik Regional Government.

[809] For example, the Report states, there was no basis for enforcing Anguvigaq's decisions other than using traditional enforcement practices.

[810] *Ibid.* at 27.

[811] RCAP *Perspectives, supra*, note 28 at 452.

groups and the government continue to have very different understandings and expectations "about what environmental assessment regimes are intended to achieve." The major failure of the regimes, the Report argues, is that they provide insufficient direction regarding criteria and standards for approving or rejecting proposed development projects. For example, the Report observes:

> terminology such as 'wildlife management', 'census' and 'population' are central concepts that guide decision making. It is questionable whether all co-management board members share the same understanding of these basic concepts. For example, the term 'wildlife' reflects a perspective on the relationship between people and animals that is rooted in agrarian and urban ways of life. The term cannot be translated directly into aboriginal languages. Hence, there is a need to negotiate the meanings of these concepts so that harvesters and the scientific community can communicate and manage more effectively. The integration of scientific knowledge and traditional environmental knowledge should be at the core of co-management. Negotiation and integration are beginning to occur only now, however.[812]

Furthermore, the decision-making process itself is understood as being on fundamentally different bases. Government bodies will often want to move quickly when presented with a particular problem while First Nation members will usually want to consult with their community.[813] Related to this is the importance of consensus decision-making. In a study of James Bay coordinating committee, it was found that the rotating chairmanship operated by consensus when with the Cree party and therefore decisions were made more slowly.[814] When the chairperson was non-aboriginal, decisions were made more quickly by the use of a majority vote, but dissatisfaction resulted among certain members.[815]

6.2.3 : Strengthening the Role of Indigenous Knowledge and Management Systems in Research

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[812] *Ibid.* at 454.
[813] Klippenstein, *supra*, note 764 at 297. See chapter two.
[814] Berkes, *supra*, note 802 at 195.
[815] Klippenstein, *supra*, note 764 at 279. Berkes notes that "when issues were settled by forcing a vote, many more resolutions were passed more quickly, only to be ignored later at the level of the minister." *Ibid.*

Research informs management decisions and so a community involved in research is involved in decision-making.[816] The problem is the lack of respect for traditional knowledge evident among some scientists and government agencies, and scientific knowledge which often takes precedence over traditional knowledge.[817] In a classic 'catch 22', funding research on indigenous knowledge is often given a low priority because such knowledge has not been given the chance to 'prove' itself. To 'prove' itself, indigenous people must bring it into the western hierarchy of knowledge[818] and for this, they need funding not available from economies based on their existing way of life. The following section highlights this 'catch-22' and how indigenous communities can help each other to 'prove' the value of indigenous knowledge in precautionary management regimes.

A major weakness in the James Bay experience is that there are no specific funds available for research or for implementing co-management decisions: "The funding available is provided by the provincial and federal governments for secretariat operations. The individual parties are responsible for the participation costs of their representatives."[819] By implication, this means that government representatives will have greater resources at their disposal to carry out research and present detailed scientific information to the board while indigenous representatives will incur a financial burden at an individual or community level, making it harder to present indigenous knowledge to the board. Thus lack of funding is often a major obstacle to bringing indigenous knowledge to the decision-making table.[820]

Other co-management regimes have, however, empowered indigenous locals with specific research functions. The Circumpolar Workshop Report states that under the various regimes, scientific "researchers are required to consult local people and incorporate traditional knowledge when conducting research projects, and research

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[816] Circumpolar Report, *supra*, note 27 at 43.
[817] *Ibid.* at 34.
[818] See chapter two.
[819] *Ibid.* at 10.
[820] See also Taiepa *et al.*, *supra*, note 348 who argue that lack of funding is a major obstacle to incorporate Maori knowledge systems into research and decision making.

results are used to develop management plans and actions."[821] Whether or not the requirement has been satisfied varies between co-management regimes and between specific projects within the regimes themselves. The Report[822] states that the Nunavut Wildlife Management Board, which controls a $10 million wildlife research trust in addition to other research monies,[823] and the Vuntut Gwich'in Renewable Resource Council both identify research needs and priorities by consultation[824] with the community and regional wildlife organizations. It further states that the communities are responsible for identifying and prioritizing research needs in the Inuvialuit[825] and Gwich'in settlement areas. However, Turpel writes that despite the 1988 Inuvialuit Renewable Resource Conservation and Management Plan committing the Fisheries Joint Management Committee to the principles of incorporating indigenous knowledge and participation, research projects generally continue to be carried out by non-Inuvialuit scientists.[826] Nevertheless, on paper, the door is relatively open for more indigenous participation in research than is the case in earlier co-management regimes.

The New Zealand experience shows that even when legislation opens the door for co-management research arrangements with indigenous people, resistance to indigenous knowledge systems may inhibit the establishment of working relationships.[827] Section 4 of the *Conservation Act*[828] directs the Department of Conservation (DOC) to establish co-management arrangements with the Maori, in accordance with the principles of the treaty

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[821] Circumpolar Report, *supra*, note 27 at 43.
[822] *Ibid.* at 37-43.
[823] Note that Article 5 of the Nunavut Agreement is required to recognize and reflect the principle that, *inter alia*, "there is a need for an effective role for Inuit in all aspects of wildlife management, including research" (article 5.1.2 (h)). A similar provision in relation to marine areas is in paragraph 15.1.1(g). Reproduced in http://www.inac.gc.ca/nunavut/index_e.html
[824] The Vuntut Gwich'in use the term 'consultation' to mean 'consent'. Circumpolar Report, *supra*, note 27 at 41.
[825] Note, however, that out of the five IFA co-management bodies, only the Fisheries Joint Management Committee can undertake its own research directly: the other bodies only advise on their own research priorities. Binder & Hanbridge observe that Inuvialuit user orientation to research conflicts with that of academic and government agencies. "What the Inuvialuit desire is applied rather than pure research." *Supra*, note 765 at 130.
[826] With some exceptions including the collection of data sometimes being undertaken by Inuvialuit hunters, as with the beluga tagging project. M.E. Turpel, "Aboriginal Peoples and Marine Resources: Understanding Rights, Directions for Management" in D. VanderZwaag, ed., *Canadian Ocean Law and Policy* (Ontario: Butterworths Canada, Ltd, 1992) 393 at 417.
[827] Taiepa *et al.*, *supra*, note 348 at 236.
[828] *Conservation Act* [1987] 1 N.Z.S. 259 [hereinafter *Conservation Act*]

of Waitangi.[829] Taiepa *et al.* write that an agreement between the Government and Ngai Tahu[830] which, pending formal ratification by parliament, will return ownership and management of the Titi Islands to Maori, has met considerable opposition from New Zealand's NGOs.[831] Meanwhile, the University of Otago's research team has entered into a "co-management agreement with the Rakiura Maori to research and monitor *titi* (a sea bird) ecology and harvest."[832] Despite indigenous knowledge of the muttonbirders being a major component of the project, Taiepa *et al.* argue that such knowledge is "discounted and not trusted by most of New Zealand society as a basis for conservation management."[833] They write that the emphasis is on the scientific research which *iwi* are effectively excluded from participating in because of the cost 'and a lack of their own scientific capacity' and conclude that "[a]s long as New Zealand society insists on prior scientific research as the basis for conservation management, progress towards truly bicultural co-management initiatives will effectively be stalled."[834]

Research from other groups, however, can often benefit indigenous groups struggling under legal restraints or other impediments to effective participation in precautionary decision-making. For example, throughout the 1980s, the Inuvialuit sought to continue their subsistence hunt of bowhead whales. Under the IFA, section 14(29) gives Inuvialuit priority to marine mammals where a harvestable quota exists with such quotas to be 'set jointly by the Inuvialuit and the Government according to the principles of conservation.'[835] This provision was largely irrelevant while the bowhead stock was

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[829] Berkes, *supra,* note 25 at 173.
[830] The *iwi* (tribe) for the southern three-quarters of Te Wai Pounamu.
[831] They write that of the 22 recognized NGO submissions about the issue, 21 were opposed to the proposal, the authors concluding that organizations "hold little regard for the ability of Maori to manage environmental resources." *Supra*, note 348 at 244. They write that existing co-management agreements have emerged on the west-coast of North Island relating to a system of coastal lakes and a river and two national parks. Furthermore, the main initiatives towards collaboration with Maori by the DOC "involves the establishment of a Kaupapa Atawhai Division to provide guidance on (1) gaining iwi [tribe] involvement in policy and planning process; (2) identifying iwi and runanga (local tribal councils) networks with particular areas of expertise; and (3) strengthening partnership strategies." Thirteen of the fourteen DOC regional conservancies have a Kaupapa Atawhai manager who are nearly all Maori, but they have no formal power to direct DOC policy. *Ibid.* at 240.
[832] Berkes, *supra*, note 25 at 173.
[833] *Supra*, note 188 at 247.
[834] *Ibid.*
[835] Doubleday, *supra*, note 793 at 224.

designated as an 'endangered species' by the international community.[836] However, the research conducted by the Alaska Eskimo Whaling Commission (AEWC) under a co-management agreement regarding bowhead whale management with the U.S. National Oceanic and Atmospheric Administration, has gradually increased awareness as to the sustainability of a bowhead harvest.[837] Freeman writes that under the co-management regime, "the indigenous knowledge of the Inupiaq whalers has been critical in increasing general understanding of the behaviour and population status of bowhead whales in the Chukchi and Beaufort seas."[838] Finally, after a reassessment of the status of bowhead stocks, a harvest quota of one whale for subsistence was achieved with the full support of the Inuvialuit bodies and the Department of Fisheries and Oceans (DFO).[839] Binder *et al.* observe that it was the "users' own kinship and lifestyle contacts with their Alaskan Inupiat cousins that provided the vital knowledge at all stages of harvest, from achieving the quota to hunting the whale."[840]

6.2.4 : Opening the Door for a Functional Role for Indigenous Knowledge and Management Systems within an Overriding Conservation Legislative Regime

While the need for a strong role for indigenous knowledge and management systems within precautionary decision-making has been recognized, such systems within the various co-management regimes are subject to overriding legal conservation principles that may effectively subvert indigenous participation. The following part highlights the clash between indigenous concepts of conservation underlying precautionary decision-making and legislative enactments of the principles of conservation. Inserting conservation principles into land claims legislation is one means of incorporating indigenous concepts of conservation within the decision-making process. Another is the explicit inclusion of indigenous knowledge into conservation management

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[836] *Ibid.*
[837] Freeman, *supra*, note 45 at 13.
[838] *Ibid.* See Freeman, *supra*, note 44 for a detailed discussion of the co-management regime. See also Freeman, *supra*, note 337; Freeman, *supra*, note 12; and chapter three, section 3.3.1.
[839] Binder *et al.*, *supra*, note 186 at 124.
[840] *Ibid.*

legislation. The problem faced by defining indigenous concepts within legislation is discussed by drawing from the experiences of New Zealand's judiciary.

Philosophical differences about the nature of conservation can conceivably inhibit broad-based precautionary decision-making within a co-management structure.[841] For example, Roberts *et al.* write that the conservation ethic adopted by New Zealand's *Conservation Act* involves "the preservation and protection of...resources for the purpose of maintaining their intrinsic values."[842] On the other hand, the "Maori conceptualize humans 'as part of a personified, spiritually imbued 'environmental family.'...Earth's bounty is considered a gift necessitating reciprocity on the part of human users in order to maintain sustainability' and requiring a sense of guardianship (*kaitiaki*)."[843] Roberts *et al.* argue that from the Maori view, the 'preservation' and 'setting aside of land' to meet conservation objectives under the Act based on a human/nature dichotomy "only serves to further alienate all humans, but particularly Maori, from their land, and thus from their *kaitiaki* [guardianship, stewardship] responsibilities."[844] This fundamental difference in philosophy lies at the core of a society's (or for that matter, a person's) understanding of precaution. While a government body within a co-management regime whose understanding of nature leaves humans outside the unit being managed and conserved may *preclude* a given use on the grounds of precaution, an indigenous body understanding humans as existing within environmental patterns may *advocate use* on the grounds of precaution.[845] Unless the fundamental assumptions underlying the concept of conservation is addressed in legislation or judicial decisions, the mandatory requirement that co-management decisions take into account legislatively defined conservation based on western cultural assumptions can inhibit indigenous knowledge systems from informing a precautionary decision.

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[841] Chapter three discusses some different concepts of conservation understood by western and indigenous peoples.
[842] *Conservation Act, supra,* note 828 cited in Berkes, *supra*, note 25 at 172.
[843] Roberts *et al.* cited in *ibid.* See chapter three.
[844] *Ibid.* at 153.
[845] In other words, that precluding human use from a given ecosystem will not protect the ecosystem by reverting it to some pre-contact pristine state but rather, will upset the balance of which human activity, within reasonable limits, is a part. See chapter three, section 3.3.2 and chapter five, part 5.2.

One means of overcoming the subordination of indigenous knowledge systems by the rigid definition of a state's conservation ethic is to allow for different views of conservation within land-claims and self-government agreements. For example, paragraph 24.4.38 of the JBNQA provides that the Coordinating Committee in its operation shall recognize and give due consideration to, *inter alia*, the principle of conservation as defined in the Agreement. Conservation:

> means the pursuit of the optimum natural productivity of all living resources and the protection of the ecological systems of the Territory so as to protect endangered species and to ensure primarily the continuance of the traditional pursuits of the Native people, and secondarily the satisfaction of the needs of non-Native people for sport hunting and fishing.[846]

This provision treats humans as being within the unit being conserved which may assist the application of indigenous knowledge systems to a particular precautionary decision.

Similarly the Nunavut Agreement[847] provides its own definition of conservation as the context in which precautionary management operates. Article 5 on wildlife management recognizes and reflects nine principles including:

> (e) there is a need for an effective system of wildlife management that complements Inuit harvesting rights and priorities, and recognizes Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat;...
>
> (g) the wildlife management system and the exercise of Inuit harvesting rights are governed by and subject to the principles of conservation...[848]

The principles of conservation must be interpreted and applied giving full regard to the principles and objectives outlined in Sections 5.1.2 and 5.1.3 and the rights and obligations set out in Article 5.[849] The principles of conservation are:

> (a) the maintenance of the natural balance of ecological systems within the Nunavut Settlement Area;

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[846] JBNQA, *supra*, note 799, para. 24.1.5.
[847] Nunavut Agreement, *supra*, note 823.
[848] *Ibid.* para. 5.1.2. Para. 5.1.3 outlines the objectives of the Article including the creation of a wildlife management system that is governed by, and implements, principles of conservation (para. 5.1.3 (b)(i)).
[849] *Ibid.* para. 5.1.4.

(b) the protection of wildlife habitat;

(c) the maintenance of vital, healthy, wildlife populations capable of sustaining harvesting needs as defined in this Article; and

(d) the restoration and revitalization of depleted populations of wildlife and wildlife habitat.[850]

Thus while the principles of conservation outlined tend to place humans outside the unit being conserved, the management context in which they are to be interpreted provides an opening for indigenous knowledge systems to inform precautionary decisions based on the assumption that humans are within the unit being conserved.

The *Endangered Species Act* of Nova Scotia[851] provides one of the few attempts in Canada to explicitly incorporate indigenous knowledge into precautionary conservation management regimes. The purpose of the Act is to provide for the protection, designation, recovery and other relevant aspects of conservation of species at risk in the Province, including habitat protection, while recognizing *inter alia*, that the aboriginal peoples of the Province have an important role in conserving species at risk.[852] The precautionary principle must also be recognized in the conservation of species at risk.[853] A Species-at-risk Working Group are obliged to, *inter alia*, list species at risk in the Province;[854] add, delete or change the status of a listed species;[855] and provide advice respecting the conservation and management of species at risk and their habitats.[856] The Group is obliged to base its decisions "upon scientific information *and* traditional knowledge as documented in peer reviewed status reports."[857] Thus the *Endangered*

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[850] *Ibid.* para. 5.1.5.
[851] *Endangered Species Act*, S.N.S. 1998, c. 11
[852] *Ibid.* at s.2(f). Note also that conservation will recognize; (c) the commitment of Government to a national co-operative approach for the conservation of species at risk, as agreed to in the National Accord for the Protection of Species at Risk; and (g) the importance of promoting the purposes of this Act primarily through non-regulatory means such as co-operation, stewardship, education and partnerships instead of punitive measures, including such preventative actions as education, incentives, sustainable management practices and integrated resource management.
[853] *Ibid.* at s. 2(h) "the precautionary principle that a lack of full scientific certainty must not be used as a reason for postponing measures to avoid or minimize the threat of a species at risk in the Province."
[854] *Ibid.* at s. 10(1)(a)
[855] *Ibid.* at s. 10(1)(b)
[856] *Ibid.* at s. 10(1)(e)
[857] *Ibid.* at s. 10(2) (emphasis added)

Species Act 1998 attempts to incorporate indigenous knowledge into a precautionary management regime.

There are several shortcomings apparent, however, within the statute that need to be overcome if indigenous knowledge and management systems are to have an impact on precautionary policy making. Firstly, the brief reference to traditional knowledge does not refer to the whole knowledge/management system. There are no safeguards against information being extracted from the knowledge base, depriving it of contextual meaning, and perhaps using it for political purposes. The decision-making process has a heavy scientific bias given that the members of the Group "shall be persons who are recognized scientific experts in the status and population of biology of plants, animals, other organisms and their habitats or in the conservation biology, ecology and geography of plants, animals and other organisms."[858] Furthermore, implementation of the precautionary principle is guided by section 2(h) where "lack of full *scientific* certainty must not be used as a reason for postponing measures to avoid or minimize the threat of a species at risk in the Province."[859] Thus the statute provides for indigenous knowledge to be incorporated into a scientific framework; to be judged by scientists, using scientific criteria for interpretation and use. Finally, the statute does not address how to proceed when scientific and indigenous knowledge systems come into conflict.[860] While it is encouraging that statutes are starting to explicitly acknowledge the importance of indigenous knowledge systems, to give effect to those systems, greater attention must be paid to how and by whom the indigenous knowledge is to be identified and interpreted and its relationship with scientific knowledge systems.

Legislative definitions of indigenous concepts that are to be incorporated into precautionary decision-making can, however, create major difficulties in interpretation and distort the concepts themselves as the New Zealand experience shows. Section 7(a)

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[858] *Ibid.* at s. 9(4))

[859] *Ibid.* at s. 2(h)(emphasis added)

[860] Except for: "Notwithstanding Section 10, the Minister may on a precautionary basis, regardless of whether the scientific information is available, list endangered or threatened species where, in the opinion of the Minister, there is threat to the survival of the species." *Ibid.* at s.11(1).

of the *Resources Management Act*[861] (*RMA*) provides that all persons exercising functions and powers in relation to managing the use, development and protection of natural and physical resources are required to have particular regard to certain specified matters, including *kaitiakitanga*.[862] Before the 1997 amendment, *kaitiakitanga* was defined in section 2(1) of the *RMA* as:

> The exercise of guardianship; and in relation to a resource, includes the ethic of stewardship based on the nature of the resource itself.[863]

Hayes argues that the Planning Tribunal's decision in *Haddon* v. *Auckland Regional Authority*[864] neglected the spiritual responsibility of *tangata whenua* (indigenous people of the land) when interpreting the concept of *kaitiakitanga*.[865] The New Zealand Coastal Policy Statement, however, states that "an interpretation of kaitiakitanga...must of necessity incorporate the spiritual as well as physical responsibility of tangata whenua."[866] Furthermore, the decisions *in Whakarewarewa Village Charitable Trust* v. *Rotorua District Council*[867] and *Rural Management Ltd.* v. *Banks Peninsula District Council*[868] interpret *kaitiakitanga* as capable of being exercised by non-Maori.[869]

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[861] *Resources Management Act* [1991] 2 N.Z.S. 595 [hereinafter *RMA*]
[862] Hayes, *supra*, note 241 at 894. See chapter three.
[863] *RMA*, *supra*, note 861 at s. 2(1).
[864] *Haddon* v. *Auckland Regional Authority* [1944] N.Z.R.M.A. 49. In that case, the Tribunal recognized *kaitiakitanga* but nevertheless allowed a proposed sand extraction from the seabed three to four kilometres off the coast of Pakiri Beach on the grounds that the activity was well within the principles of sustainable management, the over-arching purpose of the *RMA* under s. 5. Hayes writes, "The Tribunal also commented that the resource was renewable, and that potential for the payment of royalties for further extractions could be of benefit to the hapu." He says that "To suggest that future royalties could be of benefit to the hapu undermines the very foundations of kaitiakitanga, and the aims of the hapu. Tribal taonga and protection of the mana and mauri of those resources cannot be reduced to mere commodities for which royalties are paid. Furthermore, the fact that the resource is renewable does not divorce it from its cultural and spiritual significance." *Supra*, note 241 at 896.
[865] *Ibid.*
[866] Tohe, *supra*, note 386 at 887.
[867] *Whakarewarewa Village Charitable Trust* v. *Rotorua District Council, Planning* Tribunal, W61/94, 25 July 1994. See Hayes, *supra*, note 241 at 896.
[868] *Rural Management Ltd.* v. *Banks Peninsula District Council* [1994] N.Z.R.M.A. 412. See Hayes, *ibid.*
[869] Compare *Te Runanga o Taumarere* v. *Northland Regional Council* [1996] N.Z.R.M.A. 77 where Judge Sheppard noted that "the application of the concept to particular circumstances can be the subject of evidence and submissions...on behalf of those who claim the status of kaitiaki." Cited in *ibid.* at 897.

Following opposition to the statutory definition and interpretation of *kaitiakitanga*,[870] the 1997 amendment to s. 2(1) of the *RMA* redefined the concept as:

> the exercise of guardianship by the tangata whenua of an area in accordance with tikanga Maori in relation to natural and physical resources; and includes the ethics of stewardship.[871]

Hayes writes that the amendment makes it clear that *kaitiakitanga* is only applicable to the exercise of guardianship by *tangata whenua* of an area and that it has "roots deeply embedded in the complex code of tikanga."[872] While interpretations of the Pakeha terms 'guardianship' and 'stewardship' may still distort the indigenous concept, it seems that the amendment is a major step in overcoming the difficulties in the interpretation of *kaitiakitanga* by Pakaha.

Conclusion

Legal statements can only provide the framework for the operation of a broad-based precautionary principle. Institutional reform to accommodate indigenous knowledge in the policy decision-making process along with conceptual reform towards understanding the value of the knowledge itself is critical if the precautionary principle is going to have any teeth as a policy making tool. Nevertheless, international and national legislation can explicitly recognize indigenous knowledge systems as valuable in their own right and capable of displacing scientific knowledge. The whole indigenous knowledge system must be legally recognized, including the spiritual systems, to

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[870] Note that the Waitangi Tribunal, separate to the English style court system, has been set up to hear claims according to Maori cultural terms. For example, "[w]hereas expert Maori witnesses in a court have their testimony translated into English property rights terms – which undermines the Maori claim – in the marae setting of Tribunal hearings, English property terms and other legalistic notions are deemphasized, and the concept of cultural damage correspondingly emphasized. Unlike a formal court setting, no cross-examination of witnesses is conducted, and no opposition witnesses are called." Ruddle, *supra*, note 245 at 114.

[871] *Resource Management Act* [1997] 2 N.Z.S. 976 [amendment].

[872] *Supra*, note 241 at 897-8. Note the following conclusions by Taiepa *et al.*: "While there is legal recognition that the Maori concept of kaitiakitanga should be incorporated into resource management decisions, there is a common view amongst many Pakeha that it is of marginal relevance to contemporary ecological problems. The dilemma is that the concept is still not fully understood by the majority European

safeguard against specific information being extracted simply because it fits within the scientific paradigm.

To achieve a broad-based precautionary principle, decision-makers must develop a respectful working relationship that accepts the differences in world-views surrounding various knowledge systems. Respect for indigenous knowledge is part of a larger problem and cannot of course be rectified by national legislation. Legislation can, however, provide management frameworks and guidelines for research funding that can strengthen the ability of indigenous people to manage themselves according to their own way of life which in time may reveal to people blinded by science's self-legitimating world-view that there are several ways of protecting ecosystems. Perhaps Einstein was being overly pessimistic when he said, "everything in the world has changed except our thinking."[873] The rapid deterioration of the natural world in the recent past has forced many of its inhabitants to consider alternative ways of thinking about humanity's relationship with nature. Indigenous ways of thinking have been seized upon but until they are valued as whole belief systems operating on a different basis from western compartmentalized management regimes and structures, they may simply be applied as the scientific way of thinking in disguise.

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culture. Further, Maori have not been given the opportunities and mechanisms fully to develop and demonstrate its potential application." *Supra*, note 348 at 240.

[873] Introductory quote, Zacher, *supra*, note 662 at 58.

CHAPTER SEVEN: CONCLUSION

A broad-based precautionary principle is essential to precautionary management for several reasons.[874] Firstly, a broad-based precautionary principle helps to ensure the survival of whole culture systems and peoples and is an important step towards self-determination for indigenous peoples. Secondly, it is dangerous to assume that science holds the answers to the ecological crisis facing humanity. It is one knowledge base out of many and the diversity of approaches for guiding human activity in relation to environmental processes ensures that humanity has a range of options and alternatives when managing people to maintain biological diversity. There are whole systems of valuable knowledge neglected by the scientific bias inherent to the present articulations and implementations of the precautionary principle, completely undermining the usefulness of the principle as a guide to effective decision-making. Thirdly, a principle in which both indigenous and scientific knowledge systems are accommodated within a management and social setting would reduce the likelihood of disputes over management practices and increase the likelihood of users following a decision more consistent with their beliefs and practices.

Achieving a broad-based precautionary principle requires more than simply altering the term 'scientific uncertainty' within the dominant legal articulations of the precautionary principle. The scientific bias of the precautionary principle is a way of thinking that is firmly embedded within, *inter alia*, decision-making structures, the organization of knowledge and social institutions, and concepts of conservation, management, and sustainable development. A nation's legal system obviously cannot force decision-makers to think in a certain way. It *can* be used to break down the legal and social barriers preventing the establishment of relationships between scientists and indigenous knowledge holders essential for information exchange and building respect for other knowledge systems. Top-down approaches to the creation of new power sharing arrangements, however, must be accompanied by middle-level and bottom-up

[874] There are of course many other reasons and the discussion here is limited to indigenous knowledge systems as one of many other local user knowledge systems within a broad-based precautionary principle.

initiatives. Middle-level initiatives can include co-management agreements and the creation of new administrative structures such as those emerging in Canada under land claims settlements, as well as restructuring of management regimes towards adaptive management strategies. Bottom-up initiatives include research projects and community action to protect a particular species or habitat. It is the middle-level and bottom-up initiatives that are essential for forging relationships between indigenous and non-indigenous users and managers, the first step towards building a functional role for indigenous knowledge systems within precautionary decision-making structures.

The precautionary principle and the empowerment of indigenous knowledge systems are both evolving under distinct areas of international law which unnecessarily complicates the process of formulating a broad-based precautionary principle. Environmental law primarily deals with the precautionary principle while human rights law primarily deals with indigenous knowledge systems. There is, however, increasing recognition that human rights are interlinked with environmental issues as evidenced by the emerging 'right to a sound environment'. Nevertheless, the right to a sound environment is a tenuous basis on which to link indigenous knowledge systems with the precautionary principle. A better approach is for governments, independent scientific and indigenous knowledge experts, and other indigenous and environmental interest groups represented by Non-Governmental Organizations (NGOs) to meet within the same forum to share information and establish relationships as the basis for a functional role for indigenous knowledge. To a certain extent, there is a recent trend towards bringing people together from environmental and human rights fields. The presence of one hundred and two indigenous groups or groups dealing with indigenous concerns out of the 1,400 NGOs participating in negotiations for the *UNCED* agreements, resulted in a prominent featuring of indigenous issues along side the principles of sustainable development.[875] However, the issues covered, including those relating to indigenous knowledge systems, were couched in a human rights framework, which not only limited the functional role for indigenous knowledge but maintained the distinction between

[875] Cicin-Sain & Knecht, *supra*, note 465 at 107.

environmental and human rights law as forums for the precautionary principle and indigenous knowledge respectively.

There is scope within international human rights mechanisms to ascribe a seemingly functional role for indigenous knowledge in the operation of the precautionary principle if it can be shown that a state has violated an individual's or in some cases, a people's human right. While there is not yet a right to a sound environment recognized by the international community, environmental concerns have been successfully raised under human rights complaints procedures. The right to life, the right to human health, the right to an adequate standard of living and the right of persons belonging to minorities to enjoy their own culture have all been invoked by indigenous peoples to direct a state's decisions affecting a particular environment. However, each has specific requirements to meet before redress for a violation will be ordered and their invocation has commonly been limited to cases of extreme environmental degradation. Although the human rights mechanisms themselves have built-in procedures for dealing with lack of information on which to base a decision and therefore are seemingly equipped to make precautionary decisions relating to the environment, they are designed to provide *ex post facto* redress for "human rights violations that have actually occurred."[876] Applications anticipating violations are likely to be declared inadmissible on the grounds that the applicant does not meet the requirement of being a victim of a violation of human rights protected by the particular convention.[877] While interim orders may be made where there is a 'real risk' of a future violation resulting in serious, irreparable harm, the mechanisms are not an adequate avenue for making a precautionary decision where the threat of environmental degradation might not necessarily constitute a threat to a human right. Furthermore, although a 'people' may raise a violation of the right to life as a ground for protecting an environment, there is a distinct "individualistic bias of prevailing paradigms of human rights"[878] which is a major obstacle for the collective nature of indigenous knowledge and tenure systems. Another drawback is that human rights mechanisms depend on the consent of the parties to the procedures and are an expensive, often drawn out means of

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[876] Kamminga, *supra*, note 666 at 180.
[877] *Ibid.*
[878] Chapman, *supra*, note 716 at 212.

'forcing', in the sense of political pressure, a precautionary decision upon a government when indigenous funds are limited and time is of the essence. Above all, the human rights approach does not directly address the question of what type of knowledge should be used to assess the claim that precaution is warranted in a given situation. Ultimately it is up to the Court or Commission, with its possible western, individualistic bias to apply whatever knowledge it thinks appropriate as the basis for a precautionary decision.

Nevertheless, international legal recognition of indigenous knowledge systems is largely oriented towards their protection as a human rights issue rather than positively recognizing their value *in their own right*, as a system capable of displacing scientific knowledge systems within precautionary decision-making. The agreements that emerged from *UNCED* recognize the role of indigenous *participation* in the achievement of sustainable development. While it is recognized that indigenous knowledge can be useful *when applied to national policies and programmes*, arguably the paragraphs and articles do not recognize indigenous institutions, knowledge and the resulting stewardship practices as a system for management in its own right. If the whole system were valued in its own right, depending on the context, it would not make sense to integrate selected parts of indigenous knowledge into a science-biased system which may harbour inconsistent concepts and lead to ineffective management practices. Valuing the whole system as a basis for precautionary decision-making would ensure little intervention by state management regimes where indigenous groups are exercising essentially self-management. Where co-management arrangements are retained, the understanding that the whole system must be valued as capable of displacing scientific knowledge systems can aid in the communication between science-oriented managers and indigenous managers when both knowledge systems are applied as the basis of a precautionary decision. The ILO's *Convention no. 169*[879] and the *Draft Declaration*[880] embody language indicating that a 'whole systems' functional approach to indigenous knowledge is emerging within the international consciousness. Nevertheless, environmental, trade and industry 'multi-field, interdisciplinary' conventions must go further than assigning a

[879] *Convention no. 169, supra*, note 739.
[880] *Draft Declaration, supra*, note 751.

participatory role to indigenous knowledge systems if a broad-based precautionary principle is to evolve.

For there to be recognition *within* conventions and declarations of the functional role of indigenous knowledge systems, indigenous peoples must be included within the *convention* negotiations and decision-making processes. There is still a reluctance to recognize indigenous nations as 'peoples' because of the rights under international law that may be assigned to the term. Thus the usual route to participation is indirect through either accompanying a state party[881] or having their interests represented by an NGO.[882] If the *Draft Declaration* is accepted as presently drafted, there may be some scope for a functional role for indigenous treaty negotiations although it is unlikely that the final declaration will recognize indigenous populations as 'peoples' under international law.[883] Under the present global political climate, a more immediate means of securing a decisive role for indigenous peoples is by way of NGO representation, organizations which are increasingly becoming involved in conference negotiations.

Regarding Arctic affairs, there is movement towards more "meaningful participation by indigenous organizations in international relations through Permanent Participation status in a regional body", the Arctic Council.[884] The Arctic Council is mandated to oversee and coordinate the four program areas of the Arctic Environmental Protection Strategy[885] which, *inter alia*, provides the opportunity to integrate indigenous

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[881] There may be direct participation within ILO meetings by being a member of labour organization or employee association. See K. Deer, "The Failure of International Law to Assist Indigenous Peoples" in Morrison, *supra*, note 751, 100-105 for an account by a Mohawk from Kahnawake of the problems facing indigenous participation in so called high level talks.

[882] See M.L. Schweitz, "Indigenous Environmental NGO's and International Law: A Reconstruction of Roles and Possibilities" (1993) 27 *U.B.C. L. Rev.* 133-151.

[883] See Sanders, *supra*, note 758.

[884] D. VanderZwaag, ""International Law and Arctic Marine Conservation and Protection: A Slushy, Shifting Seascape" (1997) 9 *Georgetown International Environmental Law Review* 303 at 342. The Arctic Council was created in September 1996 when representatives from Canada, Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden and the United States of America met to sign the Declaration on the Establishment of the Arctic Council. *Ibid.* at 338.

[885] *Ibid.* The four program areas are 1) the Arctic Monitoring and Assessment Program (AMAP) mandated with monitoring and assessing certain contaminants (at 313); 2) the Conservation of Arctic Flora and Fauna (CAFF) which, *inter alia*, regionally implements the Biodiversity Convention and conducts research initiatives in indigenous knowledge (at 318); 3) the Protection of the Arctic Marine Environment (PAME) which can, *inter alia*, "report on the major sources and threats of marine pollution within the Arctic and

peoples and their knowledge into research, conservation strategies and decision-making over pollution and other issues not restricted to the immediate Arctic environment.[886] The mandate of the Arctic Council extends to adopting terms of reference for, and coordinating, a sustainable development program.[887] Thus there is wide scope for implementing a broad-based precautionary principle. However, it is too early to tell the extent to which indigenous peoples and their knowledge systems will attain a functional role in regional decision-making. The three indigenous organizations initially represented in the Arctic Council[888] were not granted voting rights, and the Declaration establishing the Council was careful "not to allow the use of the term 'peoples' to be interpreted as having implications for rights under international law."[889] Nevertheless, a Permanent Participant status for indigenous organizations within a regional body is an essential first step towards indigenous input in regional and international negotiations and decision-making processes.[890]

Of course, international documents, national legislation and case law cannot order science-oriented managers to value whole indigenous systems in their own right but they can create a forum in which relationships can be developed to foster such respect. Case law in Canada and New Zealand has affirmed the rights of indigenous people to a greater

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from outside the region" (at 319); and 4) the Emergency Prevention, Preparedness and Response (EPPR) (at 323).

[886] See *ibid.* at 310-312 for a discussion on the long-range transport of persistent organic pollutants and the effect of global warming on Arctic inhabitants. One of the functions of the Working Group on Protection of the Arctic Marine Environment is to "assess the need for further action or instruments on the international and/or national level to prevent pollution of the Arctic marine environment" (at 319) in recognition of the fact that Arctic conservation is largely ineffective if restricted to the region itself.

[887] *Ibid.* at 338.

[888] The Inuit Circumpolar Conference, the Saami Council and the Association of Indigenous Minorities of the North, Siberia and Far East of the Russian Federation.

[889] *Ibid.* at 342. The indigenous groups have "active participation and full consultation" within the Arctic Council (at 338).

[890] Note that indigenous inputs into other global and regional programs are conspicuous by their absence, particularly when the programs directly affect indigenous societies. See for example D. VanderZwaag and D. MacKinlay, "Towards a Global Forests Convention: Getting out of the Woods and Barking up the Right Tree" in Canadian Council on International Law, *Global Forests and International Environmental Law* (Boston: Kluwer Law International, 1996) for a discussion on, *inter alia*, the *International Tropical Timber Agreement* of 1983, its silence on indigenous rights recognition, and the poor attention it pays to local communities (at 16). The article also discusses the Tropical Forests Action Programme in which forest dwellers and indigenous peoples have typically had no say (at 10). Other conventions cited, such as the *Regional Convention of the Management and Conservation of Forest Natural Ecosystems and the*

share of conservation decision-making. Although litigation is financially draining and initially damaging to relationships between indigenous and non-indigenous peoples, it is an important vehicle for equipping indigenous nations with rights to take to negotiations over power sharing or self-managing arrangements. Once these arrangements are set up and people work together, they can focus on building respectful relationships when they must learn about other knowledge systems within the shared precautionary decision-making structures.

Legislation, for example land claims legislation, is a less socially destabilizing and financially draining avenue for setting up power sharing arrangements under which indigenous knowledge can achieve a functional involvement in precautionary decision-making. Many middle-level initiatives in the form of co-management arrangements between governments and indigenous peoples over a particular region, resource or habitat can become legally recognized, giving the parties the legal authority and freedom to input their own knowledge systems into management structures.

As the Canadian experience has shown, assigning a functional role to indigenous knowledge within precautionary decision-making structures is not achieved simply by setting up through legislation co-management boards, prescribing their composition and allocating responsibility and accountability so that indigenous and non-indigenous people have equal share in decision-making authority. Attention must be paid, for example, to getting indigenous knowledge to the decision-making table in the first place. Where individual parties within a seemingly equal power sharing co-management structure are responsible for their own costs, including providing research to support their particular interest or position, the power balance can shift towards well equipped, well funded government parties. Research informs management decisions and so a community involved in research is involved in decision-making.[891] Funding arrangements backed by legislation can facilitate community research initiatives and distribute power more evenly within shared precautionary decisions. A particular legislative requirement that

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Development of Forestry Plantations, a Central American Agreement, do focus on promoting the participation of indigenous peoples but it is too early to tell the effectiveness of these regimes (at 30).

[891] Circumpolar Report, *supra*, note 27 at 43.

researchers are to consult local peoples and incorporate indigenous knowledge into research projects[892] is not enough for power redistribution. Researchers from outside the knowledge systems risk misuse, misunderstanding or ignorance of the significance of the knowledge they are gathering. Although there are often safeguards to ensure knowledge holders benefit from the use of their knowledge, past abuses of indigenous knowledge have made the knowledge holders wary of releasing it to researchers. Supporting research initiatives by the knowledge holders themselves (the resource users) safeguards against misuse and depriving the information of its contextual significance.

To ensure that the information gathered is appropriately interpreted and applied, the manager and researcher should be the same person, but often a co-management structure inhibits participation from the most experienced knowledge holders by not allowing for cultural differences in decision-making. When the working language of the co-management boards is English, appointees must come from the bilingual aboriginal population, effectively preventing the appointment of older unilingual hunters.[893] Decision-making procedures by way of majority vote and using argumentative processes can further deter older indigenous persons most knowledgeable about the way in which their systems operate but who cannot feel comfortable in this alien setting. Similarly, when consensus decision-making procedures have been invoked, non-indigenous participants have become frustrated and talks have broken down. The different understandings of, and expectations about, decision-making procedures and processes must be thoroughly shared and explored by the parties if indigenous knowledge is to play any role at all within precautionary decision-making.

The differences in decision-making processes are embedded within a particular society's social learning structures. Prior to European contact, many indigenous societies evolved relatively stable, 'closed' societies in which collective knowledge and personal experience combined in an organic process of social and individual learning. Seeing the world through a predominantly verb-based language, many indigenous societies relate to

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[892] *Ibid.*
[893] RCAP *Perspectives, supra*, note 28 at 454.

nature as consisting of 'relationships between things'; where objects and concepts are identified in terms of their use or their relationship to other things in an active process. [894] The only 'truth' in such an inherently uncertain world is personal experience. Survival of people living within nature's processes depends upon their own ability to interpret environmental signals and to finely tune their anticipatory capacities. Narratives not only enriched personal experience through reinforcement of the collective knowledge base, but the communication process also trained people to orient their thinking towards the type of problem solving essential to anticipatory processes: "[b]y the very act of telling stories, narrators explore how their meanings work; by listening, audiences can think about how those meanings apply to their own lives."[895] Because only people's own experience can be relied upon as 'truth' everyone's opinion is listened to and decisions affecting society are made communally by consensus.

Conversely, in a world full of 'characteristics of things', predominantly noun-based languages such as English, complete with value-laden adjectives, can conceive of truths external to the thinker because the world is expressed not so much by descriptions *of* things, but by conclusions *about* things.[896] In this world, it is not difficult to conceive one opinion as right or wrong according to the 'facts', and social *instructional* learning became essential to equipping people to 'get ahead' in such a society. With information constantly flowing through an ever-changing society, western cultures developed low context methods of communication, and the written word evolved to externalize thoughts and social experience for storage, interpretation, and analysis. The accumulation of knowledge was and is beyond the experience of any one individual, and the processing of information was institutionalized according to conventional disciplinary categories.[897] A one-way hierarchical ordering of knowledge with rational thought at the apex, orders the relationships between holders of particular knowledge and decision-makers. Within this order, information that has been consistently argued or verified is likely to prevail over personal experience. Thus decision-making is a process of finding the most reliable

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[894] Joe & Choyce, *supra*, note 50 at 148.
[895] Cruikshank, *supra*, note 111 at 49.
[896] Ross, *supra*, note 99 at 102.
[897] Ridington, *supra*, note 105 at 141.

information over which competing conclusions will be argued until either the majority prevails or the whole group is convinced when consensus is required.

The functional role for indigenous knowledge within shared precautionary decisions is contingent upon the parties negotiating the meanings of concepts that surround resource management. The most basic concept that must be negotiated is 'management' itself. According to the 'scientific way of thinking', *resources* can be managed and science-oriented management systems have evolved largely focusing on 'how much' can be taken from the environment.[898] 'Wildlife' management is an urban perception of untouched land[899] tending to place people outside the unit being managed and focusing on the task of how best to maintain this pristine, untouched state. According to many indigenous beliefs, only *humans* can be managed in relation to the environment and management systems have evolved to regulate 'how' resources (or rather, gifts by non-human persons who have offered themselves up as part of the reciprocal relationship based on norms of respect and exchange) are used.[900] For many indigenous people, there is no 'wilderness', only home[901] and their management strategies are often oriented towards not maintaining a fictitious pristine, untouched state, but to maintaining the relationships, including human relationships, making up the complex web of interdependent processes.

As a corollary, the parties need to negotiate the meaning of 'precautionary' management in the sense of how information about a given order will be interpreted and applied to either predict or anticipate the effect of a given activity on the ecosystem. In other words, the type of framework, anticipatory or predictive, surrounding a precautionary decision must be identified and understood. Many indigenous management systems cannot be isolated from other systems ordering and informing society including spiritual, economic, political, legal and tenure systems. The whole systems have developed through trial-and-error by evolving within environmental

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[898] Berkes, *supra*, note 62 at 107.
[899] Berkes, *supra*, note 25 at 11.
[900] Berkes, *supra*, note 62 at 107.
[901] Deloria, *supra*, note 100 at 91.

patterns, developing infrastructure and social practices which have built-in early warning signals and the flexibility to respond to environmental feedback. The environmental patterns, too complex for logic to unravel are entered into the individual and collective 'data-bases' through *repetitive experience* of conscious and unconscious matching of environmental signals (qualitative information) to probable effects of human activity. Personal anticipatory capacities are enriched by collective experience of environmental signals, and mechanisms such as narrative, rituals and taboos have evolved to store in a culturally significant form information 'that X is so' as an expression of the collective emotional or 'intuitive' response to environmental patterns. Arguably, these narratives, rituals and taboos often internalize precaution so that individual users carry with them the responsibility to continually interpret the signals and match behaviour according to complex rules of respect and exchange with other interdependent entities. The customary tenure system itself ensures that resource users who have rights of access internalize their stewardship responsibilities for the benefit of the whole community, including the non-human members. As each user under the system has an interest in protecting the ecosystem based on their membership in the group, rights can be reordered in response to an anticipated adverse impact of a given activity with relatively little cost to the individual and society. Thus the whole framework is directed towards anticipating the effect of a given activity on the ecosystem: from the social learning structure with its emphasis on developing anticipatory capacities; to the social rules based on, and informing, emotional experiential knowledge; to the social infrastructure detecting and responding to environmental feedback. Thus 'precautionary' management is understood in the sense of 'anticipatory' management.

Conventional science-oriented 'precautionary' management uses predictive frameworks to predict the effect of a given activity on the environment where 'conclusive' information is lacking. It is expected that once enough quantifiable data is accumulated to test a set of laws, predictions will become more accurate. Thus attention is directed towards a detailed understanding of *inter alia* population dynamics and working out why the environmental patterns operate as they do. To determine 'why X is so', rational processes are relied upon to reveal external truths and qualitative information

slips through the threshold of what constitutes reliable and verifiable information. A bureaucracy, supposedly the only entity capable of acquiring all the information necessary to calculate what would constitute the 'greatest good for the greatest number' is committed to the rules of systematic rationality: it cannot be perceived to be taking risks.[902] By seeking to reduce the role of risk for members of society craving certainty on which to order their affairs within an unstable, 'open' social structure, management is directed towards 'creating' certainty in ecosystems, thereby locking in management decisions. Attempting to control environmental patterns has proved futile as the management practices themselves generate perturbations in addition to the natural perturbations, causing an ecosystem to 'flip-flop' into a qualitatively different stability domain.[903] A new set of data would need to be gathered on which to build predictive capacities, if in fact the 'flip-flop' is detected by the predictive framework blinded by its single-minded objective of testing a set of laws rather than structuring observations around environmental patterns themselves. While the precautionary principle is a guide to making decisions where there is a lack of information about the impact of a given activity, a decision-maker will still have to use some information on which to base a decision. Within this predictive framework, a decision-maker will necessarily favour quantifiable information over certain qualitative information and valuable information will never make it to the decision-making table.

Streams of science-oriented management are, however, moving towards an anticipatory framework in which to make precautionary decisions. While in a sense, concepts of resilience could be considered a 'law of nature' constructed by the human mind to be tested with the accumulation of data, the concept represents a paradigm shift in the approach to management. Concepts of resilience are based on the premise that there is inherent uncertainty within environmental patterns, and the human mind and bureaucratic structures are not capable of rationally piecing the patterns together to eventually reveal the internal workings. Instead management should be structured around uncertainty and oriented towards gathering information, qualitative and quantitative, to

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[902] Timmerman, *supra*, note 172 at 448.
[903] Holling, *supra*, note 582 at 297.

uncover a range of possibilities of the effect of a given activity, rather than making precise predictions from a detailed understanding.[904] Environmental feedback is central to shaping policy in adaptive management: [905] a management strategy and structure that has evolved to deal with inherent uncertainty within environmental processes. Incorporated into adaptive management strategies are sciences focusing on 'relationships between things' such as quantum physics, and approaches that recognize the value, even the supremacy of knowing 'that X is so' without 'why'.[906] In other words, ways of thinking about the environment, and humanity's relationship to it using limbic processes (or emotional, experiential responses to the environment), to think within environmental patterns and more accurately anticipate the outcome of a given human activity. Adaptive management treats resource management policies as 'experiments' from which managers can learn.[907] People and their social institutions must be structured around the premise of inherent uncertainty so that risk embracing, trial-and-error strategies and anticipatory precautionary decisions will not be postponed on the grounds of cost-ineffectiveness.

Adaptive management regimes are an important middle ground for science-oriented and indigenous beliefs and practices to meet within a co-management structure. Co-management boards should gear their precautionary decisions towards an anticipatory framework which guides decision-making through environmental feedback rather than through the artificial testing of environmental data within predictive frameworks. Co-management boards operating where few bureaucratic structures have developed are in the position to gear management towards trial-and-error and social learning. For such strategies to be effective there must be devolution of authority from state governing agencies to the users/managers themselves. Thus the language, decision-making, and research restrictions discussed above must be addressed to ensure that older hunters and fishers holding indigenous knowledge can effectively guide the adaptive management structures and strategies. Where possible, customary tenure systems should be strengthened or reinstated if there are enough people with the knowledge to guide their

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[904] Pinkerton, *supra*, note 620 at 75.
[905] Berkes & Folke, *supra*, note 2 at 10.
[906] For example new streams in psychiatry.
[907] *Ibid.*

effective reinstatement. While co-management might be most appropriate as a capacity building mechanism leading eventually to indigenous self-government and self-management, other societies may choose to retain the co-management structure, especially if an adaptive management regime is used to complement indigenous knowledge with scientific resilience-oriented techniques and strategies. Communities are not isolated entities and adaptive management has the potential to link several knowledge systems into similar management goals. Above all, adaptive management operating within an anticipatory framework is the most viable option for establishing a truly broad-based precautionary principle to guide decisions within a variety of contexts and having those decisions observed by the users themselves.

To achieve a broad-based precautionary principle, the meaning of the concept of 'conservation' must be negotiated between indigenous groups and state authorities. Case law in Canada and New Zealand show that treaty and aboriginal rights are subject to overriding conservation concerns. There must be recognition that principles of conservation within state legislation are derived from western society's relationship with nature. These conservation principles developed along side conventional science-oriented management and share similar assumptions about nature's processes. Practices evolving within an anticipatory, adaptive, 'trial-and-error' management system in a particular ecosystem, such as pulse fishing and mixed mesh sizes violate state conservation principles focusing on managing resources within a predictive framework. There have been attempts, however, to explicitly include indigenous knowledge and concepts within conservation legislation such as *The Endangered Species Act* 1998 from the province of Nova Scotia[908] and the *Resources Management Act 1991* from New Zealand[909]. These attempts should be strongly encouraged notwithstanding the problems that courts face interpreting indigenous concepts. Special tribunals may be set up to prevent the absorption of indigenous concepts into western frames of reference and to cater for the particular requirements of indigenous knowledge, for example, regarding evidence. Without a requirement that indigenous knowledge have a decisive role

[908] *Endangered Species Act, supra*, note 851.
[909] *RMA*, *supra*, note 861.

(alongside scientific knowledge) in determining what conservation means within a management structure, the gains made by including indigenous knowledge within a particular precautionary decision-making structure may be lost on implementation.

Similarly, the science-biased nature of the dominant concept of sustainable development must be reassessed if a functional role for indigenous knowledge in the implementation of a precautionary decision is to be achieved. Co-management boards may include indigenous knowledge in a precautionary decision only to the extent that a particular course of action informed by the knowledge is cost-effective, as judged against the prevailing concept of sustainable development. Lineal concepts of progress moving towards an elusive destination of development, being that of 'developed nations', arguably underlie dominant concepts of sustainable development. It is assumed that the benefits of modernization would trickle down to the environment, ensuring that a society uses resources in a sustainable manner once the standard of living has increased. The standard of living imports all sorts of cultural value judgements. Within the dominant concept of sustainable development is arguably a judgement about whether a society is modern (advanced) or traditional (backwards). On the other hand, 'development' or, concomitantly, an 'economic system' based on indigenous values of cyclical thinking, reciprocal relations and responsibilities to the earth, by its very nature would often be decentralized, self-reliant, and very closely based on the carrying capacity of a particular ecosystem.[910] The various development strategies carry different goals, focuses and values against which the cost-effectiveness of a particular decision would be judged. A particular society 'being for itself' can provide the basis of shared criteria for judging when a society becomes 'developed'. It gives the concept of sustainable development the requisite flexibility to address the needs of a particular human-nature ecosystem and recognizes that the particular society must determine how best it can use resources sustainably within its whole knowledge system, including spiritual, management and tenure systems.

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[910] LaDuke, *supra*, note 41 at 129.

Words alone will not achieve a functional role for indigenous knowledge systems within the precautionary principle. A simple omission of 'scientific', or an affirmative statement to include various knowledge sources, including indigenous knowledge systems, in legal articulations of the precautionary principle may move policy makers to reconsider the idea that science is the only proper basis on which 'good' decisions are made. It will not, however, be sufficient to stimulate the paradigm shift in thinking necessary for indigenous knowledge to have a decisive role in precautionary decisions. The building of relationships between indigenous resource users and managers, and western resource users and managers must be a priority for all societies whether the relationships start from a community-based research initiative or an appropriate legal and political power sharing arrangement. Respect for another culture's knowledge system can only arise once people have gone far enough into the other cultural world to stretch their own internal and external boundaries. Once the respect is strengthened and experiences are shared, the will to fundamentally transform the way in which people relate to, and guide their activities within, human-nature ecosystems will materialize into a truly broad-based precautionary principle.

> Words are like dreams. They reflect experience and they also inform it. Like words, dreams do not materialize experience. Only the dreamer is capable of that transformation. You are the reader. You are the dreamer. You have the power of materialization, the power of understanding. Take these words and dream into them. They will take you to a place that is real. You cannot go there and you cannot go away from there.[911]

[911] Ridington, *supra*, note 105 at 259.

APPENDIX I : "The First Punishment of Damelahamid"

A Tsimshian narrative reproduced in Chief Kenneth Harris, *Visitors Who Never Left: The Origin of the People of Damelahamid* (The University of British Columbia Press, 1974) at 32-5.

"They all lived in *Damelahamid* and the seven children grew fast. They grew very fast, very rapidly. One day they found the ball that the people of *Damelahamid* had made for recreation.

They found the ball and they found it was very nice to kick, and they kicked it and they followed it around. They kicked it and then they started passing it to one another, kicking it to one another. They found out very rapidly how to use the ball. They were enjoying, enjoying it very much.

Their mother saw all this and she got after them. She scolded them. She said, "You must not do this. I have no idea what happened to all our people, but I do know that they were playing. They were playing with that same ball you are playing with, and it is forbidden by our people to mock any part of the animal kingdom. We take what we have to eat and we do not waste. This is the law of our people. Our Father-in-Heaven does not allow us to waste or to mock. So I feel that the reason why they disappeared was because they were doing exactly what you are doing now – playing with that ball made from a bear's stomach."

But they didn't pay any attention to her. And one day, while they were playing, they observed that a white feather came floating down from the heavens. It floated down very gently and it stopped. They all stopped and watched it.

Noelhz, who was the most outspoken one of them and the one who was likely to do anything, ran for it and grabbed the little feather and stuck it on his head. He went back

to kick the ball and he missed it. He looked down and found that he was suspended in air. So he shouted out to his brother, *Goodip skan milkst*. He said, "Oh, *Goodip skan milkst*, help me! I am in trouble!"

Goodip skan milkst came and grabbed him by the legs, and he grew roots and turned into a tree and went right to the bottom of the earth. There was a tug now – a tug from the feather – and soon *Goodip skan milkst* knew that his roots were going to give way. So he shouted, "*Goodip skan tsnaugh*, my brother, help me because I am in trouble!"

Goodip skan tsnaugh grabbed him by the legs and he became a tree and his roots went right into the ground. All of these children were returning to the same images that they had originated from. *Goodip skan tsnaugh* had now become a tree and his roots went right into the ground as he was holding down his brother. When his roots started to give way, he shouted, "*Goo meshum la-up*, help me! My roots are giving way!"

The little red stone helped him and a great big block of a boulder appeared. Soon this boulder started to life and he shouted, "*Goodip hae gae hesku*, help me!"

Goodip hae gae hesku turned to stone and became a mountain, holding down the brothers who were being pulled into the heavens by the white feather. They started to lift again and they shouted to their brother, "*Goo loggum melhz tjalhz*, help!" So *Goo loggum melhz tjalhz* became a piece of feather that he used to be. But it did not help. They were still lifting. The feather was too light.

In the meantime, their sister, *Goo ha goelhz*, became very anxious. She was backwards and forwards and all of a sudden she started sharpening her hand and her hand became a skinning knife. And it became very sharp. She looked through it at the sun while she sharpened it, and she could see that it was becoming very sharp.

While they were still rising and being lifted up, she climbed up on top of them, jumping from head to head, right up to the feather. She took the feather and cut it right in half

with her hand. The boys fell back to earth and they lay flat. This time they took their human forms again.

The little girl was not harmed. She was not hurt in the fall. Their mother came out and they were grieved. They were grieved. They were lamenting.

Goo ha goelhz, the little girl, said to her mother, "Let us put them in order and we will use this feather to revive them." So they did. She was obviously receiving instructions that she was not aware of.

They put the brothers in order and they covered them up with their blankets. And they walked around them with the feather – walked around them four times. At the end of the fourth time they all came back to life.

They realized now that they had done something wrong. They knew why the city of *Damelahamid* was punished. This was the first punishment of *Damelahamid* because they had defied the laws of nature, the laws of their god, the laws of their Father-in-Heaven who had instructed them not to torment animals, not to laugh at them, not to waste, and not to use any portion of the animal for amusement.

After *Goo ha goelhz* had revived her brothers, they went to their house and their mother told them of their history: how they came from Heaven and how their Heavenly Father left instructions and these instructions must not be broken under any circumstances. And they concluded that he same thing had happened to the rest of the city of *Damelahamid,* because that is what the other people had been doing. They had been playing ball. They had been playing football with a *tdek,* a ball made from the stomach of a bear.

So they lived on. That night when they went to sleep they heard a windstorm and they heard a rattling, a great noise, that kept them awake most of the evening. It was a rattling of what sounded like bones. And their mother said, "Don't anybody go outside. Don't anybody leave the house. You just stay in your beds."

And they did. In the morning they got up early and they went out. Lo and behold, they found scattered all over the countryside, among the houses in the village, bones – bones of dead people. They knew what had happened. So they gathered up the bones. They gathered them and their mother said, "Let us find the right bones for the right person, because they seem to have fallen in a pattern."

And they did. They put the bones together. And just out of their grief they covered a few bones that they had put together and they took the half-feather and walked around the bones. They walked around them four times and, lo and behold, they came back to life. And they found out it was their own people – people from their own house – their mothers and their fathers. They sat about putting the people together. They put bones together and laid them in order. There wasn't a person who was missing. Not a person. Not a dog. Not an animal was missing. They got them together. They put them together in order and they revived them with the half-feather.

There were times when they made a mistake. There were times when they took a shorter limb and placed it together or a longer limb and placed it together. When these people revived, they found one leg was too short or one arm was too short. These were the only obvious errors made. But the people were the same people they were before the heavens were angered and they were punished."

APPENDIX II : CHIEF SEATTLE'S SPEACHES

Cited in Kaiser, R., "Chief Seattle's Speech(es): American Origins and European Reception" in Swann, B. & A. Krupat, *Recovering the Word: Essays on Native American Literature* (London: University of California Press, 1987) 497 at 518-530.

VERSION I – RECORDED BY DR. HENRY SMITH

Yonder sky has wept tears of compassion on our fathers for centuries untold, and which, to us, looks eternal, may change. To-day it is fair, to-morrow it may be overcast with clouds. My words are like the stars that never set. What Seattle says the great chief, Washington, (the Indians in early times thought that Washington was still alive. They knew the name to be that of a president, and when they heard of the president at Washington they mistook the name of the city for the name of the reigning chief. They thought, also, that King George was still England's monarch, because the Hudson Bay traders called themselves "King George men." This innocent deception the company was shrewd enough not to explain away for the Indians had more respect for them than they would have had, had they known England was ruled by a woman. Some of us have learned better) can rely upon, with as much certainty as our pale-face brothers can rely upon the return of the seasons. The son of the white chief says his father sends us greetings of friendship and good-will. This is kind, for we know he has little need of our friendship in return, because his people are many. They are like the grass that covers the vast prairies, while my people are few, and resemble the scattering trees of a wind-swept plain.

The great, and I presume also good, white chief sends us word that he wants to buy our lands but is willing to allow us to reserve enough to live on comfortably. This indeed appears generous, for the red man no longer has rights that he respect, and the offer may

be wise, also, for we are no longer in need of a great country. There was a time when our people covered the whole land as the waves of a wind-ruffled sea cover its shell-paved floor. But that time has long since passed away with the greatness of tribes almost forgotten. I will not mourn over our untimely decay, for reproach my pale-face brothers with hastening it, for we, too, may have been somewhat to blame.

When our young men grow angry at some real or imaginary wrong and disfigure their faces with black paint, their hearts, also, are disfigured and turn black, and then their cruelty is relentless and knows no bounds, and our old men are not able to restrain them.

But let us hope that hostilities between the red man and his pale face brothers may never return. We would have everything to lose and nothing to gain.

True it is that revenge, with our young braves, is considered gain, even at the cost of their own lives, but old men who stay at home in times of war, and old women who have sons to lose, know better.

Our great father Washington, for I presume he is now our father as well as yours, since George has moved his boundaries to the north; our great and good father, I say, sends us word by his son, who, no doubt, is a great chief among his people, that if we do as he desires, he will protect us. His brave armies will be to us a bristling wall of strength, and his great ships of war will fill our harbors so that our ancient enemies far to the northward, the Simsiams and Hydas, will no longer frighten our women and old men. Then he will be our father and we will be his children. But can this ever be? Your God loves your people and hates mine; he folds his strong arms lovingly around the white man and leads him as a father leads his infant son, but he has forsaken his red children; he makes your people wax strongly every day, and soon they will fill the land; while our people are ebbing away like a fast-receding tide, that will never flow again. The white man's God cannot love his red children or he would protect them. They seem to be orphans and can look nowhere for help. How then can we become brothers? How can

your father become our father and bring us prosperity and awaken in us dreams of returning greatness?

Your God seems to be partial. He came to the white man. We never saw Him; never even heard His voice; He gave the white man laws but He had no word for His red children whose teeming millions filled this vast continent as the stars fill the firmament. No, we are two distinct races and must ever remain so. There is little in common between us. The ashes of our ancestors are sacred and their final resting place is hallowed ground, while you wander away from the tombs of your fathers seemingly without regret.

Your religion was written on tables of stone by the iron finger of an angry God, lest you might forget it. The red man could never remember nor comprehend it.

Our religion is the traditions of our ancestors, the dreams of our old men, given them by the Great Spirit, and the visions of our sachems, and is written in the hearts of our people.

Your dead cease to love you and the homes of their nativity as soon as they pass the portals of the tomb. They wander off beyond the stars, are soon forgotten and never return. Our dead never forget the beautiful world that gave them being. They still love its winding rivers, its great mountains and its sequestered vales, and they ever yearn in tenderest affection over the lonely hearted living and often return to visit and comfort them.

Day and night cannot dwell together. The red man has ever fled the approach of the white man, as the changing mists on the mountain side flee before the blazing morning sun.

However, your proposition seems a just one, and I think my followers will accept it and will return to the reservation you offer them, and we will dwell apart and in peace, for the words of the great white chief seem to be the voice of nature speaking to my people out

of the thick darkness that is fast gathering around them like a dense fog floating inward from a midnight sea.

It matters but little where we pass the remainder of our days. They are not many. The Indian's night promises to be dark. No bright star hovers about the horizon. Sad-voiced winds moan in the distance. Some grim Nemesis of our race is on the red man's trail, and wherever he goes he will still hear the sure approaching footsteps of the fell destroyer and prepare to meet his doom, as does the wounded doe that hears the approaching footsteps of the hunter. A few more moons, a few more winters and not one of all the mighty hosts that once filled this broad land or that now roam in fragmentary bands through these vast solitudes will remain to weep over the tombs of a people once as powerful and as hopeful as your own.

But why should we repine? Why should I murmur at the fate of my people? Tribes are made up of individuals and are no better than they. Men come and go like the waves of the sea. A tear, a tamanamus, a dirge, and they are gone from our longing eyes forever. Even the white man, whose God walked and talked with him, as friend to friend, is not exempt from the common destiny. We *may* be brothers after all. We shall see.

We will ponder your proposition, and when we have decided we will tell you. But should we accept it, I here and now make this the first condition: That we will not be denied the privilege, without molestation, of visiting at will the graves of our ancestors and friends. Every part of this country is sacred to my people. Every hillside, every valley, every plain and grove has been hallowed by some fond memory or some sad experience of my tribe. Even the rocks that seem to lie dumb as they swelter in the sun along the silent seashore in solemn grandeur thrill with memories of past events connected with the fate of my people, and the very dust under your feet responds more lovingly to our footsteps than to yours, because it is the ashes of our ancestors, and our bare feet are conscious of the sympathetic touch, for the soil is rich with the life of our kindred.

The sable braves, and fond mothers, and glad-hearted maidens, and the little children who loved and rejoiced here, and whose very names are now forgotten, still love these solitudes, and their deep fastnesses at eventide grow shadowy with the presence of dusky spirits. And when the last red man shall have perished from the earth and his memory among white men shall have become a myth, these shores shall swarm with the invisible dead of my tribe, and when your children's children shall think themselves alone in the field, the shop upon the highway or in the silence of the woods they will not be alone. In all the earth there is no place dedicated to solitude. At night when the streets of your cities and villages shall be silent, and you think them deserted, they will throng with the returning hosts that once filled and still love this beautiful land. The white man will never be alone. Let him be just and deal kindly with my people, for the dead are not altogether powerless.

VERSON 2 – REVISED BY WILLIAM ARROWSMITH

Brothers: That sky above us has pitied our fathers for many hundreds of years. To us it looks unchanging, but it may change. Today it is fair. Tomorrow it may be covered with cloud.

My words are like the stars. They do not set. What Seattle says, the great chief Washington can count on as surely as our white brothers can count on the return of the seasons.

The White Chief's son says his father sends us words of friendship and goodwill. This is kind of him, since we know he has little need of our friendship in return. His people are many, like the grass that covers the plains. My people are few, like the trees scattered by the storms on the grasslands.

The great – and good, I believe – White Chief sends us word that he wants to buy our land. But he will reserve us enough so that we can live comfortably. This seems generous, since the red man no longer has rights he need respect. It may also be wise, since we no longer need a large country. Once, my people covered this land like a flood-tide moving with the wind across the shell-littered flats. But that time is gone, and with it the greatness of tribes now almost forgotten.

But I will not mourn the passing of my people. Nor do I blame our white brothers for causing it. We too were perhaps partly to blame. When our young men grow angry at some wrong, real or imagined, they make their faces ugly with black paint. Then their hearts too are ugly and black. They are hard and their cruelty knows no limits. And our old men cannot restrain them.

Let us hope that the wars between the red man and his white brothers will never come again. We would have everything to lose and nothing to gain. Young men view revenge as gain, even when they lose their own lives. But the old men who stay behind in time of war, mothers with sons to lose – they know better.

Our great father Washington – for he must be our father now as well as yours, since George has moved his boundary northward – our great and good father sends us word by his son, who is surely a great chief among his people, that he will protect us if we do what he wants. His brave soldiers will be a strong wall for my people, and his great warships will fill our harbors. Then our ancient enemies to the north – the Haidas and Tsimshians – will no longer frighten our women and old men. Then he will be our father and we will be his children.

But can that ever be? Your God loves your people and hates mine. He puts his strong arm around the white man and leads him by the hand, as a father leads his little boy. He has abandoned his red children. He makes your people stronger every day. Soon they will flood all the land. But my people are an ebb tide, we will never return. No, the

white man's God cannot love his red children or he would protect them. Now we are orphans. There is no one to help us.

So how can we be brothers? How can your father be our father, and make us prosper and send us dreams of future greatness? Your God is prejudiced. He came to the white man. We never saw him, never even heard his voice. He gave the white man laws, but he had no word for his red children those numbers once filled this land as the stars filled the sky.

No, we are two separate races, and we must stay separate. There is little in common between us.

To us the ashes of our fathers are sacred. Their graves are holy ground. But you are wanderers, you leave your fathers' graves behind you, and you do not care.

Your religion was written on tables of stone by the iron finger of an angry God, so you would not forget it. The red man could never understand it or remember it. Our religion is the ways of our forefathers, the dreams of our old men, sent them by the Great Spirit, and the visions of our sachems. And it is written in the hearts of our people.

Your dead forget you and the country of their birth as soon as they go beyond the grave and walk among the stars. They are quickly forgotten and they never return. Our dead never forget this beautiful earth. It is their mother. They always love and remember her rivers, her great mountains, her valleys. They long for the living, who are lonely too and who long for the dead. And their spirits often return to visit and console us.

No, day and night cannot live together.

The red man has always retreated before the advancing white man, as the mist on the mountain slopes runs before the morning sun.

So your offer seems fair, and I think my people will accept it and go to the reservation you offer them. We will live apart, and in peace. For the words of the Great White Chief are like the words of nature speaking to my people out of great darkness – a darkness that gathers around us like the night fog moving inland from the sea.

It matters little where we pass the rest of our days. They are not many. The Indians' night will be dark. No bright star shines on his horizons. The wind is sad. Fate hunts the red man down. Wherever he goes, he will hear the approaching steps of his destroyer, and prepare to die, like the wounded doe who hears the steps of the hunter.

A few more moons, a few more winters, and none of the children of the great tribes that once lived in this wide earth or that roam now in small bands in the woods will be left to mourn the graves of a people once as powerful and as hopeful as yours.

But why should I mourn the passing of my people? Tribes are made of men, nothing more. Men come and go, like the waves of the sea. A tear, a prayer to the Great Spirit, a dirge, and they are gone from our longing eyes forever. Even the white man, whose God walked and talked with him as friend to friend, cannot be exempt from the common destiny.

We may be brothers after all. We shall see.

We will consider your offer. When we have decided, we will let you know. Should we accept, I here and now make this condition: we will never be denied the right to visit, at any time, the graves of our fathers and our friends.

Every part of this earth is sacred to my people. Every hillside, every valley, every clearing and wood, is holy in the memory and experience of my people. Even those unspeaking stones along the shore are loud with events and memories in the life of my people. The ground beneath your feet responds more lovingly to our steps than yours,

because it is the ashes of our grandfathers. Our bare feet know the kindred touch. The earth is rich with the loves of our kin.

The young men, the mothers, and girls, the little children who once lived and were happy here, still love these lonely places. And at evening the forests are dark with the presence of the dead. When the last red man has vanished from this earth, and his memory is only a story among the whites, these shores will still swarm with the invisible dead of my people. And when your children's children think they are alone in the fields, the forests, the shops, the highways, or the quiet of the woods, they will not be alone. There is no place in this country where a man can be alone. At night when the streets of your towns and cities are quiet, and you think they are empty, they will throng with the returning spirits that once thronged them, and that still love these places. The white man will never be alone.

So let him be just and deal kindly with my people. The dead have power too.

VERSION 3 – WRITTEN BY TED PERRY

The Great Chief of Washington sends word that he wishes to buy our land.

The Great Chief also sends us words of friendship and goodwill. This is kind of him, since we know he has little need of our friendship in return. But we will consider your offer. For we know that if we do not sell, the white man may come with guns and take our land.

How can you buy or sell the sky, the warmth of the land? The idea is strange to us.

If we do not own the freshness of the air and the sparkle of the water, how can you buy them from us?

We will decide in our time.

What Chief Seattle says, the great Chief in Washington can count on as truly as our white brothers can count in the return of the seasons. My words are like the stars. They do not set.

Every part of this earth is sacred to my people. Every shining pine needle, every sandy shore, every mist in the dark woods, every clearing, and humming insect is holy in the memory and experience of my people. The sap which courses through the trees carries the memories of the red man.

The white man's dead forget the country of their birth when they go to walk among the stars. Our dead never forget this beautiful earth, for it is the mother of the red man.

We are part of the earth and it is part of us. The perfumed flowers are our sisters the deer, the horse, the great eagle, these are our brothers. The rocky crests, the juices in the meadows, the body heat of the pony, and man – all belong to the same family.

So, when the Great Chief in Washington sends word that he wishes to buy our land, he asks much of us.

The Great Chief sends word he will reserve us a place so that we can live comfortable to ourselves. He will be our father and we will be his children.

But can that ever be? God loves your people, but has abandoned his red children. He sends machines to help the white man with his work, and builds great villages for him. He makes your people stronger every day. Soon you will flood the land like the rivers which crash down the canyons after a sudden rain. But my people are an ebbing tide, we will never return.

No, we are separate races. Our children do not play together and our old men tell different stories. God favours you and we are orphans.

So we will consider your offer to buy our land. But it will not be easy. For this land is sacred to us. We take pleasure in these woods. I do not know. Our ways are different from your ways.

This shining water that moves in the streams and rivers is not just water but the blood of our ancestors. If we sell you land, you must remember that it is sacred, and that each ghostly reflection in the clear water of the lakes tells of events and memories in the life of my people. The water's murmur is the voice of my father's father.

The rivers are our brothers, they quench our thirst. The rivers carry our canoes, and feed our children. If we sell you our land, you must remember, and teach your children, that the rivers are our brothers, and yours, and you must henceforth give rivers the kindness you would give any brother.

The red man has always retreated before the advancing white man, as the mist of the mountain runs before the advancing white man, as the mist of the mountain runs before the morning sun. But the ashes of our fathers are sacred. The graves are holy ground, and so these hills, these trees, this portion of the earth is consecrated to us. We know that the white man does not understand our ways. One portion of land is the same to him as the next, for he is a stranger who comes in the night and takes from the land whatever he needs. The earth is not his brother but his enemy, and when he has conquered it, he moves on. He leaves his father's graves behind, and he does not care. He kidnaps the earth from his children. He does not care. His father's graves and his children's birthright are forgotten. He treats his mother, the earth, and his brother, the sky, as things to be bought, plundered, sold like sheep or bright beads. His appetite will devour the earth and leave behind only a desert.

I do not know. Our ways are different from your ways. The sight of your cities pains the eyes of the red man. But perhaps it is because the red man is a savage and does not understand.

There is no quiet place in the white man's cities. No place to hear the unfurling of leaves in spring or the rustle of insect's wings. But perhaps it is because I am a savage and do not understand. The clatter only seems to insult the ears. And what is there to life if a man cannot hear the lonely cry of the whipporwill or the arguments of the frogs around a pond at night? I am a red man and do not understand. The Indian prefers the soft sound of the wind darting over the face of a pond, and the smell of the wind itself, cleansed by a midday rain, or scented with the pinon pine.

The air is precious to the red man, for all things share the same breath – the beasts, the tree, the man, they all share the same breath. The white man does not seem to notice the air he breathes. Like a man dying for many days, he is numb to the stench. But if we sell our land, you must remember that the air is precious to us, that the air shares its spirit with all the life it supports. The wind that gave our grandfather his first breath also receives his last sigh. And the wind must also give our children the spirit of life. And if we sell you our land, you must keep it apart and sacred, as a place where even the white man can go to taste the wind that is sweetened by the meadow's flowers.

So we will consider your offer to buy our land. If we decide to accept, I will make one condition: The white man must treat the beasts of this land as his brothers.

I am a savage and I do not understand any other way. I have seen a thousand rotting buffaloes on the prairie, left by the white man who shot them from a passing train. I am a savage and I do not understand how the smoking iron horse can be more important than the buffalo that we kill only to stay alive.

What is man without the beasts? If all the beasts were gone, men would die from a great loneliness of spirit. For whatever happens to the beasts, soon happens to man. All things are connected.

Whatever befalls the earth, befalls the sons of the earth.

You must teach your children that the ground beneath their feet is the ashes of our grandfathers. So that they will respect the land, tell your children that the earth is rich with the lives of our kin. Teach your children what we have taught our children, that the earth is our mother. Whatever befalls the earth, befalls the sons of the earth. If men spit upon the ground, they spit upon themselves.

This we know. The earth does not belong to man; man belongs to the earth. This we know. All things are connected like the blood which unites one family. All things are connected.

Whatever befalls the earth befalls the sons of the earth. Man did not weave the web of life; he is merely a strand in it. Whatever he does to the web, he does to himself.

No, day and night cannot live together.

Our dead go to live in the earth's sweet rivers, they return with the silent footsteps of spring, and it is their spirit, running in the wind, that ripples the surface of the ponds.

We will consider why the white man wishes to buy the land. What is it that the white man wishes to buy, my people ask me. The idea is strange to us. How can you buy or sell the sky, the warmth of the land? – the swiftness of the antelope? How can we sell these things to you and how can you buy them? Is the earth yours to do with as you will, merely because the red man signs a piece of paper and gives it to the white man? If we do not own the freshness of the air and the sparkle of the water, how can you buy them from us?

Can you buy back the buffalo, once the last one has been killed? But we will consider your offer, for we know that if we do not sell, the white man may come with guns and take our land. But we are primitive, and in his passing moment of strength the white man thinks that he is a god who already owns the earth. How can a man own his mother?

But we will consider your offer to buy our land. Day and night cannot live together. We will consider your offer to go to the reservation you have for my people. We will live apart, and in peace. It matters little where we spend the rest of our days. Our children have seen their fathers humbled in defeat. Our warriors have felt shame, and after defeat they turn their days in idleness and contaminate their bodies with sweet foods and strong drink. It matters little where we pass the rest of our days. They are not many. A few more hours, a few more winters, and none of the children of the great tribes that once lived on this earth or that roam now in small bands in the woods will be left to mourn the graves of a people once as powerful and hopeful as yours.

But why should I mourn the passing of my people? Tribes are made of men, nothing more. Men come and go, like the waves of the sea.

Even the white man, whose God walks and talks with him as friend to friend, cannot be exempt from the common destiny. We may be brothers after all; we shall see. One thing we know, which the white man may one day discover – our God is the same God. You may think now that you own Him as you wish to own our land; but you cannot. He is the God of man, and His compassion is equal for the red man and the white. This earth is precious to Him, and to harm the earth is to heap contempt on its Creator. The whites too shall pass; perhaps sooner than all other tribes. Continue to contaminate your bed, and you will one night suffocate in your own waste.

But in your perishing you will shine brightly, fired by the strength of the God who brought you to this land and for some special purpose gave you dominion over this land and over the red man. That destiny is a mystery to us, for we do not understand when

buffalo are all slaughtered, the wild horses are tamed, the secret corners of the forest heavy with the scent of many men, and the view of the ripe hills blotted by talking wires. Where is the thicket? Gone. Where is the eagle? Gone. And what is it to say goodbye to the swift pony and the hunt? The end of living and the beginning of survival.

God gave you dominion over the beasts, the woods, and the red man, and for some special purpose, but that destiny is a mystery to the red man. We might understand if we knew what it was that the white man dreams – what hopes he describes to his children on long winter nights – what visions he burns onto their minds so that they will wish for tomorrow. But we are savages. The white man's dreams are hidden from us. And because they are hidden, we will go our own way. For above all else, we cherish the right of each man to live as he wishes, however different from his brothers. There is little in common between us.

So we will consider your offer to buy our land. If we agree, it will be to secure the reservation you have promised. There, perhaps, we may live out our brief days as we wish.

When the last red man has vanished from this earth, and his memory is only the shade of a cloud moving across the prairie, these shores and forests will still hold the spirits of my people. For they love this earth as the newborn loves its mother's heartbeat.

If we sell you our land, love it as we've loved it. Care for it as we've cared for it. Hold in your mind the memory of the land as it is when you take it. And with all your strength, with all your mind, with all your heart, preserve it for your children, and love it...as God loves us all.

One thing we know. Our God is the same God. This earth is precious to Him. Even the white man cannot be exempt from the common destiny. We may be brothers after all. We shall see.

APPENDIX III : "Clothed-in-Fur"

The last section of the Ojibwa story cited in Overholt, T.W. & J.B Callicott, *Clothed in Fur and Other Tales: an Introduction to an Ojibwa Worldview* (Washington, D.C.: University Press of America, 1982) at 62-73.

"Thereupon he [Clothed-in-Fur] came back home, he thought of his wife [a beaver] that was sitting there on the dwelling. And so at that place he lived again with his wife. Now, his father-in-law was there, likewise his mother-in-law, his brothers-in-law, and his sisters-in-law; so there he lived as a son-in-law. Now, Muskrat was seated there at the doorway. So one thought Clothed-in-Fur: "I wish that I might eat her!" such was the thought he had of his sister-in-law.

At once up spoke Muskrat: "See what Clothed-in-Fur has in mind! 'Would that I might eat my sister-in-law!' he thinks."

Now ashamed became the man. Whereupon said the old man: "Well, let him go ahead and eat her!" Thereupon, after they slew that woman, they cooked her. And so he was fed. "Don't break the joints at any place!" After he had eaten, then the bones were gathered up; to the water then were the bones taken and thrown in. And after a while in came the woman again; she was alive. And that was always what was done to the man whenever he had the desire to eat them; sometimes it was his mother-in-law, and sometimes it was his brother-in-law, he ate. And once he pulled apart the foot (of the one he had eaten). So when the one he had eaten cam in, it then had two nails. That was what Clothed-in-fur had done to it.

Now, once said Muskrat: "To-morrow by a being with a full set of teeth shall we be given a visit." And on the morrow, sure enough, a human being came walking hitherward. He climbed upon the dwelling, whereupon they all gazed upon him to see how he looked.

Laughed the beavers when the human being started on his homeward way. They addressed (Muskrat) saying: Muskrat, do go and listen to what the human being may have to say!"

So Muskrat slid on his feet off the log, and then started away. And when Muskrat came back, they asked him: "What did the human being say?"

" 'Very troublesome is the dwelling-place of the Beavers,' he said."

"Yes," they said. And when evening was come, (the stem of) a pipe moved into where they lived (as a sign of invitation to smoke). Thereupon to his wife said the old Beaver: "Come, receive the pipe!"

The old woman then received the pipe; she gave it to her husband; and then all drew a puff from that pipe. Back moved the pipe after they had all drawn a puff.

So on the morrow came the people, they had come to get some Beavers.

And all gave themselves up to be killed. And all were taken away except Clothed-in-Fur; he was not slain. And in the evening they all returned alive. On another occasion up spoke Muskrat: "To-morrow by a being with a full set of teeth shall we be given a visit."

So on the morrow, sure enough, a man came walking hitherward. There was very little water where they lived. Once more climbed the man upon the dwelling. Again they laughed at how he looked. After the man had gone back home, again Muskrat was commanded: "Do go and hear what he may say!"

And truly Muskrat went. And when home Muskrat was come, he was asked: "What did the man say?"

" 'There is very little water where the Beavers dwell, and all we have to do is simply go to the Beavers,' he said."

Then angry became the old Beaver. "Therefore let us hide!" Thereupon away they went for the dam. They drew along a great tree that was there at the dam, and to that place was where they went. Furthermore, they closed it up. After they had concealed themselves, they made a beaver-hole, into which they went.

On the morrow came the people for the purpose of killing some Beavers, but they did not find them. Back home they went.

On the next morning a pipe came moving in, but they did not receive it.

So on the following day back came the people. All day long they worked in vain to kill the Beavers, but they did not find where they were, even though they had fetched their dogs, that were good at hunting, and even though they went to where the Beavers were. And the Beavers spoke to the Dogs: "Away, away, away!" Yet (the Beavers) were not barked at. In the evening all went back home, they did not kill a Beaver.

Even though the pipe came moving inside again, yet they did not receive the pipe. So that was what they always did, till at last the people grew negligent on having lost the Beavers. Once more in came the pipe. To his wife then spoke the old Beaver, saying: "Do take the pipe!" After she had received the pipe, then she said: "The people surely ill-use us," she said. And all took hold of the stem of the pipe.

On the morrow back came the people bringing their dogs. Although all the dogs came there where the Beavers were, yet again, "Away, away, away!" they were told. And so elsewhere went the dogs.

But there was one dog that was of no use at all for the hunt; now, this dog too came there where the Beavers were. Him the Beavers asked: "On what do they by whom we are killed usually feed you?"

Thereupon he said: "Your livers."

"All right! then bark at us."

Thereupon truly bayed the old worthless dog...

Thereupon said the people: "Well, listen to that (dog)! Perhaps some Beavers are there." And so by and by hither they came, whereupon they found that some Beavers were there. All of them they killed, save only Clothed-in-Fur they did not kill.

And so the gizzard of the ruffed grouse now hands aloft."

APPENDIX IV : "The Boy Who Was Kept By A Bear"

Reproduced in Tanner, A., *Bringing Home the Animals: Religious Ideology and Mode of Production of the Mistassini Cree Hunters* (London: C. Hurst and Co., 1979) at 148-150 [Told by Charlie Etap].

"A bear found a child and kept him like a son for several years. Every summer the bear would hunt for all kinds of food – beaver, porcupines, other animals – and in the fall the bear and the child would collect blueberries. Then they gathered their food and took it to where they would spend the winter.

One fall the bear told the child he could sense the boy's father starting to sing. The bear tried to sing his own song to oppose the father, but the power of the man's singing was too strong for the bear, and it made him forget his song and stop singing.

Later, during the winter, the child's father started to sing again, and again he succeeded in defeating the bear's song. The next day the bear told the child that he could sense the father preparing himself and setting out to find them.

The father began walking straight towards the place where the bear and the child were staying. The bear tried to lead him astray. First, he threw a porcupine out of his den. At the same moment the man noticed the marks where a porcupine had been gnawing at a tree off to the side of his path. But the man just kept on walking straight, intending to kill the porcupine on his way home.

The bear called out, 'I cannot defeat him! Straight! Straight! He comes walking to me!'

Next the bear threw out a beaver. At that moment the man was passing a lake, and he noticed it contained a beaver lodge. But he kept on walking ahead, meaning to

investigate the beavers on his way home. The bear uttered the same cry, 'I cannot defeat him! Straight! Straight! He comes walking to me!'

Finally the bear threw out a partridge. At the same instant a bird flew out from under the snow near the father, and landed on the other side of his path. But the man kept on straight, meaning to kill the partridge later. The bear again makes his cry, 'I cannot defeat him! Straight! Straight! He comes walking to me!'

Realizing the man's power was stronger than his, the bear used magic. He lay on his back with all four legs in the air...whereupon an object...came crashing out of the sky, causing a huge storm. But still the father kept coming towards the bear, and for the last time the bear called out, 'I cannot defeat him! Straight! Straight! He comes walking to me!'

Knowing that he was about to be killed, the bear gave the boy one of his forelegs, telling him to keep it wrapped up and hanging in his tent above the place where he always sat. He told the child that if he wanted to hunt bears he was to climb to a place where he cold get a good view of the surroundings, and look for the place where smoke was rising. He was told that only he would be able to see it, and if he looked at that place he would always find a bear.

Than the child's father began to break through the snow covering the bear's den, the bear went outside, and the man killed him. He took his son home, and the boy looked after the bear's foreleg as he had been told to do. Later the boy got married, and was an extremely successful bear hunter. His hunting group lived almost entirely on bear meat. Sometimes he would tell another hunter where to look for a bear, and the man would look where he was told, and would always kill a bear.

The hunting group was visited by another group. The women of this group were very jealous, because the hero could find bears whenever he wanted, and their own husbands were never able to kill any. While the hero was off hunting for bears of which he had

previously found the location, one of the women of the second hunting group decided to look for the source of his power. She went into his tent, took down the package, and started to unwrap it. At the same moment the hero became aware of what was happening, and immediately returned to the camp.

For a while he could be heard outside his tent. Then he entered, but stayed sitting on the doorstep. He asked for the culprit; the woman admitted it was her. He told her that the following day she could find a bear by going to a particular place which he described.

He then removed his ammunition pouch, took off all his clothes, and went to sit at his accustomed place. Immediately, the leg fell down, and both he and the leg disappeared underground, leaving no trace behind. It was said that he had become a bear."

APPENDIX V : "Ki'kwa'ju and Ki'kwa'jusi's"

A Mi'kmaq narrative recorded by Ruth Holmes Whitehead in Joe, R., & L.Choyce, eds., *The Mi'kmaq Anthology* (Nova Scotia: Pottersfield Press, 1997) at 31-35.

"Somewhere in the forest, Wolverine is living – Ki'kwa'ju, Wolverine. His little brother is with him – Ki'kwa'jusi's.

Winter is coming. Wolverine and his brother move through the forest, hunting, hunting, making a good supply of food up, to last them through the moons of cold.

Now they have come to a lake, a big lake, a deep and beautiful lake, a lake covered with water birds – birds of all kinds, too many for the eyes to see, for the hands to count.

Here are the Wild Geese, *Simumkwak.*

Here are the Black Ducks, *Apji'jkmujk.*

Here are Wood Ducks, Teal, and Brant.

And here are the Whistlers, the Goldeneye ducks. Little Wolverine, Ki'kwa'jusi's, he says to his brother, "Look at all these birds! Look at all this food. We shall have meat to eat, good fat meat. We shall have goose grease all winter long. But how are we going to catch them?

"Ah," says Wolverine, Ki'kwa'ju, watching all those birds floating before him on the water, on that beautiful lake of water.

"We shall see," says Ki'kwa'ju. "But first let us build a wigwam here on the shore. A large wigwam. A strong wigwam with a very heavy door."

So Ki'kwa'ju and his little brother are building a wigwam. They make it big. They make it strong. And it has a thick, heavy door.

Then Ki'kwa'ju makes his plans. Ki'kwa'ju has Power. He will fool those birds, he will trick them, he will call them to their destruction.

"This is what you must do," he says to his little brother. "Go out onto that point of land which stretches so far into the lake. Call the birds. Call the Wild Geese. Call the Big Ones, the Little Ones. Call the Black Ducks, the Teal, the Brant. Invite them to feast with us."

The little Wolverine, "Ki'kwa'jusi's, he goes out onto the point of land. He walks to the far end sticking way out into the water, and he begins to call the birds: "I am calling you to come feast with us. I am calling for my older brother, Ki'kwa'ju. He wishes you to come to our wigwam, there, on the lake shore." When all the birds have heard him, he turns and begins to walk back home.

Inside the wigwam, Ki'kwa'ju is preparing. He puts on his ceremonial robe, his best clothing. He paints his face and chest. Ki'kwa'ju has Power, and now his Power fills him. He goes to the seat of honour at the back of the wigwam, behind the fire, the seat facing the door. Ki'kwa'ju sits there, he sits there and then he leans back, his eyes half closed, waiting. He watches the door.

From outside he is hearing a shout. It is his younger brother inviting the birds inside. Ki'kwa'jusi's pulls the door open and the birds begin to enter.

Ki'kwa'ju, Wolverine, he says nothing.

First the Wild Geese come in. They are the biggest of the birds, and they sit next to Ki'kwa'ju. Next come the Brant. Then the Black Ducks are coming in and sitting, and then all the other birds, the big ones first, then the smaller ones are all coming in, until only the tiniest birds are left. These sit down next to the door.

When all of the birds are sitting in the wigwam, around the fire, Ki'kwa'jusi's himself comes in. Carefully he pulls in the big heavy door. He shuts it tight and holds it shut. His older brother has told him what to do. His older brother has told him what to say.

"Welcome," says Ki'kwa'jusi's. "This is the house of my older brother, Ki'kwa'ju, Wolverine. Ki'kwa'ju asks me to tell you that he has Power. If you see him in his Power shape, wearing his ceremonial clothing, you would be destroyed. So, my older brother asks you, he asks you to keep your eyes shut very tightly. Keep your eyes shut until I tell you it is safe, or your eyes will burst when Ki'kwa'ju shows his Power shape."

This is what Ki'kwa'jusi's is saying, and all the birds obey him. They shut their eyes as tight as they can squeeze them, and they wait.

Now Ki'kwa'ju is getting up. He stands in his Power shape, and he moves towards the first bird, one of the Wild Geese. Ki'kwa'ju smiles. And then he throws himself, silently and quickly, he throws himself on the first Wild Goose. He wraps himself around that bird, he holds its wings and feet tightly so it cannot move and, before it can make a noise, Ki'kwa'ju bites its head right off.

Ki'kwa'ju rises. He lays the body of the first Wild Goose down on the floor of the wigwam, and then he grabs the next bird the same way, binding the wings and feet tightly, biting the head off. It is very quiet in the wigwam. All the birds are keeping their eyes tight shut. And Wolverine is moving between them and the fire, moving down the rows of birds. His Power shape is death to them, and he brings it to them, one by one.

His younger brother, Ki'kwa'jusi's, is watching from the back of the wigwam. He is holding the door. He watches Wolverine kill all the Wild Geese, the Simumkwak. He sees him kill the Brant one by one, until all are gone. The Black Ducks, the Apji'jkmujk, they are soon all lying stiff. And this begins to bother Ki'kwa'jusi's, Wolverine's younger brother.

All this slaughter is not necessary. They cannot begin to eat all that Ki'kwa'ju has already killed, and yet he is still biting the heads off the littler birds, the Teal and Whistlers.

Very carefully then, Ki'kwa'jusi's moves just a little bit away from the door. He bends down to one of the tiniest birds near him, and he whispers.

"Open your eyes," he says. "Open your eyes just a very little."

The small bird was afraid. What if his eyeballs burst? But his eyelids drift open just a crack, and that is enough. He sees Ki'kwa'ju. He sees this Wolverine and what he is doing, and he screams.

"*Ketmeto 'lwk* !" he shrieks. "We are all killed!"

Now all the birds open their eyes. Immediately they leap into flight, screaming and crying out and beating their wings, but they cannot get out. They hit the walls of the wigwam. The whole place is filled with noise and beating wings.

Ki'kwa'jusi's, Wolverine's younger brother, is cunning. He falls down, he pretends the birds have knocked him over and he lets go of the door. And so this big solid door, the door of the trap Ki'kwa'ju has made, it falls open, and the birds are rushing out.

Ki'kwa'ju is furious. He is still grabbing as many as he can in the uproar, and he is still biting off their heads. But Ki'kwa'jusi's, Wolverine's younger brother, is cleaver. He pretends to help. He catches the last bird by the leg, so that Ki'kwa'ju will not suspect.

Ki'kwa'ju is angry. He grabs his younger brother. "You have done this," he says, "and I am going to beat you."

"*Moqwe*," says Ki'kwa'jusi's "No, no, those birds knocked me down, the force open the door. I could not prevent it. It is the birds!"

Ki'kwa'ju becomes calmer. His Power is quieter now. He settles down to the task of plucking all his kills. He pulls the feathers off. He guts all the birds. He saves the hearts, the livers, the gizzards. Ki'kwa'jusi's helps him. They slice the meat and dry it, storing it up for winter.

This is how Ki'kwa'ju caught the birds – he fooled them.

This is how Ki'kwa'jusi's saved the birds – he fooled Ki'kwa'ju.

And *kespi-a'tuksit*, this is as far as it is told.

Sources and Notes – as written by Holmes Whitehead.
Retold from Rand ("Badger and his little Brother," 1894: 262-263)

This story contains one of the most important lessons a Micmac child must learn: to treat with respect the Animal Persons that give themselves to him for food. He must not kill more than he needs. He must treat their bones with respect, placing the bones of fish or beaver back in the water, and the bones of moose or bear in trees or up on scaffolding like a human's bones, so that not only will the animal want to reincarnate in the neighbourhood, but its bones will be there so it can reanimate them.

Ki'kwa'ju kills unnecessarily. Here the story shows us how Power can be tricky to deal with. Like electricity, it can both help and harm. Ki'kwa'ju's Power-shape takes him over. He goes on killing and killing, because that is the nature of his shape. So the story shows us another thing: it is important to have allies, to have relatives to help. For Wolverine's younger brother saves him, in a way, by letting some of the birds escape. Otherwise he would have been left with heaps of meat which would rot before he could eat it, and there would be no more birds or baby birds when he got hungry again.

Rand thought from the description given him that Ki'kwa'ju was a badger, and many people have based their identification of Ki'kwa'ju on this. But Ki'kwa'ju means wolverine. There are no badgers east of Ohio.

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