Greener Social Constructions: Marie Lake, Fort Chipewyan, and the Alberta Oil Sands

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Abstract

There is considerable debate in the green criminological and environmental sociological literature regarding achieving environmental reform. This dissertation contributes to the discussion through a qualitative constructivist interpretation of regional/national news media depictions of two environmental/industrial controversies. The embroiled controversies pit concerned social actors from the Alberta communities of Marie Lake and Fort Chipewyan against Canadian oil sands proponents. Using grounded theory methods and *NVivo* 10 software, media depictions of the controversies were examined as indicative of the dominant voices at the intersection of a public conversation about the harms caused by the oil sands industry. Very few issue entrepreneur efforts resulted in meaningful environmental reforms, but several key findings emerged.

First, we must provide empowering eco-solutions for government, appreciating that politicians are particularly adept at avoiding the negativity accompanying symbolically charged environmental issues. Second, there is value in embracing human interests as a means to save nature, recognizing that social actors can appear self-serving when they affix conventional environmental concerns to anthropocentric (human-centered) causes. Third, sensationalizing isolated aspects of an environmental issue can allow attention to be diverted from fundamental environmental considerations. Fourth, issue entrepreneurs must remain cognizant of the ways in which ideology can defile science during an environmental controversy. Fifth, issue entrepreneurs must acknowledge that scientists are frequently ill prepared to portray their environmental findings against political ideology, and in the media where suspenseful stories routinely take precedence to nuanced and contextualized environmental portrayals. Sixth, it is important to depict environmental controversies in ways that cast science as only one part of a broader landscape of environmental decision-making that also acknowledges localized/first-hand experiences, and the precautionary principle. Lastly, official “truth-seeking” investigations by authoritative governmental agencies often subjugate other important avenues for understanding environmental realities.

These key findings are placed in a constructivist framework entitled *greener social constructions*. The framework contributes to an evolving body of environmental social constructivist literature critical of ways in which journalists, policymakers,

environmentalists, criminologists, and concerned publics include the environment and environmentalism in their communications. Ultimately, *greener social constructions* are synonymous with conceiving more compelling ways to remake the planet's future.

Keywords: environmentalism; environmental crime; environmental social constructionism; environmental sociology; green criminology; oil sands

Dedication

For my loving parents. Thanks for always taking me outside to play.

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Chapter 1

Introduction: Canada's Socially Constructed Environment

> *Kyoto is essentially a socialist scheme to suck money out of wealth-producing nations. Implementing Kyoto will cripple the oil and gas industry, which is essential to the economies of Newfoundland, Nova Scotia, Saskatchewan, Alberta and British Columbia… [Climate change science] is tentative and contradictory. There are no Canadian winners under the Kyoto accord.*
>
> *-Stephen Harper, 2002, (as cited in Harper letter dismissed Kyoto as money-sucking socialist scheme, 2007. p. 1)*

Canada's approach to protecting the natural environment is often portrayed as a progressive platform based on scientific innovation, prudent management of natural resources, and a State-sponsored trend encouraging Canadians to adopt pro-environmental practices such as recycling in order to reduce our individual and collective "footprint" on the planet. For example, the Frontier Society for Public Policy argues that Canadians have a great deal to celebrate in terms of their environmental heritage. This Society tells us that over the past 30 years, Canada has "cleaned up its air and water, preserved ecosystems and timberlands and protected the soils that feed not only its people but also many others worldwide" (Green and Eisen, 2009, p. 1). This environmental progress has occurred while the country has grown into a "global economic powerhouse with a standard of living that is the envy of much of the world" (Green and Eisen, 2009, p. 1). The Frontier Society argues that Canada is "…well on the way towards environmental sustainability" (Green and Eisen, 2009, p. 1).

Similarly, the Fraser Institute, the Pacific Research Institute for Public Policy, and the Institute of Economic Affairs all offer positive news for Canada. They measured the environment in terms of air and water quality, natural resource use, land allocation, the production of solid waste, energy efficiency, the use of pesticides, toxic emissions, and the protection of wildlife (Brown, Fredricksen, Green, and Hansen, 2004). They assure

readers, that contrary to the alarmists, objectives for protecting human health and the environment are being met. Overall, environmental quality in Canada is improving. Specifically, air and water pollution levels are improving, there are fewer PCBs[1] and DDTs[2] in the wild, recycling is improving, our protected areas are increasing in size, natural resource extraction is stable, and the numbers of toxic pollutant releases are declining (Brown, Fredricksen, Green, and Hansen, 2004).

The Government of Canada also champions a buoyant outlook. Spokespeople claim that the Government is taking effective, aggressive approaches to environmental protection (Prentice, 2012). The *Canadian Environmental Protection Act*, the highest environmental law of the land, offers the federal government's commitment to environmental protection (1999, Preamble).[3] The Act's preamble sets out the importance of an ecosystems approach and reminds readers that government officials will continue to demonstrate national leadership in establishing environmental standards. The preamble mandates the use of the precautionary principle[4] to avoid undue delays in taking environmental initiatives and to achieve the highest level of environmental quality for all Canadians. The use of precaution involves tactics like the control and management of toxic substances and the virtual elimination of persistent and bio-accumulative toxins. Finally, the Canadian government declares, "the protection of the environment is essential to the well-being of Canadians and that the primary purpose of [the Act] is to contribute to sustainable development through pollution prevention" (Canadian Environmental Protection Act, 1999, Preamble).

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1 Polychlorinated biphenyls (PCBs) were widely used as coolants in transformers, capacitors, and electric motors in the 1960s (Health Canada, 2010). They were banned throughout Canada and the United States in the late 1970s because they are both non-biodegradable and bio-accumulative in the food chain. The low levels of exposure to PCBs "commonly encountered by Canadians" are unlikely to cause health problems, but exposure at higher levels or over longer periods may have "numerous negative health effects" (Health Canada, 2010, p. 1).

2 In Canada, Dichlorodiphenyltrichloroethane (DDT) was used as a pesticide under the *Pest Control Products Act* from the 1940s until the mid-1960s (Environment Canada, 2013). DDT was removed from pesticides by the mid-1970s due to increasing health concerns for human and non-human animals (Environment Canada, 2013).

3 See Appendix C for a copy of the Preamble of the *Canadian Environmental Protection Act*, 1999.

4 The precautionary principle was first conceived at the 1992 Rio Declaration, drafted at the United Nations Conference on Environment and Development held in Brazil. The principle read, "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" (Rio Declaration on Environment and Development, 1992, Principle 15).

Canadians also tend to characterize their own environment in positive ways. They give good or excellent ratings to all areas of their local environment including water quality (80 percent), air quality (74 percent), the protection of local wildlife and green spaces (68 percent), waste management (68 percent), and the quality of water in their lakes and rivers (56 percent) (Vital Signs, 2010). Canadians believe that their environmental quality is stable (48 percent) or improving (34 percent), and few see conditions as worsening (16 percent) (Vital Signs, 2010). In fact, consistent with most surveys conducted over the past 30 years, very few Canadians (6 percent) identify the environment as a priority (Environics Research Group, 2011). Asked to identify the most serious problems facing Canadians in 2011, the dominant response was the economy or unemployment (43 percent), followed by health care (10 percent), and poor government leadership (7 percent) (Environics Research Group, 2011). According to these studies, it seems that few Canadians are deeply worried, and many see a positive environmental future for Canada.

This generally sanguine view of Canada's environmental status has been strongly challenged by other stakeholders. For example, the organization Redefining Progress reported the ecological footprints of 146 nations (Venetoulis and Talberth, 2005). Ecological footprints are based on principles of sustainability and measure the amount of land needed to both produce resources and assimilate waste while keeping within a particular standard of living. *Redefining Progress* ranked Canada as having the third largest per capita footprint out of the 146 developed nations measured, exceeded only by the United Arab Emirates and the United States. Specifically, each Canadian requires about 8.8 hectares of productive land for resource extraction and waste absorption (Venetoulis and Talberth, 2005). In terms of the entire world, Canada has been estimated to have the eighth largest ecological footprint per capita. According to the World Wildlife Fund's (WWF) *Living Planet Report*, "[i]f the entire world lived like Canadians do, it would take 3.5 Earths to support the demand" (Grooten et al., 2012, p 12). For example, the Organization for Economic Cooperation and Development (OECD) tells us that the average Canadian, in their lifetime, will use approximately "125 million litres of water," burn "1.1 million kilograms of coal," generate "40,000 kilograms of garbage," produce "1.3 million kilograms of greenhouse gas," and require the use of more than "7,000 kilograms of pesticides and fertilizers" (as cited in Boyd, 2003, p. 281).

Other assessments of Canada's environment are equally unfavourable. For example, there are a series of reports based on data collected by the OECD, with the most recent version of the report prepared by Gunton and Calbick (2010) for the David Suzuki Foundation School of Resource and Environmental Management at Simon Fraser University, British Columbia. Since 1992, Canada has consistently been ranked as having the second worst environmental record per capita in the developed world; only the United States has a worse ranking (see Boyd, 2003; Gunton and Calbick, 2010). Compared to 25 other developed countries, Canada receives a failing grade for carbon monoxide production,[5] nuclear waste production, volatile organic compound emissions,[6] energy intensity,[7] environmental pricing,[8] sulphur oxide production,[9] energy consumption, nitrogen oxide production,[10] vehicular use, greenhouse gas emissions, and water consumption (Gunton and Calbick, 2010). Canada ranks in the bottom half of the 25 developed countries measured in terms of generating renewable energy (without the use of hydro-electricity), setting aside protected areas, protecting species at risk, and providing assistance so that countries can develop sustainably (Gunton and Calbick, 2010). Canada receives slightly better grades for reducing ozone depleting substances,[11] using less pesticides, having lower livestock density,[12] harvesting less

[5] Carbon monoxide makes it difficult for the lungs to absorb oxygen efficiently (Gunton and Calbick, 2010).

[6] Motor vehicle exhausts contain volatile organic compounds that "combine with nitrogen oxides to form smog and ground-level ozone, which impacts human health and [the] growth of fauna" (Gunton and Calbick, 2010, p. 9).

[7] Energy intensity measures "the amount of energy consumed per unit of gross domestic product" (Gunton and Calbick, 2010, p. 6).

[8] Environmental pricing involves setting the market value of natural resources to better reflect environmental damage caused based on their consumption by humans (Boyd, 2003). For example, tap water is free or vastly underpriced in many parts of Canada. This fails to reflect the full costs of water treatment and water delivery infrastructure.

[9] Sulphur oxides cause various health problems such as "asthma, coughing, and chest pain" (Gunton and Calbick, 2010, p. 9). In addition, sulphur oxides can harm "aquatic and terrestrial ecosystems by altering the acidity of the environment" (Gunton and Calbick, 2010, p. 9). This can lead to acid rain.

[10] Nitrogen oxides are a by-product of combusting fossil fuels (Gunton and Calbick, 2010). Nitrogen oxides are a health hazard and harm aquatic as well as terrestrial environments (Gunton and Calbick, 2010).

[11] This reduction is chiefly the result of Canada's continued adherence to the *Montreal Protocol, 1989.* The protocol was ratified by more than 175 nations and set concrete and binding schedules for many industrialized countries to phase out ozone depleting substances (Boyd, 2003).

timber per square kilometer, and using less fertilizer per square kilometer[13] (Gunton and Calbick, 2010). However, with the exception of reducing ozone-depleting substances, even these better grades are somewhat misleading. For example, the indicator used to measure pesticides fails to "capture the variation in environmental impact associated with the toxicity of different pesticides used" (Gunton and Calbick, 2010, p. 4). Presently, Canadian pesticides contain as many as "60 active ingredients banned in other OECD countries" (Gunton and Calbick, 2010, p. 13). Though the total rate of pesticide use is lower in Canada compared to many other OECD countries, the environmental impact may not be.

Some of the other grades are also misleading in terms of Canada's environmental record. For example, the low timber harvest ratio per square kilometer and low livestock density per square kilometer fail to account for Canada's expansive geographic size. Canadians have access to ample pasturelands and extensive forested areas not found in many other developed OECD countries. Canada's boreal forest is the largest intact forest on earth, with around three million square kilometers of undeveloped land (Laestadius, Nogueron, and Lee, 2006). The sheer size of Canada allows for lower density timber cutting and makes it easier to avoid the use of dense livestock feedlots. Lastly, though Canada uses less fertilizer per capita than other developed countries, the long-term trend is unfavourable (Gunton and Calbick, 2010). Since 1992, Canada's rate of fertilizer use increased 35 percent, while the average in other OECD countries showed an increase of only 7 percent (Gunton and Calbick, 2010, p. 13). In addition to fertilizer use, Gunton and Calbick (2010) also argue that Canada's performance on many other environmental indicators has been steadily worsening since 1992. For example, Canada continues to increase its energy consumption, derives less electricity from renewables, and travels farther in private vehicles than almost every other developed country measured (Gunton and Calbick, 2010, pp. 7-8). While many of the other countries have decreased their environmental impact, in Canada, greenhouse gas emissions increased by 26 percent, pesticide use increased by 7 percent, and livestock

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[12] The livestock industry produces a number of environmental problems "including contamination of water from manure and contamination of air by release of greenhouse gases" (Gunton and Calbick, 2010, p. 13).

[13] Fertilizers release nitrogen, a greenhouse gas linked to climate change (Gunton and Calbick, 2010). Fertilizers can also leach and/or run-off into lakes and rivers raising nitrogen and phosphorous levels. This can eventually result in algae blooms that harm underwater flora and fauna (Gunton and Calbick, 2010).

intensity increased by 10 percent (Gunton and Calbick, 2010). Finally, although Canada has seen decreases since 1992 in air pollutants like nitrogen oxides, sulphur oxides, volatile organic compounds, and carbon monoxide, these reductions are in many cases well below the reductions seen in other OECD countries (Gunton and Calbick, 2010). Canada's reductions are only somewhat better in terms of ozone-depleting substances, nuclear waste production, municipal waste production, pollution abatement and control expenditures, water consumption, sewage treatment, and the timber harvest to growth ratio (Gunton and Calbick, 2010).

It is clear that there are many divergent, even polarized opinions and perspectives regarding the state of Canada's natural environment. This dissertation begins with the premise that these broad divergences exist because environmental problems are also socially constructed problems situated within wider economic, political, and cultural contexts that are often characterized by dissensus. Environmental problems and their respective solutions do not rise and fall solely according to fixed, objective, ecological conditions in reality, inasmuch as they are a function of the ways that such problems are socially constructed and disseminated by powerful social actors, organizations, and institutions (Hannigan, 2006). From this perspective, understanding the social construction and communication of environmental problems is as important for protecting the natural environment as is measuring the extent to which the environment is being degraded (Hannigan, 2006). To this end, researchers have employed a variety of means to study the social construction of environmental problems. For example, studies by Brown and Crable (1973) and later by Grunig (1989) examined industry's use of public marketing campaigns and mainstream magazines to construct "ecological" images. More recently, Pezzullo (2003) studied how members of poor and minority communities often invite news reporters to experience the toxic pollution in and around their neighbourhoods. Schwarze (2003) explored the use of investigative journalism to reveal ecological problems such as asbestos exposure. Shriver and Webb (2009) examined perceptions of environmental health and injustice among Native Americans affected by pollutants from industry. Finally, many researchers have focused on the ways particular environmental topics like animal rights, environmental justice, electricity deregulation, or global warming are generally portrayed in the mainstream news media (see Jacobson, Langin, Carlton and Kaid, 2012; Kirilenko and Stepchenkova, 2012; and Simmons, 2008). This dissertation continues to build along similar constructivist lines, through a news media content analysis of two prolonged and heated controversies

involving the Canadian oil sands industry and its impacts on human health and the natural environment. [14]

The first controversy examined involved an attempt by a junior oil sands company (Oil Sands Underground Mining Corporation[15] (OSUM)) to complete seismic exploration in 2007 to eventually develop a full-scale oil sands extraction project underneath Marie Lake. Seen below, Figure 1.1 shows the lake's location, 300 km northeast of the city of Edmonton, situated inside the northern quadrant of the 780-km² Cold Lake oil sands formation found in the province of Alberta (Imperial Oil, 2013). The lake has a small subdivision on private land on the eastern banks with approximately 80 lots, all of which are fully developed (Atlas of Alberta Lakes, 2005). In 2008, OSUM's attempt at seismic exploration and oil sands development beneath the lakebed sparked fierce resistance in the picturesque cottage community. This resulted in a number of regional news articles in the *Edmonton Journal, Cold Lake Sun,* and *Calgary Herald* as well as a number of Alberta legislative debates over the next eight months aimed at saving the lake from the impending industrial development.

The second controversy examined emerged out of Fort Chipewyan, a mostly Aboriginal community located in northeastern Alberta, Canada. Also seen in Figure 1.1, the town is located on the banks of Lake Athabasca at the basin of the Alberta Athabasca River and is one of the oldest communities in the Regional Municipality of Wood Buffalo. The First Nations and Métis peoples of Fort Chipewyan have endured in Alberta's northernmost region for well over two centuries, despite numerous attempts by the Canadian government to assimilate them into western culture (McCormack, 2010). As well, many of the residents survived years of abuse at the hands of missionaries in

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[14] Oil sands include a combination of water, sand or clay, and bitumen (Dyer and Huot, 2007). Unlike viscous oil, bitumen does not flow readily and must be mined, heated or diluted with steam to be pumped out of the ground (Alberta Energy, 2014). Raw bitumen must be upgraded into crude oil before it can be used in plastics or other products (Alberta Energy, 2014). The Alberta oil sands formation is primarily found in and around Athabasca, Cold Lake, and Peace River (Alberta Energy, 2014). The formation underlies "approximately 140,000 km² (20%) of Alberta, which is an area about the size of Florida" (Dyer and Huot, 2007, p. 1). As of June 2009, the "Alberta Government had granted 84,000 km² of oil sands extraction leases accounting for almost 60% of the total oil-sands area" (Alberta Energy, 2014, p. 1).

[15] OSUM's main oil recovery projects focus on two major areas of Alberta: Cold Lake and Saleski (OSUM Oil Sands Corporation, 2009). The Cold Lake area Taiga Project is proceeding as of late 2013. In the Saleski area, "OSUM and its joint venture partner are extracting from the Grosmont carbonate heavy oil reservoir" (OSUM Oil Sands Corporation, 2009, p. 1).

the Fort Chipewyan Convent of Holy Angels Indian Residential School (McCormack, 2010). Coupled with this, Fort Chipewyan also has longstanding experience in dealing with the pollution caused by industry. For at least 30 years, local residents in the area have expressed serious concerns about the ecological and human health costs of the oil sands extraction and refining plants situated upstream from their town. In 2006, their concerns moved into the broader public realm when Dr. John O'Connor, a local Fort Chipewyan medical practitioner, reported to the media that residents were experiencing a disproportionately high cancer rate that was possibly due to contamination from the oil sands industry. Since then, scientific disputes, smear campaigns, and political debates regarding the impact of the oil sands industry have made their way into mainstream media as residents have fought to protect their livelihoods and the environment on which they depend.

Figure 1.1: Marie Lake, Fort Chipewyan, and the Alberta Oil Sands Formation
Adapted from the PUBLIC DOMAIN work of Einstein, N. (2006). In Wikipedia. Retrieved August 16, 2013, http://en.wikipedia.org/wiki/File:Athabasca_Oil_Sands_map.png

The media's depictions of these controversies were viewed as vital to understanding the ways that environmental problems, like those having to do with the oil sands, are socially constructed. My dissertation research rested on a premise developed by Cynthia Bogard (2001), in her study of the social construction of homelessness in New York and Washington, D.C. In particular, that the news media are "important

producers and arbiters of what becomes influential public knowledge about social problems" (Bogard, 2001, p. 431). In this study, the regional news stories involving Marie Lake and Fort Chipewyan were viewed as critical in shaping public social conceptions about the oil sands industry and its impact on humans, animals, and the environment. Focusing on the media's portrayals brought together the voices of local residents, activists, legislators, lawyers, scientists and other concerned publics under one medium. This allowed for an interpretation of competing knowledges and an examination of how the environmental and human issues were portrayed for policy, politics, and the public (Boykoff, 2009). Taken together, the controversy and media-based focus of this study were advantageous for understanding how environmental realities come to be forged and broadcast. In the end, the dissertation brings together lessons learned from both controversies, offering a constructivist evaluative framework critical of the ways in which journalists, policymakers, academics, scientists, concerned publics, and even environmentalists, include the environment and environmentalism in their communications.

The impetus for carrying out the research in this dissertation is relatively straightforward. It is hoped that this study is a step towards achieving meaningful environmental reforms in Canada, such as:

- legal reforms to respond to the numerous voluntary corporate regulations and discretionary and missing environmental laws at the provincial and federal level;
- bringing environmental laws into alignment with what we do and do not know about ecological science;
- making more opportunities for the public to engage in developing and enforcing environmental laws;
- relying on a broader range of public and corporate policy options and economic instruments such a higher pollution taxes, lower rate green taxes, and low interest green loans to protect the environment;
- using eco-polices and economic instruments like the polluter pays principle as well as environmental pricing that takes environmental harm into account in order to free economic growth from the exploitation of non-renewable and scarce resources; and
- subsidizing renewable energies, energy saving urban design, and green forms of economic growth based on numerous examples of sustainable practice from around the world.

Furthermore, it is believed that achieving meaningful environmental reforms such as these requires studying the ways environmental problems, such as those surrounding the oil sands, are portrayed in the news. In particular, media portrayals influence our environmental perceptions and can shape public policy. Environmental sociologists, who routinely explore the social barriers separating humans from the natural world, have engaged in this sort of research since the 1960s and early 1970s (Hannigan, 2006). Criminologists, however, have only begun to study the natural environment. Arguably, criminologists are in a unique position to make valuable contributions toward environmental protection as they often weigh in on discussions of morality, harm, law, politics, and justice. Though there have been numerous critical examinations of the entities that kill, injure, and assault non-human life forms and ecological systems in blatantly illegal ways in criminology, it was only in 1990 that Lynch coined the term "green criminology" (Lynch, 1990). The term refers to research whose focus shifts beyond traditional interests in typical crime to broader concerns about state, corporations, and the environment (Beirne and South, 2007). Herbig and Joubert (2006) and Gibbs, Gore, McGarrell and Rivers (2010) refer to "conservation criminology."[16] Thus, criminological inquiry has only started to expand its focus beyond legalistic definitions of environmental harm, injustice, and inequality. In addition, there are even fewer criminological-based studies examining the processes of environmental social construction, such as claims-making, framing, and other constructivist methods discussed in forthcoming chapters (White, 2008; Reiman and Leighton, 2013).[17] For these reasons, this study offers a constructivist interpretation of the media's portrayal of two embroiled controversies involving the Canadian oil sands industry. It focuses specifically on examining the ways in which environmental realties are depicted in the

[16] To some extent, the word choices are used to distinguish ecologically-focused work from environmental criminology as coined by Patricia Brantingham and Paul Brantingham (1981). The Brantinghams' approach is focused on understanding spatial and temporal dimensions of crime, among many other criminological issues of time and place in urban environments as opposed to natural environments (see Brantingham and Brantingham, 1981).

[17] See Chapter 2 of *The Rich Get Richer and The Poor Get Prison: Ideology, Class, and Criminal Justice* by Jeffrey Reiman and Paul Leighton (2013, p. 65-117) for a detailed argument regarding the overly narrow and subjective focus of the criminal justice system, especially when it comes to addressing issues of environmental harm. Pages 96-102, *Waging Chemical Warfare Against America*, are also pertinent and discuss evidence that links various forms of pollution with cancer and other serious diseases.

news, particularly cognizant of those depictions that permit, normalize, and/or obfuscate environmental harm and injustice.

1.1 Research Questions

The following research questions guided the inquiry in this dissertation. The *how* and *which* questions below elucidated the social patterns and processes as they were represented in the mainstream media's depictions of the Marie Lake and Fort Chipewyan events. The *what* questions focus on media representations of individuals, groups, social settings, and the natural environment, looking for the meanings that existed within, emerged out of, and were consequential for the two oil sands controversies. Taken together the questions were formulated to understand *how,* and the ways in *which,* environmental problems are constructed in the news and how these constructions might work to shape broader environmental realities. Specifically, three sets of questions were asked, each based on a different rationale as described below. The questions and rationales are as follows:

1. How did the Marie Lake and Fort Chipewyan controversies unfurl in the regional/national news media in reference to economic, scientific, political, cultural, and societal contexts, and which social actors, institutions, and/or organizations contributed? This two-part question elucidated relevant processes and structural contexts, as well as the roles of the central social actors across the two controversies.
2. Did the controversies result in meaningful environmental policy reforms? In addition, did the controversies result in different outcomes for the communities, and why? These questions helped to examine the impact of the controversies for the communities involved, as well as in terms of broader and meaningful environmental reforms.
3. Lastly, how were the human and environmental issues portrayed in the mainstream news media? What were the implications of these portrayals for environmental social constructionism? As one example, this two-part question examined the ways in which environmental representations of nature were anthropocentric, ecocentric and/or biocentric (e.g., placing the value of humans and economies above or on equal footing with non-human animals and

environments). The rationale for this two-part question was to examine how our environmental realities are shaped through the news.

1.2 Dissertation Structure

This dissertation builds on a critical discussion of Canada's environmental status and integrates key concepts from environmental social constructionism, environmental sociology, and green criminology to examine the media's portrayals of two controversies involving the Canadian oil sands industry. This introductory chapter, *Canada's Socially Constructed Environment*, provided a glimpse into the divergent depictions of Canada's natural environment, briefly touched on why these divergences exist, and discussed the research questions and rationales for this dissertation. Chapter 2, *The Social Construction of Environmental Problems*, presents the conceptual framework for the Marie Lake and Fort Chipewyan analyses by reviewing prominent social constructionist literature involving rhetorical analysis, claims-making, framing, and discourse analysis. These constructionist methods are instrumental for understanding the ways the natural environment is portrayed and understood in public discourse. Chapter 3, *Prominent Theories of Environmental Sociology*, introduces the three major ecophilosophical perspectives on which most environmental theories are based, and reviews the competing environmental functions model (Catton and Dunlap, 1989), the treadmill of production thesis (Schnaiberg, 1980), ecological modernization theory (Mol and Spaargaren, 2000), and the risk society thesis (Beck, 1992). Ecophilosophy and these fundamental environmental theories provide the conceptual groundwork for understanding the causes and solutions for environmental harm while also providing a theoretical basis for the analyses and discussions found in Chapters 5 and 6.

Chapter 4, *Methodology, Design and Analysis*, sets out the methodology, controversy-focused design of the research, data sources, and sampling procedure. The chapter also offers a review of the grounded theory methods and procedures used to conduct the research. Interwoven with these methodological sections are discussions of the trustworthiness, rigor, and quality of the study. Chapter 5, *Stopping an Oil Sands Development under Marie Lake*, and Chapter 6, *Downstream and Dealing with the Oil Sands Industry in Fort Chipewyan*, presents the Marie Lake and Fort Chipewyan content analyses. These chapters depict the five main themes of the Marie Lake content analysis and the five main themes of the Fort Chipewyan analysis in the form of

storylines. They also provide an in-depth theoretical and conceptual interpretation of the Marie Lake and Fort Chipewyan findings, followed by a discussion attaching import to the themes, considering different meanings, contextualizing the findings in the broader literature, incorporating examples, as well as offering summarized explanations and overarching conclusions for each theme. In conclusion, Chapter 7, *Greener Social Constructions,* answers the main research questions set out in this introductory chapter. The chapter also integrates the themes developed in Chapters 5 and 6 into a constructivist framework for evaluating the ways that journalists, policymakers, academics, environmentalists, industrialists and concerned publics include the environment and environmentalism in their communications. The framework, entitled *greener social constructions*, is then contextualized amongst the broader literature and the dissertation is concluded by providing examples of *greener social constructions* in theory and practice.

With the dissertation's structure set out, the following chapter presents the conceptual framework that guided this study. The chapter reviews prominent social constructionist literature about rhetorical analysis, claims-making, framing analysis, and discourse analysis. As a point of departure, the chapter contrasts realist and constructionist perspectives on understanding social problems.

Chapter 2

The Social Construction of Environmental Problems

> *Environmental issues do not simply exist 'out there' as if they have an existence separate from human society. Rather, specific environmental problems and harms are always constructed as such through complex social processes of selection and affirmation.*
>
> *-Rob White, 2008, p. 32*

2.1 Realists versus Constructionists

Malcolm Spector's and John Kitsuse's (1973) book, *Social Problems: A Reformation,* offered a constructionist interpretation of existence that directly opposed the realist approach to understanding social problems put forward by Robert Merton and Robert Nisbet (1971) in their book, *Contemporary Social Problems* (Hannigan, 2006). Merton and Nisbet (1971) argued that social problems, such as worries about water pollution, concerns over climate change, or anxieties about the health of indigenous communities are a direct function of asocial and objective conditions found in reality. By asocial and objective, Merton and Nesbit meant that social problems exist in their own right, regardless of social perceptions, and that these problems have a basis in objective empirical scientific facts. Conversely, Spector and Kitsuse (1973) argued that social problems are based on the developments of collective decision-making. This is now often referred to as claims-making or social problems work (Hannigan, 2006). From a constructionist's viewpoint, social problems are a collection of cultural and human perspectives that render certain issues important and significant. Strict constructionists tend to view reality as a shared collection of human perspectives formed through the lens of human culture, which "sifts, selects, names, and categorizes" aspects of the social world as problematic (White, 2008, p. 33).

These perspectives are less polarized today, and many scholars now agree that social problems are constructed through a combination of both material and cultural

factors (Hannigan, 2006; White, 2008). A few criticisms have strengthened the constructionist position, while also questioning some of the underlying assumptions of strict realism. At the forefront of these criticisms was an accusation by realist authors that social constructionists were engaging in "ontological gerrymandering" (Woolgar and Pawluch, 1985, p. 214). In essence, their concern was that constructionists acknowledge the existence of certain problems while simultaneously arguing that such problems are nonexistent in their own right and are actually products of social construction. This raised the question as to which claims to reality ought to be privileged over others (Williams, 1998), or more to the point, how do constructionists decide which problems are worthy of study?

In response, constructionists explained what they had *not* intended to study. For example, Greider and Garkovitch (1994), who focused on understanding environmental social problems, believed that the role of environmental sociology, which focuses on the barriers that serve to separate humans from nature, was not to find some elusive socio-bio-physical model that directly links the complexities of ecosystem breakdown to underlying social variables. The authors argued that such a task was beyond most sociologists' skill sets (Greider and Garkovitch, 1994). Instead, they believed environmental constructionists and sociologists should explore social perceptions about claims regarding the state of the environment and study classic sociological questions about how perception and power play a part in securing meaning. In this context, problems are still meaningful to constructionists and ought to be studied if cultural groups in society acknowledge them as meaningful. Consequently, most contemporary environmental social constructionists will not deny the validity of concerns over nuclear radiation, deforestation, climate change, or the petroleum industry, but there is a general agreement that their immediate and central task is not to prove or disprove the ecological harmfulness of such problems (Dryzek, 2005). Instead, the goal of most environmental sociologists and green criminologists is to speak to the ways that society perceives (and misperceives) material and objective problems due to power and perception processes such as redefinition, negotiation, and legitimization. Dryzek (2005) points out that:

> Just because something is socially interpreted does not mean it is unreal. Pollution does cause illness, species do become extinct, ecosystems cannot absorb stress indefinitely, tropical forests are disappearing. But people can make very different things of these phenomena and—

> especially—their interconnections, providing grist for political dispute. (p. 12)

Thus, potential social problems like those discussed in this dissertation involving the environment and the oil sands do not always gain ascendancy based on scientific facts, even when the facts suggest serious cause for concern (or no concern whatsoever) (Hannigan, 2006). Environmental problems are partially divorced from facts, and rise and fall as a function of successful construction by social actors such as journalists, activists, industrialists, concerned citizens, politicians, and scientists (Hannigan, 2006). These claims-makers frame issues and use rhetoric to breathe life into, or out of, potential problems (Hannigan, 2006).[18] Their perceptions and the processes of knowledge and power have the potential to propel social issues into the realm of importance, where such issues become politically actionable. This is a more moderate but empirically rich constructivist position, which stands at the core of this dissertation and facilitates recognition that humans interpret and misinterpret environmental problems through cultural filters (White, 2008). This stance is empirically rich because it prompts questions oftentimes overlooked or dismissed as non-questions by rigid realist and strict constructionist authors. This in turn provides a unique, yet firm basis for sociological research. Accordingly, in the last few decades moderate "social constructionism has increasingly moved toward the core of social theorising, generating a critical mass of theoretical and empirical contributions across sociology" and into other disciplines and forums (Hannigan, 2006, p. 64).

Environmental communications researchers have also been critical for the constructivist movement and this critique has improved our understanding of the processes of environmental social construction. In his informative book, *Environmental Communication and the Public Sphere,* Robert Cox (2009) surveys much of the field of environmental communications, defining it as a "symbolic medium" for the construction and negotiation of environmental problems (Cox, 2009, p 12). Cox argues that environmental communications, such as those in the mainstream media and those examined in this dissertation, are "pragmatic and constitutive vehicles," that are instrumental for understanding the natural world, as well as our place within it (Cox,

[18] Hannigan (2006) calls individuals engaged in social construction *claims-makers*. His terminology is adopted throughout this dissertation. Snow, Rochford, Worden and Benford (1986) reinvigorated the idea of framing social issues in ways to gain adherents. *Framing* terminology is also used throughout this dissertation. Both concepts are discussed later in this chapter.

2009, p. 12). He contends that environmental communication is pragmatic because it "educates, alerts, persuades, mobilizes and helps people to solve environmental problems" (Cox, 2009, p 12). As well, environmental communications are also constitutive. For example, the media "constitute, or compose, representations of nature and environmental problems themselves as subjects for our understanding" (Cox, 2009, p 12). These communications about nature then invite us to perceive the environment in various ways. This leads us full-circle, to a more pragmatic approach to environmental problem solving. Cox (2009) explains, writing:

> [b]y shaping our perceptions of nature, environmental communication may invite us to perceive forests and rivers as threatening or as bountiful, to regard natural resources as for exploitation or as vital life support systems… Such communication also assists us in defining certain circumstances as problems…[and in associating]…particular values in the public's mind with these problems…In doing so, this constitutive shaping of our perceptions also invites pragmatic communication as we educate, organize, and rally the public to act on these problems and values. (p.12-13)

Taken together, the disciplines underlying environmental communications and the views of moderate constructivists are both essential to the framework of this dissertation. The perspectives offer a theoretical and conceptual basis for understanding the ways the voices of politicians, pro-environmentalists, concerned citizens, and industrialists are likely to be represented in the media's portrayals of the Marie Lake and Fort Chipewyan controversies in Alberta. These perspectives also provide a context for understanding how the media's representations are likely to play a part in shaping broader public conceptions of nature. In particular, constructionist writings suggest that the Marie Lake and Fort Chipewyan issues are unlikely to unfold based solely on objective science and clear-cut facts. Though the ecological and human impacts (or lack of impacts) resulting from the oil sands are likely to play a part in how the stories unfurl, so too are the power and perception processes that work to subjugate, redefine, negotiate, and legitimize the harms caused be the oil sands industry. Lessons from the discipline of environmental communications are also critical to this dissertation. First, the media provides an examinable medium where pragmatic debate about the environment unfolds; second, the media constitutes a "discursive" and "constitutive" space where public conceptions about the environment are built (Cox, 2009, p. 12). Put differently, the media reflects and shapes societal values pertaining to nature. This seems especially likely during heated controversies about the oil sands industry. With these underpinnings

in mind, the remainder of this chapter reviews the prominent models and techniques of environmental social construction; most notably, rhetorical analysis, claims-making, framing, and discourse analysis.

2.2 Models and Techniques of Environmental Social Construction

A constructionist lens has been used to research such diverse environmental topics as factory farming (Kunkel, 1995), meat consumption (Maurer 1995), duck shooting in Australia (Munro, 1997), contesting community environmental hazards (Shriver, Cable, and Kennedy, 2008), discursive strategies to minimize environmental impacts (Kurz, Donaghue, Rapley, and Walker 2005), forest conservation (Midgley, 2007; Fischer and Bliss 2009), and industrial health hazards in a rural native American community (Shriver and Web, 2009). This body of research is informed by sub-disciplines of social constructionist research, most notably, rhetorical analysis, framing analysis, discourse analysis, and claims-making. To varying degrees, each type of analysis hinges on postmodern[19] notions that help us question modern institutions of dominance and authority in our society (Hesse-Biber and Leavy, 2006). For example, rhetorical analysts focus on the linguistic form of persuasive arguments. Rhetoric is the study of how authors and speakers use language (words) to garner influence over others. Rhetoricians often explain how parts of a text are connected in order to persuade or inform. Claims-making includes aspects from rhetorical analysis, framing analysis, and discourse analysis. In particular, claims-making refers to the processes of problem mobilization or issue ascension and is focused on the steps required to propel lesser-known social problems into the broader public and political domain (Hannigan, 2006). Framing analysis is somewhat different, and refers to examining how reality is compartmentalized in ways that help to mobilize a social issue. Entman writes, "[t]o frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation" (1993, p. 52). Framing analysts are often critical of those compartmentalisations that work to subjugate other's views of reality. Lastly, discourse analysts focus on the larger building blocks of

[19] Postmodern theorists "focus on the prominence of dominant ideology and the discourse of power that normalize this ideology to the maintenance of a dominant world order" (Hesse-Biber and Leavy, 2006, p. 31).

social reality and are more concerned with broader social meanings within language as well as discursive practices. They often study how both dominant and insurgent discourses about social reality come into being and shape social practices (Hesse-Biber and Leavy, 2011). The remainder of this chapter contrasts these four types of analysis in an environmental context and interweaves examples from eco-constructionist studies. The goal is to provide a setting for the analysis and discussion chapters that follow. Rhetorical analysis is discussed first.

2.2.1 The Rhetorical Analysis of Environmental Arguments

At the most basic level, rhetorical analysts examine the ways arguments are crafted in order to persuade. The use of rhetoric has a history that interweaves the Greek Empire, the Roman Empire, the Middle Ages, and the Age of Enlightenment (Boykoff, 2009). Over these formative periods, modes of political debate and communication drew on metaphor, storytelling, and multiple fields of argument to communicate important themes and issues (Briggs and Burke, 2005). These early rhetorical debates sowed some of the seeds of modern rhetorical analyses and contemporary social constructionism.

This dissertation makes use of more recent iterations of Stephen Toulmin's (1958) argument analysis model. Toulmin was a well-known British philosopher, author, as well as Oxford educator and his model has been used by social scientists to deconstruct arguments (or claims) (see Best, 1987). Before delving into Toulmin's model, it is important to mention the role that rhetoric plays amongst the broader processes of social constructionism discussed thus far. Rhetorical analysts are generally less concerned with Foucauldian questions about the power of individuals and institutions, focusing instead on the construction and deconstruction of arguments. For example, Best (1987) tells readers that rhetoric is central, not peripheral to the construction of social problems. He terms rhetoricians, claims-makers, writing:

> [c]laims-makers inevitably hope to persuade. Typically, they want to convince others that X is a problem, that Y offers a solution to that problem, or that a policy of Z should be adopted to bring that solution to bear. While the success of claims-making may well depend, in part, on the constellation of interests and resources held by various constituencies in the process, the way claims are articulated also affects whether they persuade and move the audiences to which they are addressed. Claims-making, then, is a rhetorical activity. (p. 102)

Best (1987) argues that though the constellation of interests and resources are important to the construction of social problems, these factors are not central. Consequently, rhetorical analysts focus on the form and persuasiveness of arguments and less on the power of the arguer. Gusfield (1981) posits that all supposedly objective and neutral claims to truth such as those proffered by scientists and journalists must partially be considered as rhetorical techniques. Even the most earnest scientists and devoutly neutral journalists still display biases in their communications. It is the job of rhetoricians to look beyond the scientific controls for objectivity and the journalistic claims to neutrality to see the persuasiveness inherent in the text.

For these reasons, Toulmin's (1958) rhetorical analysis model is particularly useful. The model contains three components—*grounds*, *warrants*, and *conclusions* (Toulmin, 1958). The remainder of this section discusses each in an environmental context. In brief, *grounds* provide the basis for an argument, *warrants* take the form of fields of argument, and *conclusions* are those suggestions offered to ameliorate or eradicate a social problem (Toulmin, 1958). The following section begins with *grounds*.

2.2.1.1 Grounds

Toulmin (1958) contended that all arguments or claims rest on grounds, which are essentially the important facts that underpin the argument. Specifically, grounds come in the form of definitions, examples, and numeric estimates that establish a topics domain (Best, 1987). They also set the groundwork for an argument and offer persuasive reasons that are supportive of the claim (Toulmin, 1958). For instance, some assertions are initially open to dispute, like climate change, whereby persuasion as well as examples and numeric estimates are necessary to provide grounding for the facts that are to follow. Andrew Shepherd, a Professor of Earth Observation at the University of Leeds in the U.K., provides grounds for his climate change argument in a *Canadian Broadcasting Corporation* (CBC) news article:

> Our new estimates are the most reliable to date and provide the clearest evidence yet of polar ice sheet losses…They also end 20 years of uncertainty regarding changes to the Greenland and Antarctic ice sheets. They are intended to be the benchmark data set for climate scientists from now on... …Greenland's ice sheets are melting at a rate five times faster than they were in the 1990s…[and] have contributed just over 11 millimetres to global sea levels since 1992… This amounts to one-fifth of all sea level rise over the same period. (Shepherd in McDiarmid, 2012, p. 1)

The use of authoritative persuasion is seen in many of Shepherd's statements, such as "the most reliable to date," "the clearest evidence yet," "[an] end [to] 20 years of uncertainty," and "the benchmark data set for climate scientists" (2012, p. 1). Shepherd is using grounds to convey his findings as definitive. Alternatively, some environmental assertions are already well established, yet they require redefinition in order to solicit support. For example, in his book, *Unnatural Law* (2003), David Boyd, a well-respected environmental lawyer and adjunct professor in the School of Resource and Environmental Management at Simon Fraser University, British Columbia, explains that non-point source pollution, which today is a pervasive environmental problem, is not widely recognized as such. Boyd (2003) redefines and reinvigorates this particular pollution problem for his readers by using examples and estimates. The reader learns that instead of originating from a single source, such as a factory, non-point source pollution is "diffuse" and includes "agricultural run-off," "urban run-off," and "airborne water pollution" originating locally and from around the world (Boyd, 2003, p. 249). For example, pesticides, fertilizers, and manure run-off from large factory farms are serious environmental problems in some rural areas of Canada (Boyd, 2003). Readers also learn that industrial, factory, and municipal point sources of pollution represent only a small fraction (10-20 percent) of all sources of pollution and many experts agree that up to 80 percent of pollution problems are caused by non-point sources (Boyd, 2003, p. 36). Ultimately, Boyd's (2003) redefinition of the issue re-grounds it, making it more salient for the reader.

Arguments are also grounded by casting them in particular ways (Toulmin, 1958). For example, ecological degradation can be cast as a human health concern, an environmental issue, a scientific problem, a political issue, an economic issue, an animal rights infringement, or in several other ways. For instance, Fitzgerald and Baralt (2010) examined the ways the topic of mercury-contaminated fish was being cast in the *Globe and Mail* and the *New York Times*. Their research explored "the construction of responsibility for mercury contamination and mitigating the attendant risks" (2010, p. 341). They found that newspapers, to a small extent, cast the stories about mercury contamination as though the government was responsible to inform the public about the attendant risks, but scant attention was focused on the responsibility of the "mercury-releasing industries, the commercial fish industry, and restaurants and supermarkets to protect consumers" (2010, p. 341). Foremost, however, the media recast the mercury stories by directing responsibility toward individual consumers to protect themselves and

reduce their own intake of mercury. Fitzgerald and Baralt (2010) argue that casting the stories in this way "individualized the responsibility" and "normalized the risks" posed by the hazards of mercury contamination (p. 342). Mercury poisoning was made to appear virtually inevitable and invisible through the text and is instead an unpleasant fact of day-to-day life that requires management by vulnerable consumers (e.g., children and pregnant mothers). These sorts of rhetorical constructions in the news work to protect industries and government entities responsible for food contamination in the first place.

Ecological problems are also increasingly being cast as human/environmental rights issues. In a more recent book, *The Environmental Rights Revolution* (2012), Boyd posits that there is an environmental rights revolution underway in many countries, not found in Canada or the United States. Boyd (2012) argues that beginning in the 1970s, social awareness of worldwide environmental harm and government neglect resulted in constitutional changes in many developing countries, materializing in powerful environmental rights language (Boyd, 2012). Boyd's book casts a multitude of environmental problems as eco-rights issues and provides examples and numeric estimates as grounds for his arguments. In doing so, Boyd (2012) forces the reader to question which organisms and entities (e.g., humans, animals, and environments) deserve to have their rights enshrined in law and to what extent.

Finally, grounds also come in the form of sensational examples, atrocity tales, or emotion grabbers (Toulmin, 1958). As an example, the *Globe and Mail* released a news article in 2004 focused on the serious and lingering health effects of the asbestos industry in Sarnia, Toronto, Ontario (Mittelstaedt, 2004). The article documents how thousands of workers have contracted asbestos related cancer and respiratory diseases while government and industry officials appear to be ignoring the issue (Mittelstaedt, 2004). Although asbestos has been strictly controlled in Canada since the mid-1970s, the material was once used "indiscriminately as an insulating wrap for pipes and reactor vessels in petrochemical plants" (Mittelstaedt, 2004, p. 1). To date, Canadian industries still export asbestos to other countries for a multitude of purposes (Ruff, 2012). To impress upon readers the seriousness of the health issues coming out of Sarnia the author also mentions the 1984 Bhopal Chemical disaster in India, stating:

> …Sarnia, [is in] the epicentre of what, by some assessments, is the worst outbreak of industrial disease in recent Canadian history. …The assessment that the city is experiencing a kind of slow-motion Bhopal is hard to make conclusively, because no one is bothering to study in any

> detail the health of workers in the country's blue-collar communities. (Mittelstaedt, 2004, p. 1)

The reference to the Bhopal Chemical disaster in India works to ground the asbestos health issues in Sarnia in a particularly catastrophic context. Bhopal was arguably one of the world's worst industrial disasters. In a matter of hours, approximately 200,000 people were poisoned by methyl isocyanate gas and other contaminants from the Union Carbide refinery as the chemicals permeated surrounding communities. Varma and Varma (2005) write that, "[t]he exact human death toll is still to be unknown; however, it is estimated that nearly 5,000 people died within 2 days, and the death toll eventually reached upward of 20,000. A total of 200,000 in a city of 800,000 (1984 population) were exposed to the gas" (p. 38). "More than 60,000 of them required long-term treatment" (D. R. Varma (1986), as cited in Varma and Varma 2005, p. 38).

Adding to the tragedy, the victims of the Bhopal disaster have not been adequately compensated. In 1986, a lawsuit against Union Carbide was brought before the Bhopal district court and was eventually appealed to the Supreme Court of India (Gonsalves, 2010). Before the Court could issue a ruling, the Indian government and Union Carbide reached a settlement requiring the corporation to pay the Indian government $470 million in compensation (Kibel and Rosencranz, 1994). This amount was far less than the $300 billion that was being sought before the courts. The $470 million compensation was to be distributed to those who had been injured and the surviving families of those who had been killed (Kibel and Rosencranz, 1994). Kibel and Rosencranz (1994) argued that the compensation scheme and amount of compensation was woefully inadequate. They wrote:

> There are no provisions for detoxifying the soil or for assisting former farmers. There are no provisions for addressing the problems of wide-scale population displacement. There are no provisions for the medical care of the unborn. Unless these larger, broad-based problems are addressed, the settlement will not truly succeed in compensating or rehabilitating the victims. To effectively compensate these persons, the distribution scheme must provide for the future of the Bhopal community and the welfare of its affected unborn generations. (Kibel and Rosencranz, 1994, p. 1644)

The Union Carbide victims have still not been adequately compensated. In addition, many became ill long after the tragedy and received no compensation whatsoever (Gonsalves, 2010). In 2010 the Indian government finally agreed to pay an additional

$15.8 million in compensation to the victims (Bhopal carbide victims to receive extra $15.8M, 2010). Despite this, activists and academics argue that the payments made to the victims of the Bhopal disaster have been paltry (Gonsalves, 2010). Ultimately, in the end, referring to the Bhopal disaster grounded the very serious health issues that are emerging out of Sarnia, Ontario, in this particularly tragic context. As is still the case with Bhopal, as of late 2013, it appears that little has been done to help the victims living in Sarnia, Ontario.

Another example of grounding an argument in an emotional context is seen in the recent comments from recording artist, Neil Young. The musician likened the Alberta oil sands to Hiroshima, stating:

> The fact is, Fort McMurray looks like Hiroshima. Fort McMurray is a wasteland. The Indians up there and the native peoples are dying. The fuels all over – the fumes everywhere – you can smell it when you get to town. The closest place to Fort McMurray that is doing the tar sands work is 25 or 30 miles out of town and you can taste it when you get to Fort McMurray. People are sick. People are dying of cancer because of this. All the First Nations people up there are threatened by this. (as cited in Babad, 2013, p. 2)

This rhetorical technique not only grounded the Alberta oil sands in the particularly catastrophic context of Hiroshima, but also brought more attention to bear on the controversy. Young's comments resulted in a spate of news articles discussing the veracity of his claims.

2.2.1.2 Warrants

Once the grounds of an argument are established, warrants propel the argument toward its conclusion. Best (1987) tells us that warrants have a special place in Toulmin's scheme (1958). Warrants function on a higher level of generality than grounds and are not normally explicit (Toulmin, 1958). They justify drawing certain conclusions based on the grounds of a claim and are elucidated when the rhetorical analyst recognizes the field of argument being used and how the field works to compel the reader to adopt a particular interpretation or action (Best, 1987). Fields of argument include mathematical, moral, causal, legal, logical, and so forth (Toulmin, 1958, p. 14). For example, in David Boyd's book, *The Environmental Rights Revolution* (2012), legal and causal warrants take precedence. This is demonstrated through Boyd's analysis of constitutions and legal decisions of many nations in Europe, Asia, Africa, and Latin

America. Boyd (2012) focuses on the associations between constitutional protection and reduced ecological footprints, improved environmental laws, and a better standard of living in the countries under examination. The unstated warrant is that causal analyses are preferable to other ways of knowing when it comes to the effects of constitutional environmental language. The causal warrant justifies Boyd's conclusion that enshrining environmental rights will likely result in positive outcomes for countries like Canada and the United States that make no mention of the environment in their constitutions.

A different example of using warrants is seen in the work of some feminist authors who have been successful in lodging persuasive moral/logical arguments for the protection of animals. For example, Adams and Donovan (1994) argue that through "sustained exploitation, humans have inflicted enormous suffering on animals" (p. 11). They argue against the false opposition of humans versus animals and believe that humans have maintained an illusionary world in which "chimpanzees, snails, barracudas, and tree frogs are somehow more alike than chimpanzees and humans" (Adams and Donovan, 1996, p. 22). The authors ask us to recognize the false dichotomy that is human versus animal, just as we have begrudgingly begun to recognize the false dichotomy that is man versus woman. In this case, the authors persuade us to conclude that humans are much more like animals than we like to think.[20] The reader is convinced by using both a logical and moral warrant.

Another important example is seen in the warrants used during environmental debates that are often intertwined with economic concerns. Government spokespeople, for instance, often argue that the goals of environmental protection and economic development are separate and somewhat incompatible. Ronald Reagan was especially rhetorically effective in this regard. He managed to cast environmentalism as pessimistic, alarmist and in some cases, anti-patriotic (Bruner and Oelschlaeger, 1994). In *Rhetoric, Environmentalism, and Environmental* Ethics, Michael Bruner and Max Oelschlaeger (1994) tell readers:

> Voters elected Reagan at least in part because they believed that environmentalism would raise taxes, depress economic activity, and cost

[20] The notion that humans are much more like animals than we like to think echoes the Pulitzer Prize writings of René Dubos in *So Human an Animal* (1968). Dubos argued that humans have become disconnected from nature through a relentless pursuit of scientific knowledge and technological innovation (1968). He believes that humans have changed their physical and social environments in ways detrimental to the human animal (Dubos, 1968).

> some people their jobs. Simultaneously, they discounted the long-term costs of anti-environmentalism (reductions of biodiversity, allergies caused by airborne pollutants, and so on). … [H]is reassuring, even grand-fatherly demeanour helped recontextualize environmentalism as an invention of radicals—fringe groups, special interest groups, and liberal media, tree huggers, and people haters—who opposed the dominant myth of the "American way of life." (p. 379-380)

In essence, Ronald Regan convinced the electorate using a "false dichotomy" warrant by repeatedly implying that the environment and the economy were on two sides of the same coin. Little has changed since the Reagan era. Bricker (2012) studied the rhetoric seen in President Obama's environmental policy in the first 17 months of his term. The President responded to various environmental issues using a number of rhetorical strategies. Bricker examined the first 40 speeches on the environment delivered by the President and found that he primarily used fiscal and national security rhetoric to validate his policies that were anti-environmental (2012). This "false dichotomy" warrant works to normalize and legitimize environmental harm and blinds the electorate to eco-innovations and other market ideas that foster strong economies while still being pro-environmental. It is a simple, but persuasive warrant used by many politicians.

Before discussing the final component of Toulmin's model, it is important to mention that to be persuaded by a warrant, the reader must belong to a group that understands and deems some aspects of the warrant as valid (Willard, 1982). Social actors on both sides of a controversy will rely on various warrants when arguing, whereas concluding that something must be done demands that readers accept some of the warrants being used. Willard's (1982) point, though a step away from analyzing the argument itself, elucidates a difficulty that some social actors have experienced when trying to mobilize their environmental causes using warrants not generally accepted as legitimate for establishing the truth. For example, the day-to-day pollution problems that some indigenous cultures endure are likely to be deemed less legitimate by certain politicians when compared to causal and scientific warrants that discount the effects of pollution.

2.2.1.3 Conclusions

The final component of Toulmin`s (1958) model is conclusions. Conclusions typically call for actions to alleviate or eradicate a social problem and are based on grounds and warrants. Toulmin (1958) argued that conclusions should include all of the

results of an argument. In addition, conclusions should be crafted in ways that increase the likelihood of their acceptance. Environmental conclusions, for example, are often crafted tentatively and/or ambiguously so that they are accepted on the political agenda. Radical actions like overthrowing capitalism to reduce pollution are less likely to be accepted than the more tempered "polluter pays" principle whereby corporations must purchase pollutions credits or are charged a fee based on the amount of pollution they emit. As another example, Corvellec and Boholm (2008) examined the rhetoric found in the conclusions of Environmental Impact Assessments (EIA) for wind-farm developments. EIA documents they examined contained a detailed discussion of the risks attached to the projects for bird life, human health, and commercial fishing. The authors argue that EIA documents function as rhetorical focal points for both the creation of risk and risk neutralization, whereas the assessments contain long lists of potential risks for a project, but also systematically label these risks as negligible and/or manageable (Corvellec and Boholm, 2008). This renders any sort of definitive conclusion, inconclusive. Overall, Toulmin (1958) asks readers to be critical of conclusions in terms of whether, and to what extent, the conclusion flows from grounds and/or warrants. In particular, conclusions are often based on flimsy and/or unsubstantiated grounds and/or warrants.

2.2.1.4 Summarizing the Rhetorical Construction of Environmental Problems

Toulmin's model provides an important tool for recognizing how environmental arguments are constructed. Toulmin's (1958) approach puts less emphasis on the activities and tasks required to mobilize an issue and focuses specifically on the language and techniques of argumentation that are effective. Best (1997) expands on this approach, arguing that most constructionist researchers pay too little attention to rhetoric, focusing instead on substantive matters such as measuring problematic environmental conditions. He believes that the construction and presentation of effective arguments are often overlooked in favour of traditional sociological questions about power and authority. There are relatively few contemporary studies of environmental rhetoric. A few research articles focus on political rhetoric whereby politicians justify pro-economic or pro-military policies at the expense of the environment (Bruner and Oelschlaeger, 1994; Bricker, 2012). Other studies, like the work of Dryzek (2005), describe the general rhetoric of environmentalists as spanning from those who advocate for the complete removal of humans from nature based on moral and logical arguments,

through to a more conservative rhetoric of rationality that argues for forms of ecofriendly capitalism. More recently, Barry, Ellis, and Robinson (2008) examined some of the specific rhetorical arguments supporting and opposing renewable energy in the form of wind farms. Anti-wind farm social actors used a sacrifice and despoliation rhetoric focused on preserving pristine and beautiful places from the erection of unsightly wind turbines. Opposing arguments were built upon the untrustworthiness of government officials and concern that the environment was being commercialized for the purposes of wind farm development. Wind farm supporters used an imperative rhetoric grounded in the argument that climate change was imminent and pleaded with the opposition to listen to their appeals to science and rationality (Barry, Ellis, and Robinson, 2008). In sum, the study of rhetoric is an important intermediary step in understanding how environmental problems are socially constructed. The following section discusses claims-making, which is also critical in understanding the construction of environmental problems.

2.2.2 Claims-making and the Environment

Claims are concerns about social conditions that group members perceive to be offensive and undesirable (Spector and Kitsuse, 1973). Claims-making includes all of the techniques of environmental social construction reviewed in this chapter (i.e., rhetorical analysis, framing analysis, and discourse analysis). The process requires positioning potential social problems among powerful and authoritative interests so that the problem is recognized and possibly solved (Hannigan, 2006). John Hannigan (2006), a Professor of Sociology at the University of Toronto, Canada, offers an informative and integrative model of claims-making activities in his book, *Environmental Sociology*. This model comprises three stages: *assembling, presenting,* and *contesting*.[21] In brief, *assembling* requires carefully naming the problem, distinguishing its uniqueness, determining its

[21] Hannigan cites two models as critical to the development of his claims-making model. In the first, Wiener (1981) identifies three processes through which the public can collectively come to identify a problem; namely, animating, legitimizing, and demonstrating. Wiener depicts the collective definition of an issue that eventually wins out, as the result of a ricocheting amongst these three key processes. In the second model, Solesbury (1976) identifies three tasks necessary for an environmental issue to gain ascendancy in political circles. He argues that changes in political environmental agendas may in part be due to changes in the state of the environment, but also have to do with evolving public views as to what issues are important. Like Weiner (1981), Solesbury argues that a potential issue must switch among three criteria - commanding attention, claiming legitimacy, and invoking action - before it is likely to make it on the public and political agenda.

scientific, technical, moral, and legal basis, as well as deciding who is responsible for its origin (Hannigan, 2006). *Presenting* involves commanding attention through evocative terminology and imagery, as well as through legitimization, which involves the use of rhetorical arguments and establishing links with scientific, journalistic, and government authorities (Hannigan, 2006). Lastly, *contesting* involves navigating bureaucratic hurdles, and aligning claims with dominant social discourses (Hannigan, 2006). Hannigan's (2006) model, like Toulmin's rhetorical analysis model discussed in the previous section, provides a useful context for the Marie Lake and Fort Chipewyan analysis and discussion chapters to follow. The following section discusses each stage if his model in an environmental context.

2.2.2.1 Assembling Claims

Assembling environmental claims requires the initial discovery and elaboration of a possible problem (Hannigan, 2006). Social actors engage in specific activities such as naming the problem, distinguishing it as important, determining the scientific, technical, moral, and/or legal basis of the claim, and gauging who is responsible (Hannigan, 2006). At this stage, some environmental problems originate in the realm of science. For example, knowledge about the hole in the ozone layer in the late 1980s was not connected to our everyday observations, but to scientific study and verification (Garcia, 2011). Many environmental problems such as global warming, toxic bioaccumulation, cross-contamination of traditional crops with genetically modified seed strains, and the role of pesticides in human and non-human health originate in the realm of science. Other problems, however, may originate more closely to local experiences. For instance, concern over waste and pollution can constitute harm to a community in the form of being unsightly, or by causing environmental and/or human health problems (White, 2008). However, whether something is done to ameliorate locally experienced environmental problems often hinges on the interests and power exercised by the affected community. For example, poor and minority populations often directly experience and suffer disproportionately from environmental pollution, yet they have little recourse (Stretesky, Johnston, and Arney, 2003). For instance, Laura Westra (2008) in her essay, *First Nations of Canada and the Legal and Illegal Attacks on Their Existence*, outlines some of the ways in that resource development, legal decisions, and corporate initiatives are used to undermine the ecological concerns of First Nations people who often experience environmental harm first hand. Though First Nations' knowledge of

environmental harm is routinely gathered through local observation and by the experiences of breathing polluted air and drinking toxic water, it is often called anecdotal and ignored. This is often the case, even though such environmental harms are perhaps best interpreted as a direct attack on the indigenous culture's health and livelihood (Westra, 2008).

A claim may lay dormant at the assembling stage of Hannigan's (2006) model. Whether it originates from scientific study or by local experiences, the claim may fail to ascend into the broader public domain. For example, on one hand, local knowledge and experience possessed by individuals harmed by an environmental event is often ignored, delegitimized, contested, or simply treated as an outright lie. For example, as just mentioned, indigenous environmental reforms are routinely subverted by labelling Aboriginal belief systems as antiquated, unscientific, or anti-capitalist. On the other hand, scientific evidence of harm may be handicapped by a combination of scholarly caution, excessive use of technical jargon, and inexperience or fear when it comes to using the media (Hannigan, 2006). For example, complex claims like bioaccumulation or entropy are less likely to move out of the assembling stage than simple constructs that are easily depicted such as overpopulation or species extinction. In the end, most emergent environmental problems will not penetrate the mass media and end up on the government's agenda through assembling alone. Instead, assembling primarily involves readying a problem for the presentation stage.

2.2.2.2 Presenting Claims

Presenting an environmental issue involves commanding attention and legitimating the assembled claims (Hannigan, 2006). Some events are so tragic and/or highly publicized that they do not need help to command widespread attention. For example, the nuclear meltdown at Chernobyl easily commanded worldwide attention. On April 26, 1986, a nuclear energy station at Chernobyl in the Ukraine had a catastrophic nuclear meltdown (Gunn, 2008). Routine maintenance at the station resulted in overheating and caused a massive radioactive leak into the surrounding Ukraine, and across Europe (Gunn, 2008, p. 592). The events at Chernobyl resulted in widespread health problems and death. There are estimates that over "three million Russians suffered radiation exposure with 370,000 likely to develop a radiation-linked illness" (Gunn, 2008, p. 594). By 2001, total death estimates from Chernobyl were in the

upwards of “15,000 people” (Gunn, 2008, p. 594). More recently the British Petroleum oil spill garnered widespread international attention following an explosion on an off shore oil rig in 2010, which resulted in “4.1 million barrels of oil being spewed into the Gulf of Mexico over 87 days” (BP leak the world's worst accidental oil spill, 2010, p. 1). This was the biggest offshore oil spill in the history of the petroleum industry (BP leak the world's worst accidental oil spill, 2010, p. 1). The widespread and tragic nature of both the Chernobyl meltdown and the BP oil spill easily commanded attention on the world stage.

In a slightly different vein, some claims are already imbued with powerful cultural resonance. For example, concern over nuclear radiation has a long history in the public’s consciousness. Palfreman (2006) describes how cultural perspectives about nuclear power changed throughout the 1970s and 1980s, eventually taking on a much darker image. The transformation was propelled in part by the mainstream media, as well as by their portrayals when it came to nuclear incidents. Palfreman (2006) discusses how beginning in the early 1970s movies like *Godzilla* and *Them* began depicting nuclear radiation as a sinister force and that by the late 1970s most of the public had seen “images of H-bomb tests” and learned of the “potential problems associated with nuclear war and radiation fall-out” (Palfreman, 2006, p. 25). During these years, many scientists and environmental groups had started to raise concerns about the potential harms associated with nuclear radiation (Palfreman, 2006). In 1979, the Three Mile Island nuclear power plant in Pennsylvania had a partial meltdown that resulted in minimal radiation leakage. Only about, “…15 curies of dangerous iodide-131 were emitted. In contrast, the 1986 Chernobyl disaster…which led to about 40 million curies of the isotope being released” (Walker, 2004, p. 334). Despite the fact that the Three Mile Island meltdown was contained within the reactor vessel, it did result in hundreds of news articles and books on the subject (Palfreman, 2006). The event was followed by a film entitled, *The China Syndrome,* starring Jane Fonda and Michael Douglas that portrayed a covert and dangerous nuclear establishment going to great lengths to cover-up their crimes (Palfreman, 2006). By 1986, an already suspicious public was alerted to the widespread and serious radiation poisoning in Chernobyl, which added another black mark for nuclear energy. Palfreman (2006) writes:

> [Chernobyl] generated numerous TV news segments and articles, several books (Ford, 1986; Marples, 1988; G. Medvedev, 1991; Z. Medvedev, 1990; Mould, 2000; Read, 1993; Yaroshinkaya, 1994), a novel (Pohl, 1988), and a play (Gubaryev, 1987). This vivid and relentless negative coverage of the accident—for example, Newsweek called nuclear energy

> "a bargain with the Devil" (Newsweek, 1987)—swayed public perceptions of nuclear energy around the world. A number of European countries—Italy, Sweden, Germany, and Austria—subsequently voted to phase out their nuclear energy programs. (p. 26-27)

More recently, the environmental damage tied to the Fukushima Daiichi power plant north of Tokyo has all but sealed the public's negative image of nuclear power. The plant was badly damaged by a tsunami on March 11, 2011, resulting in "fuel-rod meltdowns at three reactors" (Arase, 2012, p. 313). The consequence was widespread radioactive contamination of the air and sea, as well as the evacuation of "160,000 people" (Arase, 2012, p. 313). The meltdown has arguably resulted in the most serious nuclear crisis since Chernobyl that occurred a quarter of a century earlier. As of late 2013, radiation leakage and poisoning persist at the Fukushima Daiichi power plant, and concern over nuclear radiation is arguably just as pervasive as ever in the public's consciousness.

When an environmental incident is neither tragic nor culturally resonant, commanding attention may require additional evocative verbal and visual imagery. For instance, seeing a photograph of what appeared to be a hole in the ozone layer played a large part in prompting the *Montreal Protocol* (1987)[22] that strictly regulated ozone-depleting substances on an international scale (Boyd, 2003). However, few knew that the image was not actually a hole, but instead a colour-coded ordinal scale of continuous ozone gradations that looked like a hole (Hannigan, 2006). Another example of evocative terminology was seen when German environmentalists began to use the term, *Waldsterben,* which means forest dieback. Forest dieback is caused by acid rain, and the effects of acid rain seemed to suddenly garner greater media coverage following the use of the term (Hannigan, 2006). Another example is seen in how technical data on the diminishing size of seal herds and codfish stocks lost much of its relevance to reporters when activists released seal clubbing images to the media (Hannigan, 2006). These images were particularly evocative and seen in many international newscasts.

[22] The *Montreal Protocol on Substances that Deplete the Ozone Layer,* 1987 is an international treaty aimed at protecting the stratospheric ozone layer. The treaty followed the *Vienna Convention on the protection of the Ozone Layer,* 1985 (Boyd, 2003, p. 70). The discussions put Canada on the leading-edge of phasing out ozone-depleting substances, mandating that industrialized countries halve CFC usage by 1999, and completely stop halon usage by 1992 (Boyd, 2003, p. 71). Despite corporate opposition to the *Montreal Protocol,* "Canada was one of the first countries, along with Sweden, Norway, and the United States, to ban the use of CFCs…" (Boyd, 2003, p. 70).

In addition to evocative verbal and visual imagery, potential environmental problems often also need to be legitimated through rhetorical techniques and/or through building associations with authority (Hannigan, 2006). As discussed in the previous section in this chapter, rhetorical arguments are crafted to persuade us. Environmental rhetoric often involves the justification of pro-environmental behaviour based on various argumentative grounds such as morality or rationality. For example, Dryzek (2005) found that eco-feminists, deep ecologists, and other advocates of deep green radicalism have tended to adopt an argumentative *rhetoric of rectitude* as a method of persuasion, which justifies the harmfulness of environmental events on moral grounds. Their arguments are grounded in the belief that it is immoral to harm nature—human or non-human—as we are all accorded the same intrinsic worth. Environmental rationalists, on the other hand, advocate for a more down to earth sustainable development paradigm, which tends toward a *rhetoric of rationality* (Dryzek, 2005). Environmental rationalists refuse to place human importance above or below nature, but feel that human intelligence engenders us with a responsibility to strive for a sustainable future.

Hannigan (2006) also explains how legitimization is accomplished by becoming an authority on an issue, or through building links with authority. For example, Hansen (1993) describes how Greenpeace became an authority on being green by acting as a conduit between environmental science and the media. GreenPeace's claims-making ability does not flow out of their own independent scientific research as much as from their ingenuity in selecting, spinning, and elaborating other scientists' interpretations of environmental issues that might have otherwise gone unnoticed (Hansen, 1993). Legitimization also results from scientists collaborating with the media, government, and or legal authorities. Hannigan (2006) pinpoints some moments where potential environmental problems were sent into the "zone of legitimacy" (Hannigan, 2006, p. 72). For example, global warming was arguably legitimized in 1988 when Dr. Hansen addressed the US senate, stating he was 99 percent certain that the climatic warming of the 1980s was not due to chance, but instead caused by global warming. A number of news providers helped legitimize his study in the public and political realm.[23] Another example followed "The 5 Mill Study" (1987), which was a two-year investigation of the extent of dioxin contamination caused by pulp and paper mills in the United States. The

[23] Though global warming is widely recognized, whether it has made it into the "zone of legitimacy" is still open to debate. See Leroux (2005) for a discussion of these issues.

study found dioxin contamination at most facilities, as well as in fish, and in surrounding areas. World Health Organization (WHO) officials write, “Dioxins are highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer” (World Health Organization, 2010, p.1). The “5 Mill Study” received considerable press coverage in the *New York Times*, and other national papers where readers were also warned that traces of dioxins from the pulp milling process were left behind in certain household paper products (Harrison and Hoberg, 1991). Not long after these events transpired, dioxins were more strictly regulated by the United States Environmental Protection Agency.

A more recent example of legitimizing environmental harms through building links with authority was seen with the case of the British oil trader, Trafigura. It is estimated that thousands of West Africans were hospitalized in 2006, and many died, after hundreds of tonnes of highly toxic oil waste were dumped around Abidjan, Ivory Coast (Leigh, 2009). Following the incident, the company denied compensation claims, while Trafigura lawyers threatened the mainstream media who sought to contradict the company’s version of events (Leigh, 2009). However, eventually dozens of incriminating Trafigura emails surfaced, revealing how stock traders were warned in advance that the company’s chemical processing plant would produce toxic waste that was illegal in the west (Leigh, 2009). Greenpeace called for the oil firm to be prosecuted in London courts, arguing that the company knew the contamination was likely to cause serious injuries and death, yet dumped the toxic waste anyways. In this case, once the victim’s claims were legitimated by the mainstream news media and through Greenpeace, Trafigura was forced to compensate for an undisclosed amount (Leigh, 2009).

2.2.2.3 Contesting Claims

Contesting is the final stage of Hannigan’s (2006) claims-making model. Despite the legitimization and presentation of a claim, there is still no guarantee that the socially constructed problem will survive being contested. Gould, Weinberg, and Schnaiberg (1993) emphasize that many events make it onto the agenda, yet never really influence the agenda, especially when their proponents advocate for a reallocation of resources away from capital interests. Solesbury (1976) adds that issues lose momentum at this stage because of government bureaucrats who postpone them, refer them back for further research, and/or constantly add amendments. Consequently, contesting is a ‘fine

art' given the cross pressures legislators face (Hannigan, 2006, p. 73). Walker (1981) concurs, noting that:

> Public policies seldom result from a rational process in which problems are precisely identified and then carefully matched with optimal solutions. Most polices emerge haltingly and piecemeal from a complicated series of bargains and compromises that reflect the biases, goals and enhancement needs of established agencies, professional communities and ambitions of political entrepreneurs. (p. 90)

Kingdon (1984) offers two useful criteria for predicting which policies will survive at the contesting stage. First, at the very least, the proposed claim must seem both scientifically sound and politically administrable (Kingdon, 1984). For example, Canadian laws governing biodiversity and endangered species attempt to balance the economic interests of the forestry industry with the scientific principles of conservation biology. To accomplish this feat, the *Species at Risk Act* (2002) protects a species' "residence" as opposed to the species' habitat. At face value, this seems like an attempt to balance ecology and capital interests, but this policy falls short in protecting the environment. It has resulted in solitary trees left standing among otherwise clear-cut forests that read "do not disturb," this "wildlife tree" has been "saved for food, shelter, and nesting" (Boyd, 2003, p.2). Thus, many pro-environmental policies merely appear to have survived the contesting stage. Second, Kingdon (1984) makes the point that policies must also be compatible with the values of policy makers. Hannigan (2006) argues that this is problematic because most politicians do not have ecocentric beliefs when it comes to the natural environment; instead, most politicians are anthropocentric, placing the interests of humans and economies above ecosystems and other non-human organisms. Ecocentrists, on the other hand, refuse to place humans above or below other species arguing that humans have an obligation to the planet based on their understandings of its ecological limits (White, 2008). Yet few politicians are ecocentrists and many proposed environmental policies are not considered politically actionable. Unless there is a perceptible crisis, the policy must appear virtually neutral to survive the contestation stage. Ideologically tinged, non-utilitarian, and/or costly perspectives are less likely to be adopted.

Hannigan (2006) also argues that for environmental claims to survive contestation they must fit with one of society's dominant discourses. The importance of environmental discourse is addressed in detail at the conclusion of this chapter, but as a

brief introduction, Hawkins (as cited in Hannigan, 2006) discusses three unique environmental discourses when it comes to the literature. He argues that the *global managerialist paradigm* is dominant, which advocates for the "detection and solution of [environmental] problems in the globalized commons by an existing configuration of nation states and international organizations buttressed by scientific experts and professional environmentalists within international NGOs" (in Hannigan, 2006, p. 74). A less dominant variation is the *redistributive development paradigm* that recognizes "the need for greater equity in matters pertaining to development and the environment in Southern countries" (in Hannigan, 2006, p. 75). Finally, the *new international sustainability order paradigm* is premised on a "fundamental restructuring of the world order such that Third World nations claim a more direct voice in establishing a balance between economic and social sustainability" (in Hannigan, 2006, p. 75). Ultimately, claims that fail to correspond with the dominant discourse, or closely related sub-discourses, are unlikely to survive the contestation stage.

2.2.2.4 The Audience and Claims-making

Though not explicitly part of his model, Hannigan (2006) also discusses the importance of audience. Some claims simply fail because they appear to require substantial lifestyle changes on the part of the audience. These might include no longer consuming meat, walking to work and foregoing the private automobile, or only buying pricey organic groceries. Other claims are neutralized in the audience's mind by powerful counterclaims. For example, Laura Westra (2008) discusses how First Nations' claims to treaty and environmental rights in British Columbia are often neutralized by introducing competing economic and utilitarian goals. The courts, for instance, will override treaty rights to allow resource development by recognizing the "economic and cultural needs of all people and communities in the Province" (*Halfway River First Nation v. British Columbia*, 1999). The utilitarian appeals and the authoritative capacity of the courts act as powerful counterclaims against indigenous efforts to protect the natural environment from resource development. In a different vein, some claims are too complex, extreme, or misanthropic from an audience perspective (misanthropic refers to anti-human sentiments). In particular, some radical environmentalists advocate extreme, anti-human policies that completely deny humans access to nature and go to great lengths to protect the natural environment. For example, members of the Radical Animal Liberation Movement have trespassed to free caged animals, committed arson and

vandalism, and engaged in forms of sabotage (Flükiger, 2009). Audiences are often less receptive to these methods of environmental claims-making, especially when the methods border on eco-terrorism.

Of course, not all environmental claims fail. Some claims are well received by the audience, quickly ending up on the public and political agenda. Young and Rubicon offer four reasons for this (in Scotland, 1994). First, distinctive problems that are perceived as separate from other problems may garner more attention. For example, acid rain set itself apart from other environmental problems such as air pollution. The idea of acid raining down on plants, aquatic animals, and infrastructure was a vivid and sensational image latched onto by the media and the public. In this case, ameliorative action came quickly to prevent acid rain (Hannigan, 2006). Second, problems that hold relevance for the audience may receive attention more readily. For instance, Hannigan (2006) sarcastically talks about how drought conditions in Africa are of little relevance to the U.S., while municipal bylaws reducing lawn watering are quite meaningful. Third, the problem must have a level of stature in the audience's mind. For example, readers seem more interested in saving majestic lions or cute pandas than other obscure plants, birds, reptiles, frogs, and insects. Charismatic species are given considerably more conservation funding, which has led to the extinctions of other species (Cute animals hog extinction funds, 2013). Fourth, familiarity refers to how well the problem is already known by the audience. For example, the media may educate the public as to the extent and scope of a mega-industrial project prior to specific pollution issues coming to the foreground.[24] In these cases, the audience already has a context in mind and public outcry may come quickly if environmental harm occurs.

2.2.2.5 Summarizing the Claims-making Model

To reiterate, assembling requires the initial discovery and elaboration of a possible environmental problem where social actors name a problem, distinguish its uniqueness, determine its scientific, technical, moral, and/or legal basis, as well as

[24] Though I tend to agree with Hannigan's (2006) points regarding the importance of audience receptiveness, to a small degree it reduces the audience to a passive group. Environmental issues also gain ascendancy in the public sphere by coinciding with the audience's complex impressions of our environmental future(s). This view contradicts abstract topics of environmental social construction focused on broader environmental realities such as framing and discourse, which are discussed later in this chapter.

decide who is ultimately responsible for dealing with it. Presenting, involves commanding attention for an environmental problem through evocative terminology and imagery, but more importantly through legitimization, which involves rhetoric as well as establishing links with scientists, journalists, and governments. Finally, the contesting stage involves navigating bureaucratic hurdles and aligning claims with dominant social discourse. Overall, Hannigan's (2006) model in very useful, presenting a clear overview of the stages of claims-making. His model is critical to understanding how environmental issues garner widespread attention and provides a critical point of reference for the Marie Lake and Fort Chipewyan analyses and discussions to follow. In addition to claims-making, framing is also important for mobilizing environmental issues. The following section reviews framing analysis.

2.2.3 Framing Environmental Issues

Gitlin (1980) summarized the elements of framing a particular issue when he wrote, "[f]rames are principles of selection, emphasis and presentation composed of little tacit theories about what exists, what happens, and what matters" (p. 6). More recently, framing has been defined as an explicit and active process, rather than a tacit happening (Konig, 2007). Konig (2007), for example, argues that particularly in media studies it has become more common to treat framing as deliberate. Snow, Rochford, Worden and Benford (1986) led the way for this approach and propose, "[b]y rendering events or occurrences meaningful, frames function to organize experience and guide action, whether individual or collective" (p. 464). Entman (1993) adds to this definition, writing, "[t]o frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation" (p. 52).

Snow et al. (1986), who are quoted extensively in the framing literature, argue that social movement actors must deal with three general tasks when framing issues. First, diagnostic framing requires identifying some condition or event as problematic as well as attributing causality and blame (Snow et al., 1986). Second, prognostic framing involves suggesting solutions to a proposed problem and requires social actors to identify strategies, tactics, and targets for reform (Snow et al., 1986). Lastly, motivational framing serves as "a call to arms" or a "prod to action" (Snow et al., 1986, p. 200). At first glance, these central tasks of framing share many similarities with both claims-making

and rhetorical analysis; yet, there are also key differences. For example, recognizing and understanding the rhetorical arguments found in environmental messages is often a prerequisite to analyzing frames. Frames are aggregated constructions constituting interrelated rhetorical claims made by various claims-makers. Framing brings seemingly disparate claims and rhetorical arguments into the foreground as cohesive wholes (Entman, 1993). Thus, frames are often portrayed in the literature as being more general, generic, and enduring than rhetorical messages.

Framing is also different from claims-making. In their study of anti-environmentalists' efforts to construct the "non-problematicity" of global warming, McCright and Dunlap (2000) rely on both claims and frames. They carefully point out the differences between each. First, the claims-making model results in a tendency to emphasize the ahistorical and internal characteristics of each individually recognized social problem. However, looking at frames facilitates an examination of the historical and social context in which social actors mobilize their particular issue (Bash, 1994). Second, claims-making emphasizes the agency of individual actors. Claims are regularly portrayed throughout the literature as a product of the claims-makers efforts. Frames, however, ask the researcher to elaborate on relevant structural characteristics. For example, discussed later in this section, Snow et al. (1986) identify what they call the strategic framing alignment processes of bridging, amplification, extension, and transformation which shed light on how social actors are both constrained and enabled by existing cultural frames when trying to motivate others to their cause. Finally, where claims-making points out confrontations of power at the level of the social event, framing provides additional advantage geared toward understanding broader structures of power. For example, Williams (1998) discusses how frames about environmental problems can come into conflict with the broader "cultural stock of knowledge" (p. 484) and therefore draw attention to the hegemonic activities of the powerful.

In summary, framing analysts generally pay more attention to the social/historical context, relevant structural characteristics, and broader structures of power that give rise to various frames. Framing analysis is an important step that supplements claims-making and is partially made possible through rhetorical analysis. McCright and Dunlap (2000) suggest that by synthesizing the conceptual strengths of framing and claims-making, social scientists can secure additional theoretical purchase in the examination of social problems. Framing analysis provides another important component for

understanding the mobilization of environmental issues. In this regard, Snow and colleagues are probably the most cited in the environmental framing literature. The remainder of this section discusses their research into frame alignment, frame constraints, and counter-framing.

2.2.3.1 Frame Alignment

Social actors intentionally and sometimes unintentionally frame aspects as well as entire social movements in ways that mobilize potential adherents and demobilize opponents (Snow and Benford, 1988). Snow and Benford (1988) call this frame alignment and it is the most general type of framing. Its purpose is to fit the activities, goals, and ideology of a social movement with broader interests, values, and beliefs held by individuals in society. A good example of environmental frame alignment emerged out of the protest-themed and consciousness-raising atmosphere of the 1960s when Rachel Carson's *Silent Spring* (1962) was written. She argued that widespread pesticide use was harming non-human and human organisms (Carson, 1962). Her title evoked images of a spring in which the birds were silenced through pesticide poisoning. The subversive stance taken by Carson rallied against the technological control of nature and her book resonated with civil rights advocates, quickly becoming a best seller. Today, her book is credited with facilitating the outright ban on DDTs[25] and helping to launch the entire environmental movement (Glausiusz, 2007).

Specific types of frame alignment include frame bridging, frame amplification, and frame extension (Snow et al., 1986). Frame bridging involves attempting to link ideologically similar yet structurally unconnected frames about specific issues in order to lend weight to a cause. For example, Munro (2005) discusses animal rights activists promoting environmentally conscious eating, which supports their cause and other causes by bridging animal rights, environmentalism, and vegetarianism. By eating less meat, humans contribute to their own health, as well as to the health of animals and the environment. Another example involves companies bridging organic consumerism with the additional benefits of buying local, supporting ethical businesses, improving human and animal health, while also reducing the use of pesticides.

[25] In Canada, Dichlorodiphenyltrichloroethane (DDT) was used as a pesticide under the Pest Control Products Act from the 1940s until the mid-1960s (Environment Canada, 2013). DDT was phased-out of pesticides by the mid-1970s in response to increasing safety concerns for humans and the environment (Environment Canada, 2013).

Frame amplification is slightly different and involves emphasizing certain values or beliefs that help to bring a frame into focus (Snow et al., 1986). The authors offer two types of frame amplification. First, belief amplification involves stressing ones beliefs about an issue's seriousness, who is to blame, who should be targeted, the likelihood of change, and the importance of taking a stand (Snow et al., 1986). Second, value amplification means locating and idealizing certain values such as justice, liberty, integrity or other principles that interweave a frame. For example, pollution can be framed as an injustice issue in addition to being an ecological problem and a health concern. Value amplification involves bringing a specific principle to the forefront to give the movement cohesion. As an example, Gunns Limited, an Australian Forestry company, attempted to earn its green credentials by entering an environmental awards process (White, 2008). The company might have succeeded, however pro-environmental activists worked hard to highlight the importance of integrity when it came to the award granting process and exposed the company's environmental record of accomplishment. Gunns Limited Forestry is known to environmental activists in Australia as the nation's "largest native forest woodchipper" (Darby, 2004, p. 1). Eventually, the Banksia Environmental Awards Foundation announced that Gunns Forestry was no longer a finalist in what appeared to be a rather suspect environmental awards process in the first place (Darby, 2004; White, 2008).

Similar to frame amplification, frame extension involves gathering additional followers by portraying the objectives of a social movement as being congruent with the values or interests of other potential adherents (Snow et al., 1986). Issue mobilizers try to amplify a frame so that it extends and connects with other frames. In effect, social actors are attempting to enlarge their "adherent pool by portraying [their] objectives or activities as attending to or being congruent with the values or interests of potential adherents" (Snow et al., 1986, p. 472). This may involve restructuring a social movement in ways that bring it in line with more broadly recognized movements. For example, Obach (1999) studied the links between unionists and environmentalists. He found that by linking environmental concerns directly to those interests already identified by unionists, both movements gained traction. For example, both groups believed that workers should be made aware of the potential contamination risks of exposure to toxic substances on the job (Obach, 1999). Consequently, attempts were made at the state level to protect both worker and environmental health (Obach, 1999). Obach (1999) also discusses how unionists went so far as to extend their concerns about toxic substances

to the entire community. He writes that, “Access to the information by the community created the possibility for environmentalists or community members to place direct pressure on employers to change production practices…” (p.58). Here unionists extended the frame beyond the coalition formed with environmentalists, also including concerned community members. Obach (1999) concludes that, “Labor-environmental coalitions represent a powerful political force that offers hope for the creation of a just and sustainable economy” (p. 70).

2.2.3.2 Frame Constraints

Frame constraints limit how well a frame resonates. Phenomenological constraints involve the degree to which framings resonate with the real life experiences of prospective adherents. Snow and Benford (1988) identify three phenomenological constraints. First, empirical credibility has to do with how well a frame is congruent with other events going on in the world. For example, the 19th international climate conference in Warsaw was arguably completely overshadowed by typhoon Haiyan that caused severe damages in the Philippines. The irony is that some scientists attribute the severe typhoon to global warming. Second, experiential commensurability occurs when a frame is not “too abstract or distant from the everyday experiences of potential participants” (Snow and Benford, 1988, p. 208). For example, some members of radical (deep-green) environmental movements constrain their own efforts by arguing for strict non-harm policies when it comes to animals, and/or that human populations should separate themselves from the natural environment at all costs. These policies are unlikely to resonate with outdoor enthusiasts or the majority of meat eating North Americans. Third, narrative fidelity refers to the degree that the framings “ring true” with cultural narrations such as myths, folktales, and beliefs (Snow and Benford, 1988, p. 210). An example of this is seen in how some indigenous cultures contain spiritual ecology stories, but these stories do not resonate deeply with wider western society. Though there is evidence to show that many indigenous cultures were not always exemplars of a harmonious co-existence with nature (see Krech, 1999), there are many indigenous spiritual ecology myths that stress the importance of symbiosis between humans, animals, and ecosystems.

Belief and value constraints can also limit the effectiveness of framing attempts and environmental mobilization campaigns (Snow and Benford, 1988, p. 205). These

constraints include the centrality of the values or beliefs promoted by the movement to larger belief systems, the range of values or beliefs the framing effort is linked to, and the extent to which the values or beliefs are related with other values or beliefs in the targeted group's larger belief system (Snow and Benford, 1988, p. 205). Shriver and Webb (2009) provide an example in *Rethinking the Scope of Environmental Injustice: Perceptions of Health Hazards in a Rural Native American Community Exposed to Carbon Black*. Their study examined Ponca Tribal residents in a rural Oklahoma community who contended that many of their respiratory and health problems were related to contaminants being emitted from the Continental Carbon Company. The residents were unable to validate their claims through traditional health and government channels (Shriver and Webb, 2009). Consequently, the residents attempted to mobilize their cause by aligning it with broader moral frames of environmental injustice and racism. They claimed to have received no meaningful support from the Carbon Black Company, while asserting that local white residents had (Shriver and Webb, 2009). They also claimed that the company had purchased homes and properties owned by white residents around the rubber plant, while they themselves had received no such offers (Shriver and Webb, 2009). The Ponca Tribal residents' effort to align their cause with environmental injustice and racism was unsuccessful, failing to engender broader community support. Based on these findings, Shriver and Webb (2009) argue that rural minority communities are particularly disadvantaged when trying to mobilize environmental concerns because the burden of proof falls squarely on their shoulders. Additionally, Aboriginals frequently have fewer resources in order to press their claims. However, it also seems likely that the residents' efforts were impeded by the fact that the racial claims did not resonate with the concerns of the white residents who were involved.

2.2.3.3 Counter Framing

Counter framing describes attempts to "rebut, undermine, or neutralize a person's or a group's myths, version of reality, or interpretive framework" (Benford, 1987, p. 75). Counter framing efforts may encourage reframing of the initial movement, resulting in what is described as a "framing contest" between the movement and countermovement (Benford and Snow, 2000, p. 626). McCaffrey and Keys (2000) discuss two strategies for counter framing: frame debunking and polarization-vilification. Frame debunking, involves promoting one's own ideology while simultaneously

discrediting the competitors ideology (McCaffrey and Keys, 2000, p. 44). Examples include “alleging that one’s opponents are hypocrites; enlisting a supporter with a link to the opposition to denounce the opposition’s agenda by purportedly revealing the true character of the opponents; and lastly associating the opponents with negatives such as oppression, terrorism, or rights infringements” (McCaffrey and Keys, 2000, pp. 53-54). Similarly, polarization requires establishing oppositional version of events, while vilification involves discrediting the opposition by portraying them as “untrustworthy, corrupt, troublemakers, or malevolent” (McCaffrey and Keys, 2000, p. 55). Polarization-vilification takes the form of “name-calling” and emotionally charged terminology (McCaffrey and Keys, 2000, p. 55). For example, entire corporations are often vilified. Monsanto Corporation has been the subject of hundreds of news articles and numerous documentaries that depict the company’s business practices in a particularly unfavourable light. Specifically, the company’s genetic modifications have become a growing issue of contention, with some health and environmental advocates arguing for a unilateral ban on genetic modification. Yet, there appears to be some confusion regarding this issue. In particular, it is debateable as to which types of gene modifications pose a risk to human health. Though the toxic pesticides used on plants modified to be genetically resistant to “total-kill” or “all-kill”[26] herbicides are particularly damaging to humans and ecosystems, it is unclear whether the genetic modifications themselves are dangerous. Regardless, Monsanto has been vilified on all fronts. As of mid-2013, organizers against Monsanto say two million people marched in protest against the corporation in numerous rallies across Canada, the U.S., and dozens of other countries (Protestors around the world march against Monsanto, 2013). Though it is clear that Monsanto has engaged in many environmentally harmful business practices, the potential benefits of genetic modification, such as growing plants in dry and inhospitable climates, is increasingly being overshadowed by the growing movement against all Monsanto products and practices.

2.2.3.4 Summarizing Framing the Environment

In summary, frame alignment is the most general type of framing. Its purpose is to fit the activities, goals, and ideology of a social movement with broader interests, values, and beliefs held by individuals in society. Alternatively, frame constraints limit

[26] “Total-kill” or “all-kill” pesticides and herbicides are designed to kill all organisms for a prolonged period.

how well a frame resonates, while counter framing describes attempts to rebut framing efforts. This review of framing, though brief, serves to highlight some of the meso-level processes of social construction that are overlooked in the literature focused on claims-making and rhetorical analysis. Frames are not “static, reified entities but are continuously being constituted, contested, reproduced, transformed, and/or replaced during the course of a social movement” (Bickerstaff and Agyeman, 2009, p. 783). Hence, framing is a dynamic, on-going process that does not occur in a structural or cultural vacuum (Benford and Snow, 2000). Framing processes are affected by a number of elements in the socio-cultural context of which they are embedded (Benford and Snow, 2000). Thus, framing adds to rhetorical analysis by recognizing the broader structural and cultural forces that constrain arguments. It also adds an important intermediary analytical step between the more internally and locally focused approaches of claims-making and the higher-order abstractness of discourse analysis, to which attention now turns.

2.2.4 Environmental Discourse

Discourse refers to “persuasive effects present in sources of communication that are much bigger than any single speech or utterance” (Cox, 2006, p 58). Put differently, a discourse functions to “circulate a coherent set of meanings about an important topic,” such as broad coherent meanings about the environment and its purpose or usefulness (Fiske, 1987, p. 14). Environmental discourse is also part of a broader discursive landscape. For example, environmental discourses compete with economic discourses. These broader discursive formations are critical to whether certain issues are understood, communicated, and treated as environmental problems (Feindt and Oels, 2005). This implies that environmental discourse is not homogeneous; “instead, basic concepts, such as ‘nature’, ‘progress’ or ‘sustainability’ are contested and the knowledge base of environmental policy remains fragile and contentious” (Feindt and Oels, 2005, p. 161).

Acknowledging that both prominent and insurgent environmental discourses are part of a broader discursive landscape helps for understanding how meaning is constructed. This acknowledgement also aids in recognizing the claims, rhetoric, and frames discussed in this chapter thus far. In sum, discourse analysis is an influential method for analysing the production, reception, and broadcasting of environmental

messages (Hannigan, 2006). An extremely detailed effort at classifying environmental discourse is seen in Robert Brulle's typology (1996), which he adopts from an extensive review of literature on the US environmental movement. Brulle's (1996) book, *Environmental Discourse and Social Movement Organizations,* depicts nine distinct dominant and insurgent discourses related to environmental movements. The following section reviews his work.

2.2.4.1 Brulle's Discourse Typology

Robert Brulle (1996) tells us that from the 1600s to the early 1900s the dominant and virtually unchallenged discourse that guided Americans' relationship with the natural environment was *Manifest Destiny*. This discourse offers an economic and moral argument legitimating human exploitation of the environment. Anthropocentrism, or the idea that humans are dominant when it comes to nature, provides cohesion for this discourse. *Manifest Destiny* proponents argue that humans are of the highest moral value on the planet and that nature can be thought of as a commodity to be objectified and exploited for human use. The historical and prominent nature of this discourse is seen in the Bible where it is written, "…let [man] rule over the fish of the sea and the birds of the air, over the livestock, over all the earth, and over all the creatures that move along the ground."

Similar to Brulle's description, Pirages and Ehrlich (1973) describe the *Dominant Social Paradigm.* Like *Manifest Destiny,* this discourse has sustained attitudes of human dominance over nature. As expressed in political communications, popular culture, marketing, science, literature and so on, this latent social paradigm affirms our "belief in abundance and progress, our devotion to growth and prosperity, our faith in science and technology, and our commitment to a laissez-faire economy, limited government planning and private property rights" (Dunlap and Van Liere, 1978, p. 10). Robert Cox (2006) tells readers that when discourses like the aforementioned gather a "broad taken-for-granted status" in a culture, and when their influences help to "legitimize certain policies or practices," they can be said to reflect the dominant view in society (p. 58). Brulle reminds readers that *Manifest Destiny*, and other similar versions of this

discourse, continue to serve in opposition to almost all of the contemporary, insurgent environmental discourses (1996).[27]

Though *Manifest Destiny* is still arguably dominant today, from the 1920s to the 1960s Western society witnessed a rise in insurgent environmental discourses. Brulle (1996) argues this started in the form of the conservation movement, which was a culmination of three separate sub-discourses: Wildlife Management, Conservation, and Preservation. *Wildlife Management* advocates argued the scientific management of ecosystems could ensure stable populations of wildlife from which excess populations could be sustainably harvested in accordance with ecological limits. This was seen, for example, in the development of "widespread game management movements" in the form of allowable hunting and trapping limits (Brulle, 1996, p. 134). Supporters of this movement recognized that ecological instability and even collapse could result from overexploitation, but did not ascribe nature with any greater moral worth than previously. The *Conservation* discourse was similar, originating out of concerns with conserving forests. Brulle (1996) writes that this was perhaps the most influential movement of the three. From the view of conservationism, natural resources should be used rationally and efficiently to achieve maximum utility. Conservation involves the "technical management of natural resources in service of the existing social structure, and over the longest period" (Brulle, 1996, p. 160). Finally, the third discourse - *Preservation* - defined the spiritual and psychological relationship between humans and the natural environment. A core premise of this discourse is that the earth, its organisms and systems, are interconnected (Brulle, 1996). Here, wilderness and wildlife are important components that support the physical and the spiritual life of humans and all organisms, and the protection of nature is critical to the spiritual wellbeing of humanity.

Brulle (1996) argues that these three discourses eventually came to be known more broadly as the *Conservation Movement.* As this broader discourse took shape, so did recognition of the degraded state of the natural environment. In this context, *Reform Environmentalism* grew by focusing on saving the environment. This, Brulle argues, is

[27] Ecological Modernization Theory (EMT) is an exception in some ways and is discussed in the following chapter. In brief, proponents of EMT suggest that advancing technologies and policies will allow us to continue to use the environment while avoiding ecological degradation (Mol and Spaargaren, 2000). EMT proponents suggest that economic and environmental discourses do not need to oppose each other; instead, these discourses can be brought into alignment through some form of sustainable capitalism (Mol and Spaargaren, 2000).

perhaps the most dominant environmental discourse today. Though it pales in comparison to the influence of *Manifest Destiny*, this discourse depicts nature in a delicate balance, with humans playing a critical role in this balance. Human health and survival is linked to the health of the environment, because natural systems are essential to all existence (Brulle, 1996). Thus, ethical human actions that "promote the good life for all humankind must also necessarily promote ecologically responsible actions towards all life" (Brulle, 1996, p. 172). This, as many environmentalists have argued, requires the appropriate use of environmental sciences as a means to guide the relationship between humans, animals, and ecosystems. This environmental discourse is still dominant, and many social movements still focus on saving nature from human exploitation and degradation.

As *Reform Environmentalism* took hold, Brulle (1996) argues that four radical alternative environmental discourses materialized—*Deep Ecology, Environmental Justice, Ecofeminism,* and *Ecotheology*. *Deep Ecology* makes a moral argument for the preservation of the natural environment arguing that ecosystems have intrinsic value. Arne Naess first named this ecophilosophy in 1973 in contrast to shallow or anthropocentric ecology. Sessions and Devall (2006), along with many others, have contributed to an increasingly comprehensive articulation of what is now called deep or radical ecology. Deep ecologists promote equal ecological rights for human and non-human nature arguing that the maintenance of ecological integrity requires substantive decreases in human impact (Sessions and Devall, 2006). Although *Deep Ecology* is a sustained critique of the dominant anthropocentric discourse, it is also an expression of an alternative way of being (Drengson, 1988). For example, in their book, *Deep Ecology*, Sessions and Devall (2006) consider practical strategies for self-actualization. In doing so, the authors question what it means to become a whole, mature, fully "self-realized human being," and argue that maturity means leaving behind the "fears, insecurities, anger, and greed" that propel immature humans to pursue power, which injures and destroys themselves, others, as well as the natural world (Sessions and Devall, 2006, p. 169). In reference to Sessions and Devall's (2006) first book published in 1983, Drengson (1988) writes, "The real enemies are not wild animals, nature, germs, insects, other nations, or persons, nor even ourselves, but … a philosophy of life that is embedded in the inappropriate structures of many dominant cultural practices, policies, and patterns" (p. 84). Here, Drengson (1988) informs readers of the dominant and

deeply entrenched anthropocentric discourse that guides most human behaviour that is primarily defined through rampant self-interested consumerism.

Proponents of the *Environmental Justice* discourse accept the link between human survival and ecosystem survival as defined by contemporary reform environmentalism, and see the causes of degradation as a function of the stratified human social order. For example, a study by Booth and Skelton (2011) examined the perspectives of two First Nations Peoples of Canada: British Columbia's West Moberly First Nations and Halfway River First Nation. Their study explored perspectives regarding resource extraction and environmental degradation on lands critical to First Nations' culture and livelihood (Booth and Skelton, 2011). Those interviewed principally identified their own concerns as environmental injustice issues (Booth and Skelton, 2011). They argued that the ecological and human health impacts of industrial development are permitted to continue because First Nation peoples are economically disadvantaged and can often be intimidated by the federal and provincial governments (Booth and Skelton, 2011). They also believed that because First Nation peoples display distinct non-western cultural values, and are far removed from the majority of the non-indigenous society that benefits from resource extraction, that the injustice is allowed to continue (Booth and Skelton, 2011). Based on studies like this, Dr. Robert D. Bullard (2000), a prolific environmental justice writer, has identified three categories into which the field of environmental justice can be subdivided: *Procedural Equity, Geographic Equity, a*nd *Social Equity*. *Procedural Equity* refers to questions of justice, and "the extent to which governing rules and regulations, evaluation criteria, and enforcement are applied in a non-discriminatory manner" when it comes to the environment (Bullard, 2000, p. 116). *Geographic Equity* refers to the location of environmental hazards in relation to poor and non-Caucasian communities (Bullard, 2000). Lastly, *Social Equity* concerns the way in which social factors, such as race, ethnicity, class, and political power have an impact on, and are reflected in environmental decision-making (Bullard, 2000). Overall, the *Environmental Justice* discourse proposes that solutions to environmental problems lie in reconciling human inequality. For example, environmental justice proponents argue that the economic system and nation-state are the core structures of society that create ecological problems (White, 2008). Consequently, resolution of environmental problems will require fundamental social changes which ensure that these entities are held to task for environmental degradation.

The *Ecofeminist* discourse stands in opposition to anthropocentric values and ties the treatment of nature to the development of a patriarchal society, and the domination of male values over female values (Brulle, 2000). In this respect, just as men dominate women, humanity dominates nature. Relations of "complementarity, rather than superiority between culture and nature, humans and nonhumans, and between males and females should be aspired toward" (Brulle, 1996, p. 222). In general, Ecofeminism has its roots in liberal, Marxist, radical, and socialist feminism (Warren, 1997). Karen Warren, a prominent feminist writer argues that what makes ecofeminism distinct is its insistence that nonhuman nature and the unjustified domination of nature are issues for feminism to examine (1997). Thus, this philosophy extends familiar feminist critiques of social "isms" such as "sexism, racism, classism, heterosexism, ageism, and anti-Semitism" into the environmental sphere (Warren, 1997, p. 4).

The last discourse is *Ecotheology*, which argues that nature is spiritual. Humanity as a part of nature has a moral obligations to preserve the environment and foster religious beliefs that embody this ethic. Religious beliefs can then inform actions to create an ecologically sustainable society. The ecotheology discourse is perhaps most widely seen in indigenous cultures, where parallels are frequently drawn between Mother Earth and spirituality. For example, Northwest Coast Tribes like the Tsimshian people located their villages on key sacred water bodies, and carved totems that included expressions of a sacred dependence on mother earth (Kramer, 2008). The contrast between western and indigenous spirituality is also discussed by Celia Deane-Drummond (2008). She proposes that ecotheologists seek to uncover the "theological basis for a proper relationship between God, humanity and the cosmos" (p. xii). For example, in the Christian tradition humans are understood to be "created, but alienated" from the natural world through their own domineering tendencies (p. xii). Consequently, ecotheologists often build on indigenous cultural values and seek to re-establish connections to the biosphere, reminding proponents that the earth is shared (Deane-Drummond, 2008). In the end, Deane-Drummond (2008) argues that the agenda for ecotheology must be expansive enough to encompass some tenants of religion, without being overly reduced to environmental ethics. She suggests this must involve an examination of the "'rich mosaic' of different cultures, traditions and contexts" that can inform ecological theology (Deane-Drummond, 2008, p. xii).

2.2.4.2 Summarizing Brulle's Environmental Discourse Typology

Brulle's environmental discourse typology is very useful, illuminating many concepts that imbue both dominant and insurgent discourses. It serves as a potential guide to understanding, as opposed to a strict prescription for analysis. In this dissertation, Brulle's typology helps to recognize what Schulzke calls the "Symbolic Legitimacy Boundaries" (as cited in Cox, 2006, p. 61) of the Marie Lake and Fort Chipewyan data. These are the symbols of legitimacy that social actors attach to their stories about the environment, which help them to define a particular policy, idea, or institution in a particular way. Brulle's (1996) typology is compelling. He believes that the multiplicity of discourses has resulted in environmental fragmentation, preventing society from speaking in any sort of unified voice. This, he feels, has severely stunted environmental reform since adherents to each discourse talk past each other in a process of "mutual incomprehension and suspicion" (Brulle, 1996, p. 273). Brulle (1996) argues that the various discourses about the environment continue to obfuscate the human origins of environmental harm and impede a coherent vision for a common environmental good. As will be set out in subsequent chapters, Brulle's (1996) arguments accord with many of the lessons learned from the Marie Lake and Fort Chipewyan analyses.

2.3 Conclusion

This chapter compared and contrasted four prominent approaches to understanding how environmental issues rise and fall as a function of successful social construction: rhetorical analysis, claims-making, framing analysis, and discourse analysis. These four approaches were not reviewed as rigid guides for the analyses that follow, but rather as frameworks by which to compare and contrast the findings of the Marie Lake and Fort Chipewyan controversies. Despite receiving disparate treatment in the literature, each approach to social construction is important. Unlike the other approaches, Toulmin's (1958) rhetorical analysis model puts less emphasis on the stages of issue mobilization and on the hegemonic activities of powerful social entities, instead focusing on the persuasive components of arguments. Readers are reminded that all texts used to mobilize environmental issues can be deconstructed and examined in terms of their constituent grounds, warrants, and conclusions. Hannigan's (2006) claims-making model presents a clear and detailed overview of the stages and activities

involved in claims-making. It also points to the importance of social actors, and the steps used to advance environmental issues. Snow et al. (1986), Entman (1993) and other authors stress the importance of framing. Framing adds an additional dimension to understanding environmental social construction, by bringing disparate arguments and claims into the foreground as cohesive wholes. For example, framing can highlight the meso-level processes of social construction, such as how a particular frame resonates within the broader culture, or the ways a frame is both dynamic and connected with other frames. Lastly, Brulle (1996) stresses the importance of discourse for recognizing the symbols of legitimacy (or truth stories) that social actors attach to their conceptualizations of the natural environment. These “truth stories” often show up in the policies that social actors endorse. Thus, discourse, much like framing, is important for locating various environmental conceptualizations in terms of how they fit into a broader discursive landscape dominated primarily by anthropocentric thinking.

With the conceptual framework of this dissertation set out, the following chapter reviews prominent theories of environmental sociology. These theories offer much in terms of understanding the sources and possible solutions to environmental harm and build upon the conceptual framework developed thus far.

Chapter 3

Prominent Theories of Environmental Sociology

> *Unlimited maximum efficiency in the valorisation of capital thus demanded unlimited maximum inefficiency in meeting needs, and unlimited maximum wastage in consumption. The frontiers between needs, wishes, and desires needed to be broken down; the desire for dearer products of an equally or even inferior use value to those previously employed had to be created; what had merely been desirable had to be made necessary; wishes had to be given the imperious urgency of need.*
>
> *-Andre Gorz, 1989, p 114*

While the preceding chapter focused strictly on constructivist conceptualizations within environmental sociology, this chapter presents theories of environmental sociology characterized as predominately realist.[28] Foster (1999) and Buttel (2003) argue that realist environmental sociology has gone through two stages since its emergence in the 1970s. The first stage involved identifying the social sources for environmental degradation and harm. The second more recent stage was directed at identifying ways to repair our environmental problems. This chapter reviews both stages. The theories examined below are critical to understanding the present state of environmental knowledge and provide a framework for understanding the extent to which the rhetoric, claims, frames, and discourses used by the various Marie Lake and Fort Chipewyan social actors coincide with these prominent theories of environmental sociology. First, however, this chapter features three predominant ecophilosophical perspectives that form the basis of considerable environmental theorizing.

3.1 Ecophilosophy

Environmental theories are based on ecophilosophical assumptions about how humans view and use the natural world. As briefly introduced in the previous chapter,

[28] Realism, defined at the outset of Chapter 2, is distinct from left-realist criminology. Left realists have historically argued for linking theory to pragmatic and effective criminal justice practice (Young, 1992).

there are three broad ecophilosophical perspectives found in the literature. Each provides a different answer to the question, what is the environment for? Anthropocentric (human-centred), biocentric (environment-centred), and ecocentric (balanced) perspectives each attach a different value to the natural world and demand a different recourse when it comes to environmental harm (Halsey and White, 1998). Thus, ecophilosophical perspectives influence how criminologists and the rest of society define environmental harm as well as the ways in which groups come to understand the victimization of certain environments as well as human and nonhuman animals (White, 2008).

Halsey and White (1998) provide an excellent example of how ecophilosophy shapes social views of nature through a discussion of old-growth forests in economic and legislative contexts. They begin with anthropocentrists who occupy one end of the ecophilosophical continuum and see old-growth forests (nature) instrumentally, as a commodity used primarily to meet human demands and desires (Halsey and White, 1998). This perspective requires that old-growth forests are utilized to their fullest commercial potential using methods of production that incur the least cost to investors and producers. This might involve environmentally harmful practices such as clear-felling using heavy industrial machinery to harvest timber. From this perspective policy-making, legislation, and law are used to facilitate the extraction and commodification of timber. Tenure laws, which grant legal harvesting rights to the forestry industry, are written to ensure companies have long-term access to old-growth forests in order to generate prolonged capital gains for investors (Halsey and White, 1998). Legislation is directed at the conservation of old-growth forests, but only to maintain prolonged timber harvests that ensure continued profits. The courts are used to mediate conflicts between those groups that interfere with the extraction and commodification of old-growth forests (e.g., pro-environmental activists or indigenous populations) (Halsey and White, 1998).

The biocentric perspective is at the other end of the ecophilosophical continuum. Advocates view old-growth forests and their biodiversity as embodying intrinsic worth (Halsey and White, 1998). Old-growth forests are valuable, regardless of the value that humans place upon them. Biocentrists believe that all species and natural environments have inherent value and that humans are on equal footing with other species and ecosystems. From this perspective, harming organisms or ecosystems is no different from harming humans. Consequently, biocentrists view old-growth forests as significant

and worthy of strict conservation measures like non-interference because they provide invaluable and rich ecosystem services to a multitude of organisms, humans included (Halsey and White, 1998). From a biocentric perspective, legislation should be directed at preserving these ecosystems at all costs. Radical biocentrists argue that harming dense and important living ecosystems is to be treated no differently than harming humans and human communities. In such situations, the criminal law, along with other measures, would be used to deter environmental impacts.

Ecocentrists occupy the centre of the ecophilosophical continuum. Proponents view old-growth forests as fundamentally important to the long-term survival of all human and non-human animals in perpetuity (Halsey and White, 1998). Importantly, ecocentrists refuse to place the value of humanity above or below other organisms. Instead, this perspective is often labelled a balanced approach, seeking to find ways to utilize the resources needed for human survival while ensuring that organisms and ecosystems are not harmed. Ecocentrists argue that human intelligence and in particular, our advanced forethought, engenders us with a social and ethical responsibility to the integrity of all entities and ecosystems (Halsey and White, 1998). This includes the complex biotic/abiotic networks found in old growth forests, so that all organisms can meet our long-term needs. Ecocentrists seek methods of production that ensure the long-term survival of old-growth forests over immediate capital gains. According to some, legislation attempts to strike a harm reductionist balance between the interests of humans (anthropocentrism), animals (biocentrism), and the environment (biocentrism).

White (2008) argues that the ecocentric perspective is particularly valuable as a heuristic tool for analysing social problems in terms of potential harm. He writes:

> Analysis that is pitched at too high a level of abstraction, and that correspondingly reinforces rigid definitions and absolutist positions (e.g. humans come first; the earth is most important; any harm to animals is bad) precludes closely considered analysis of specific situations. For example, an absolutist approach may contend that humans should not, in any way, interfere with animals. This approach may be appropriate when dealing with a situation involving dingoes and kangaroos in the wilds of the Northern Territory, but may not be appropriate when considering issues of wandering bears in an urban area of Alberta. (p. 25)

Thus, White and Watson contend that the ecocentric approach “provides a method for weighing up and balancing the justice of a particular situation” (as cited in White, 2008,

p. 25). The authors argue that balancing the interests of humans, animals, and ecosystems provides a mechanism by which environmental social problems can be assessed and criteria set out to regulate and reduce harm for all entities (as cited in White, 2008). Ultimately, all three ecophilosophical perspectives provide an important foundation for weighing-up harm in all manner of environmental situations, and provide a critical perspective for evaluating the Marie Lake and Fort Chipewyan findings. The perspectives also underpin many of the environmental theories discussed in the remainder of this chapter.

3.2 Theoretical Explanations for Environmental Harm

Two foundational explanations for environmental harm are found in the literature. The first is Catton and Dunlap's (1989) model of competing environmental functions. The second is Schnaiberg's Treadmill of Production (1980). As the reader will discover, the first is primarily an ecological theory, while the latter is more closely affiliated with sociological theory. Here, ecology is meant in the traditional sense where researchers explore the associations between the natural environment and humans. This is not to be confused with ecological theories in criminology, which explain associations between humans and built environments, such as cities and communities.

3.2.1 The Competing Environmental Functions Model

William Catton's and Riley Dunlap's environmental harm model was borne out of environmental ecology, and formulated in the late 1970s. Catton is professor emeritus of Sociology at Washington State University, and Dunlap is a Sociology professor at Oklahoma State University. Their model underpins sustainability, and the literature is replete with modified versions of it. Presented in Figure 3.1, the model depicts the environment as serving three crucial functions for human and non-human nature—supply depot, living space, and waste repository (Catton and Dunlap, 1989). As a supply depot, the environment provides renewable and non-renewable natural resources such as air, water, food, and energy. These resources are required for life, and their depletion will result in shortages, scarcity, and death. As a living space, the environment provides land, housing, transportation infrastructure, as well as other stable inhabitable areas. Overuse of living spaces results in overcrowding, congestion, and destruction of these habitats. Lastly, as a waste repository, the environment can only assimilate finite

amounts of garbage, sewage, industrial pollution, greenhouse gas, toxins, heavy metals and other anthropocentric and non-anthropocentric substances. Exceeding assimilative capacities can result in health problems and the disruption of ecosystems.

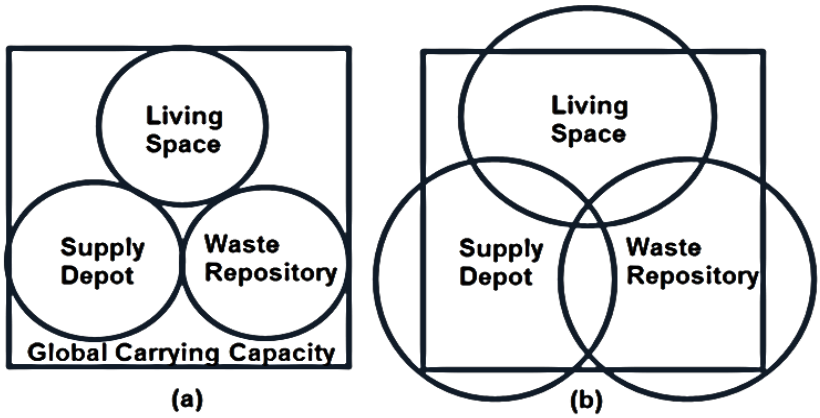

Figure 3.1: Competing functions of the environment: (a) circa 1900; (b) current
Adapted from Dunlap, R.E. (1993). From environmental problems to ecological problems. In C. Calhoun and G. Ritzer (Ed.), *Social problems* (p. 707-738). New York: McGraw Hill.

In Figure 3.1, the three environmental functions are shown to compete over time and space. In terms of space, each function competes with the others, as well as with the earth's global carrying capacity (Catton and Dunlap, 1989). For example, too much waste can impinge on a living space and the ability of the land to produce resources. In addition, the global carrying capacity is limited in terms of its population capacity, the amount of available resources, and in terms of waste assimilation. Catton and Dunlap (1989) argue that the three functions of living space, supply depot, and waste depository have increasingly come into conflict since the 1900s, and will continue to clash as demands are increasingly put on all three functions.

Catton and Dunlap's (1989) parsimonious model has influenced both environmental science and environmental sociology. In particular, their work challenged premises of anthropocentric sociology, by recognizing ecological considerations. In fact, since the 1970s sociology has noticeably transformed to include environmental forces in social explanations, and as such, increasingly detailed versions of their model have been produced. A more recent variant offered by Azar, Holmberg, and Lindgrens (1996) sets out a variety of sustainability indicators for humans (and industries) to abide by. In brief, these authors argue that sustainability is underpinned by three elementary rules about nature that cannot be ignored. First, nature cannot be subjected to a systematic build-up of materials extracted from the earth's crust beyond the biosphere's assimilative

capacities. Second, nature cannot be subjected to a build-up of anthropocentric substances beyond the biosphere's assimilative capacities. Third, the earth cannot withstand systematic degradation of its diversity, productivity, or capacity for renewal. These rules, like the competing environmental functions model, have been reiterated by a number of authors (Boyd, 2003; White, 2006) and show up in a number of sustainability policies worldwide (Grafton, 2007). In sum, both models have done much for substantiating sustainability and the discipline of environmental sociology as a whole.

3.2.2 The Treadmill of Production

Catton and Dunlop's (1989) competing environmental functions model is powerful, as are its variants, but the authors make no explicit reference to human agency, or the role that humans play in harming the environment. The model does not address human values, power relationships, and the processes of social definition. Hannigan (2006), for example, argues that too many ecologists and environmentalists explicitly fail to consider humans and power when explaining environmental degradation. Many authors have hailed the late Allan Schnaiberg's book *The Environment: From Surplus to Scarcity* (1980) as a critical contribution to understanding the root causes of environmental harm. Schnaiberg was Professor Emeritus of Sociology at Northwestern University in Evanston, Illinois, and his book attempts to bridge the gap between sociological and ecological explanations of environmental harm.

Schnaiberg (1980) carefully details the treadmill of production analogy in his book. The analogy is based on extra-Marxist political economy (Buttel, 2004), and is a complex self-reinforcing mechanism within capitalist/industrial democracies where capitalists, the government, and labour have the means and the motives to perpetuate a continuously expanding system of production that threatens irreversible damage to the biosphere (Schnaiberg, 1980; Schnaiberg and Gould, 1994). The capitalist system, government, and labour combine to create the overall machine, yet each part of the treadmill operates based on its own incentives (Obach, 2004). First, particularly within free-market economies, capitalists unremittingly act to generate profits. For example, corporations must relentlessly increase efficiency and expand production levels to ensure profits and long-term competitiveness (White, 2008). These capitalistic imperatives push human societies to increasingly withdrawal resources and make deposits of waste and by-products (Schnaiberg, 1980; Schnaiberg & Gould, 1994).

Second, government bureaucrats facilitate this capitalist expansion by aiding big businesses through encouraging economic growth and consumptive patterns, managing failures inherent in market economies like stock market crashes, and providing the necessary legitimation for the capitalist system by political plat-forming on economic issues (Obach, 2004). Individual government actors also help to perpetuate the treadmill via direct corporate motivation, as well as through public pressure from their electorate who are seeking jobs and public services made possible through tax revenues from the growing private sector (Obach, 2004). Third, labour benefits by claiming a small share of the wealth that is generated by the capitalist system and by securing the reemployment of workers left jobless by the previous round of capital intensification (Schnaiberg, Pellow, and Weinberg, 2002). In sum, the treadmill must revolve indefinitely, applying constant and ever-burgeoning pressure on the environment's resources, productivity, and assimilative capacities. The dynamics of the treadmill of production are extensive, requiring ever-growing withdrawals from nature to accommodate a growing population, the global spread of capitalism, and an increasing carbon footprint for each person (Hooks and Smith, 2005).

Schnaiberg's (1980) treadmill analogy is valuable. For some time, scholars have recognized the ways environmental harm, and many other social problems, are connected with the interests of capital. For example, C.B. Macpherson (1962) argued that capitalism was powered by securing definitions that facilitate its continued growth. Capitalism is propelled when humans are led to be materialistic, acquisitive, possessive, individualistic, and self-interested (Macpherson, 1962). Today, there are variants of his idea. Businesses have managed to rotate the treadmill by 'metaphorically' wrapping their products in green packaging, seemingly promoting environmental stewardship through purchasing power. The consumer can protect the dolphins on the one hand while depleting tuna stocks on the other, or reduce climate change by buying hybrid motor vehicles that still produce climate change and contribute waste to the environment. Whether green consumerism makes an actual environmental difference is open to debate. For example, Canadian social theorist Toby Smith (1998) cautions readers that, "[s]ome ecologists insist that only a product that has passed a so-called cradle to grave environmental audit can be said to be authentically eco-friendly" (p. 89). In his book, *The Myth of Green Marketing: Tending our Goats at the Edge of Apocalypse,* Smith (1998) argues that our belief that we can improve the environment through our purchasing power is underpinned by certain discourses that impugn our shopping with significance.

For example, green advertising suggests that consumers can drive social change. Nevertheless, Smith (1998) argues that green consumerism is deceptive, co-opting skeptical attitudes about the environmental impacts of excessive consumption. His belief is that green consumerism and marketing support "an expansionistic, and growth oriented ethic" (p. 10). In this light, green marketing rotates the treadmill of production by "subtly and skillfully associating corporations' products, images and behaviours with environmentally friendly values" (Cox, 2006, p, 385).

Schnaiberg (1980), applying Marx's concept of dialectic materialism as outlined in *Das Kapital* (1867), also discusses conflicts between the treadmill's component actors and the environment. For example, there is a dialectic tension between 'use values' (the value of preserving unique species of flora and fauna) and 'exchange value' (the value of these resources for industry and the state) (as cited White, 2008). Consequently, the state must periodically engage in forms of environmental intervention to stop the unfettered overexploitation of resources, and to secure its own legitimacy, affirming that state officials are taking measures to protect the environment. Expanding on this, Redclift (1986) tells readers that politicians are often in contradictory positions as promoters of economic development on the one hand, and environmental protection on the other. Consequently, they must engage in processes of *environmental managerialism* (Redclift, 1986). Accordingly, politicians will legislate in limited ways as a means to deflect criticism, but not significantly enough to derail economic growth in any meaningful way. Alternatively, if they protect the environment at too great a detriment to the interests of capital, then recessions, job shortages, and other economic troubles are given as reasons for cutting the environmental budget back, allowing corporations to comply voluntarily with environmental regulations, and failing to implement or enforce environmental laws (White, 2008). For example, in 2011 the Canadian federal government cut more than 200 million dollars in funding for research and monitoring of climate, conservation, and ozone monitoring projects (Leahy, 2011, p. 1). Around the same time, *Fisheries and Oceans Canada*, the Ministry responsible for protecting Canada's oceans and inland waterways, was subject to major cutbacks (Leahy, 2011). Then, in 2012, the federal "government's 2012 budget called for substantial cuts to federal spending on the environment: $83.3 million in 2012-13, $117.9 million in 2013-14 and, starting in 2014-15, $180.5 million per year on an ongoing basis" (Public Service Alliance of Canada, 2012, p. 1). The government also eliminated federal environmental reviews for many major resource extraction projects (Public Service Alliance of Canada,

2012, p. 2). These cuts were generally premised on the need to save money and boost the faltering economy in Canada.

Others academics, such as Rob White, have expanded on the idea of the treadmill of production, by discussing its connection with neoliberal philosophies. Neoliberalists advocate economic liberalization, free trade, privatization, deregulation and decreasing the size of the public sector in favour of a larger private sector (Boas and Gans-Morse, 2009). White (2008), for example, discusses how as traditional markets have become exhausted, capitalists and industrialists must endeavour to convert unproductive or non-capitalist forms of activity into new profitable ones. For instance, what may have been formerly cost free (e.g., drinking water) or state-operated (e.g., garbage collection) must now be retooled, deregulated and redefined so that it can be sold back to the consumer for a price. This retooling is seen in the privatization and deregulation of state services that are now increasingly being transformed and vigorously marketed to generate profit for capital (White, 2008). For example, privatized water concessions are established in cities across the world (Boykoff and Sand, 2003; Beder, 1997). White (2008) confirms that the great majority of these concessions are operated by three giant global corporations: *Viola Universal, Suez*, and *Rheinisch-Westfälisches Elektrizitätswerk* (RWE). In the past 15 years, these corporations have managed to gain control of the water supplied to millions of people across the globe (Whelan and White, 2005). There have also been important developments when it comes to water privatization. The trend toward the profitable use and management of water, as well as the use of toxic, cheap delivery systems that ultimately pose threats to water quality has also been documented (White 2008). This was seen in the Walkerton, Ontario tragedy in 2000 when seven people died and 2,300 were poisoned when employees of an outsourced quality control firm failed to administer standard e-coli testing (Gillis, 2001). Another example is seen in privatized garbage collection and waste disposal, which can be made more profitable if it is done in ways that harm the environment, which include burying it in cheaply lined containers or in unlined landfills, or shipping containers of the most highly regulated types of waste to countries with weak or nonexistence environmental regulation (Pellow, 2004). For example, as Bridgland (2006) and others have pointed out, European industries have been cutting deals with Somali warlords for decades in order to dump their toxic waste by-products. Bridgland (2006) explains how the tsunami on Boxing Day 2004 exposed some extremely serious environmental issues in Somalia. He writes:

> [a]long more than 400 miles of shoreline, the turbo-charged wave churned up reinforced containers of hazardous toxic waste that European companies had been dumping a short distance offshore for more than a decade, taking advantage of the fact that there was not even a pretend authority in the African 'failed state'. The force of the tsunami broke open some of the containers which held radioactive waste, lead, cadmium, mercury, flame retardants, hospital waste and other cocktails of deadly residues of Europe's industrial processes. As the contaminants spread across the land and in the air, the United Nation said that an unknown number of people died from breathing toxic dust and fumes. Subsequent cancer clusters have also been linked to Europe's special gift to the country, delivered by that tsunami. (p. 1)

In these and other examples, neoliberal ideas like privatization, outsourcing, and deregulation are vaunted as fiscally responsible decisions aimed at helping both domestic and foreign economies. However, White (2008) argues that such examples are better described as capitalism's march toward incorporating and subsuming all parts of daily life in the web of profit accumulation.

Like Rob White, Professors McCarthy and Prudham (2004) of Pennsylvania State University argue that neoliberalism and environmental harm are closely interconnected and that neoliberalism is chiefly constituted by severing our relationships with nature. They contend that contemporary neoliberalism draws on classical liberalism, which aimed to fundamentally restructure our social relationships with the environment. This process is most famously associated with enclosing the commons to facilitate the development of increasingly capitalist, export-oriented farming operations (Williams, 1973; Cox, 1985). The commons refers to resources like air, water, and productive land held in trust for all (Dinar and Zaccour, 2013). Where traditional farms were often family-oriented operations supplying food to local communities and other growers, modern export-oriented agribusinesses effectively sever many direct connections with our food, and with nature. These reconfigurations of property amounted to "liberalizing" nature, which detached the environment from community constraints and placed it decidedly under the control of the self-regulating market (Polanyi, 1944). This process, McCarthy and Prudham (2004) argue, initiated capitalism through what Harvey (2003) has recently termed, "accumulation by dispossession" (p. 63). Thus, the shared commons were increasingly appropriated by the private sector for accumulating wealth. More recent manifestations of 'liberalizing nature' or 'accumulation by dispossession' involve promoting the idea that capitalists can save, protect and manage nature through its

commodification, which in turn also helps to place nature under market control (McAfee, 1999). For example, this might include:

- the management of nature by genetic engineering and bioprospecting;[29]
- the creation of various private property rights in order charge money to pollute;
- the growth of user's fees for "public" nature reserves in order to generate profit; and/or
- the privatization of all manner of natural resources, from fisheries to forests to water (see for example, Mansfield, 2001).

A compelling example of using the treadmill analogy is provided by Hooks and Smith (2005) who explain environmental harm through the geopolitical and "expansionary dynamics" of war and militarism (p. 21). They acknowledge political and economic explanations for environmental harm, and build on C. Wright Mills (1956) conceptualization of the "power elite," which also includes the military. Where treadmill proponents suggest that competition, profitability, and the quest for markets are problematic, Hooks and Smith (2005) argue that the "pressures of war, militarism, and arms races" drive what they term the treadmill of destruction (p. 22). The authors argue that the military is not simply a derivative of economic systems, but instead, has its own interconnected and separate expansionary dynamics that have critical environmental impacts that require examination by sociologists (Hooks and Smith 2005). In particular, Hooks and Smith (2005), describe the buildup of the massive military regime in the United States over the last century where there has been a stockpiling of dangerous radioactive and contaminative materials. For example, the "chemicals used to propel projectiles were frequently toxic, and the projectiles consisted of heavy metals (iron, copper, steel, and depleted uranium)" (Hooks and Smith, 2005, p. 20). The authors also document how the U.S. military has "systematically located ordnance and toxic materials in proximity to Native American lands and people" (Hooks and Smith, 2005, p. 26). They also describe how as the physical space occupied by the military decreases, their ability to kill people and poison the environment has sharply expanded. Hooks and Smith (2005) document widespread environmental harm as a reality of the treadmill of destruction. They write:

[29] Bioprospecting is defined as the search for naturally occurring chemical compounds and biological material, especially in extreme or biodiversity-rich environments like rainforests and hot springs (Reed, 2004).

> [i]n the latter half of the 20th century—with the bombings of Hiroshima and Nagasaki dramatically ushering in this era—the environmental damage of war making and militarism became qualitatively more dangerous. Armaments referred to as "weapons of mass destruction"… [were] designed to poison the environment…Mass industrial warfare has scarred the environment: military forces voraciously consume natural resources (especially petroleum) to clothe, feed, and transport troops. Moreover, the chemicals used to propel projectiles [are] frequently toxic…consist[ing] of heavy metals (iron, copper, steel, and depleted uranium). Military forces leave a trail of environmental degradation under the best of circumstances… (pp. 19-20)

The authors conclude that the environmental harm and social injustice resulting from war and militarism have drawn scant attention in the literature (Hooks and Smith, 2005). They believe this relative silence is in part a result of the predominance of the treadmill of production explanation for environmental harm (Hooks and Smith, 2005). Their central point is that both treadmills are important for understanding the widespread causes of environmental harm.

Ultimately, the treadmill analogy is advantageous to understanding environmental harm because it locates present environmental problems amongst the inequities of human operated political, economic, and even military systems, rather than just in the abstract 'conflict of functions' as preferred by the ecologists (Hannigan, 2006). The treadmill metaphor furnishes an examination of environmental problems from within the domain of sociology. Buttel (2004) feels the treadmill of production is unique insofar as it has a basis in sociological reasoning but at the same time offers a "key dependent variable in the form of environmental destruction that is biophysical" (p. 323). In Buttel's (2004) opinion, this makes the treadmill "the single most important sociological concept and theory to have emerged within North American environmental sociology" (p. 323). Overall, the theory is truly useful. As discussed, numerous scholars have had little difficulty expanding on the ways environmental harm, and many other social problems are firmly entrenched in powerful interests (see Chapter 6 in White, 2008 for a review). It seems likely that ideas from the treadmill will reappear when analyzing the controversies out of Marie Lake and Fort Chipewyan. However, before moving in this direction, the remainder of this chapter focuses on two predominant theories of environmental reform.

3.3 Explaining Environmental Reform

Though there is considerable agreement in the literature as to the prominent ecological and sociological sources of environmental degradation, there is less of a consensus regarding the path to environmental reform. Two socio-ecological theories/theses of reform stand out. The first is Mol and Spaargaren's (1997) ecological modernisation theory, which sees resolution to our environmental problems in remedying the contradictions between capital and ecology (as cited in Mol and Spaargaren, 2000). The second model is Ulrich Beck's risk society thesis in which our attempts to reform modern industrial society in the face of what is likely an 'apocalyptic eco-societal crisis' are unattainable without substantive changes to the face of modernity (Beck, 1992; Browne and Keil, 2000). These approaches to environmental reform share one important commonality in that they expect environmental social norms to expand and play a larger role in our future (Hannigan, 2006). However, they disagree as to the means of realizing this eco-friendly place.

3.3.1 Ecological Modernization Theory

Ecological modernization (EM) theory, as developed by Gert Spaargaren and Arther Mol in 1992, is a prescription for the future (as cited in Mol and Spaargaren, 2000). Both authors are professors in environmental policy of the Environmental Policy Group of Wageningen University in the Netherlands. Ecological modernization theory is based on Huber's work (1982) who argued that industrial societies develop in three phases. Ecological modernization is the third phase following industrial breakthrough (1789–1848) and the construction of an industrial society (1848–1980). In the first two phases, the economy and technology are the driving forces of modernization, but in the third stage the need to reconcile the impacts of human activity with the environment become increasingly important (Murphy, 1994). Spaargaren and Mol believe that society can overcome its environmental crises without fundamentally reformulating progress along the way (Mol and Spaargaren, 2000). They argue that environmental degradation is so intertwined with modernization that the two can no longer be separated (Spaargaren and Mol, 2008). The belief is that further "deterioration of the environment will be averted" and that past harms will be "ameliorated, in a more or less autonomous fashion, via the continued pursuit of industrial modernization" (Davidson, 2011, p. 686).

In practice, many contemporary ecological modernization theorists favour large-scale restructuring of production-consumption cycles; a restructuring that can be accomplished using new sophisticated clean technologies and complementary sustainability policies. The notion is that economic and environmental objectives can be simultaneously achieved with a zero sum outcome. In other words, both society and the environment can improve today, and in future generations. There is also a common understanding that ecological modernization will require reconfiguring some of the forces that propel the treadmill of production, which threatens irreversible damage to the biosphere. Research in this area is focused on the interplay of various social factors (e.g., scientific, economic, institutional, legal, political, and cultural) which foster or hamper green industrial innovations (Huber, 2008; Weber and Hemmelskamp, 2005). Studies also examine the utilization and efficacy of sustainable policies, and whether free-markets and purchasing power can achieve these pro-environmental goals in the absence of government interventions (Olsthoorn and Wieczorek, 2006).

Despite its hopeful outlook for the future of capitalism, ecological modernization theory has seen its fair share of criticisms. Foremost, though there are a growing number of cases where governments and industries have utilized ecological modernization policies, the degree to which these policies have been institutionalized resulting in meaningful and widespread environmental reforms is yet undetermined. Davidson and Frickel (2004) point out that for every "empirical study supportive of the potential for ecological modernization, there are now a number of empirical analyses that raise numerous caveats regarding the propensity for industry actors to undergo the 'greening' process…" (p. 477). More recently, Davidson (2011) argues that EM has a number of problems to deal with. These include "the environmental pressures that emanate from the global expansion of consumption and waste generation," "the implications of peak oil and climate change," and the potential that the "internalization of ecological costs will amount to increased costs of all consumables, including most notably food and energy (Davidson, 2011, p. 688).

Other critiques centre on whether ecological modernization can overcome the capitalist forces inherent to the treadmill of production that cause widespread environmental harm. For example, even when technologists and scientists agree on the basic nature of a harmful environmental phenomenon there is still considerable variation in how corporations and governments approach the very same issue (Boyd, 2003). The

United States and the European Union, for example, share different views concerning the use and production of certain genetically modified organisms. This is not simply a scientific debate, or even a purely ideological dilemma, as much as it is a reflection of the vested interests of capital associated with genetically modified organisms in terms of their production, distribution, and purchase (White, 2008). Divergent governmental policies are also seen in the use of pesticides, the emission of greenhouse gases, forestry practice, species protection, and the monitoring of toxins. In these, and many other cases, both environmental policymaking and technological progresses are firmly entrenched in a capitalist framework that is particularly resistant to what are often costly, yet ecofriendly modernizations. Thus, how to free technology and policy from capital is a pertinent question for ecological modernists who presently suggest that the institutions of modernity are capable of 'self-correcting' on their own impetus (Davidson, 2011, p. 688). Davidson (2011) argues that this sort of structural-functionalist reasoning has, as of yet, come to fruition. There are few theories that adequately explain the agency required for environmental change, and "[e]cological modernists desperately need a more theoretically sound set of propositions regarding macro-social change" (Davidson, 2011, p. 688).

Sutton (2004), on the other hand, believes that ecological modernists should be recognized for trying to strike a balance between deep ecologists arguing that deindustrialization is our only saviour from eco-armageddon, and capital apologists who prefer the business-as-usual approach. Desfor and Keil (2004) allege that ecological modernization theory has become an important frame of reference to analyze the changing economy-ecology relationships of industrial societies and that we are seeing a slight 'greening' of modernism so to speak. However, Hannigan (2006) notes that ultimately, whether you view yourself as an ecological modernist or a person who believes in the necessity of more radical solutions to the problems of capitalism depends on your "faith in gradualism" (p. 28). The longer our ecological problems persist in the face of supposed ecological modernization the more likely it becomes that other courses of action may need to be taken. For example, Hajer (1995) entertains the possibility for the bulk of his book, *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process,* that eco-modernization represents little more than the successful co-optation of environmental movements and agendas by the corporatist elite. Ultimately, ecological modernists have their work cut out for them, not only in terms of crafting green technologies and policies, but also in terms of having to contend with

corporations that find it much more cost effective to market green images than to develop green products.

3.3.2 Risk Society Thesis: Towards a New Modernity

Ulrich Beck, a German sociologist, offers a different impetus for environmental reform with his risk society thesis (1992). Beck argues that the technological by-products and processes of the modern industrial age are harming society. He believes that the consequent risks of modernity are spreading across the globe, facilitating the unfolding of what he terms "reflexive modernity,"[30] which he describes as a new social rationality rooted in a critique of progress and a radicalization of modernity (Beck, Bonss and Lau, 2003). An important component of Beck's thesis is that society is increasingly recognizing modernity for its inherent failures. Beck et al., (2003) problematize modernity, writing that:

> …modern societies unfold themselves on the basis of a scientifically defined concept of rationality that emphasizes instrumental control. Rational progress is conceived of as a process of demystification that can continue without limits. This implies a belief that scientization, [or that the use of scientific principles] can eventually perfect the control of nature. (p. 5)

Beck and colleagues argue that modernity's crucial weakness is a taken-for-granted assumption that scientists can eventually solve the world's problems. The authors contend that modern society regards itself as the final word on the culmination of history and as a social form of progress meant to last forever (Beck et al., 2003). This devotion to traditional science, they say, has stymied new forms of alternative, advocacy-based science aimed at solving many of our global problems. Instead, Beck (2012) seems to envision a dystopia, whereby the negative by-products of modernity spread across the globe to such an extent that society begins to reconceptualise modernity in terms of its failures. By failures, Beck refers to problems like the radioactivity spreading from the Fukishima reactor, the 2008 collapse of the United States economy, and the massive 2010, BP oil spill (Beck, 2012). Beck et al., (2003) write:

> Our central thesis is that side-effects of modern Western society eventually put its touchstone ideas into question. Both its attitude towards problem-solving and its institutionalized answers seem progressively less

[30] Beck sometimes refers to reflexive modernity as second modernity. See Beck et al., (2003) for examples of this.

> suited to meet the challenges at hand. The more the foundations are undercut, the more thinkers and social actors feel themselves at sea, the more the Western project of modernization loses its telos. (p. 8)

The authors see shift in thinking on the horizon as the foundations of modernity are undercut by its consequent failures. They believe society will begin to see all the traditional hierarchies of wealth, power, and privilege (that are the cornerstones of modernity) as artifacts of the failed modernist enterprise (Beck et al., 2003). The nation-state, the sexual division of labour, the nuclear family, the bourgeoisie and proletariat, the experts and the non-professionals, the division of knowledge, humans versus the environment, and so on, will increasingly be seen as antiquated consequences of modernity as risk expands.

Because of this motif of expanded risk, Beck (1992) foresees a new reflexive modernity unfolding. This new society will embrace social rationality and individualism, through a radicalization of modernity (Beck et al., 2003). As opposed to modern society, which regarded itself as the last word on the future, reflexive modernity will open up a pluralisation of possibilities. Ultimately, Beck (1992) believes that people will free themselves from the rigid scriptures of modernity to pursue their individual aspirations. However, in a form of irony central to Beck's thesis, society will still need to confront the failures of modernity in collective ways. For this reason, Beck believes that society will not drift into a postmodern era characterized by rampant individualism, but will move into reflexive modernity. Beck et al., (2003) explain the subtle difference from postmodernity:

> In contradistinction to many postmodern positions, the perspective of reflexive modernization does not posit an arbitrary multiplicity as an ultimate fact. Such a situation can only maintain itself over the long run in cultural spheres that are free from the burden of decision-making. In general, where decisions must be made, where legitimacy is demanded and where responsibility must be assigned, procedures must be worked out and criteria must be agreed upon at least to the degree that better solutions can be distinguished from worse. (p. 17)

Unlike postmodernity, which gives way to outright subjectivism and even nihilism, Beck argues that reflexive modernism will be set in motion by the sheer fact of necessity. Beck tells readers that society must begin to cooperate and use new forms of individualistic and advocacy-based science to solve global environmental problems. He sees local and individualized scientists pioneering new fields of activity in unique ways not wedded to past ideas based on rigid rationality and scientization. There will be a "growth of

contradictory scientific camps, recognition of extra-scientific justifications, increased account taken of unexpected side effects, [and] debate[s] ended through ad hoc institutional means of reaching decisions" (Beck et al, 2003, p. 22). At the same time, monopolies on political action are said to be breaking apart and opening up decision-making to the processes of collectivism and individualism. The results are a new society characterized by "a new kind of capitalism, a new kind of labour, a new kind of global order, …a new kind of nature, a new kind of subjectivity, a new kind of everyday life and a new kind of state" (Beck, et al., 2003, p. 2-3).

Not surprisingly, Beck's swerve from both modernity and post-modernity has encountered criticisms. For example, despite Beck's insistence on more individualistic and inclusive forms of science, he frequently uses rarefied or obscure terminology that puts many of his claims out of conceptual reach for the average reader. Additionally, Beck argues that sociological concerns with class-based inequities are no longer the norm, and that new divisions of power are cropping-up in society. He proposes that it is now commonplace to see labour and industry join in opposition to "traditional victims" such as fisheries and tourism in environmental disputes. In some cases, alliances may even emerge between those once in serious environmental conflicts. For example, in New Mexico, ranchers and green organizations such as the Sierra Club joined forces to fight oil and gas developers (Carlton, 2005). However, White (2008) points out that not only is this coalition an exceptional example to the rule, but Beck's interpretation of the situation is flawed. Labour is frequently compelled to support harmful and dangerous technologies and policies simply to survive. Marx (1867/1999) put it another way when he wrote:

> The dull compulsion of economic relations completes the subjection of the laborer to the capitalist. Direct force, outside economic conditions, is of course still used, but only exceptionally. In the ordinary run of things, the laborer can be left to the "natural laws of production," i.e., to his dependence on capital, a dependence springing from, and guaranteed in perpetuity by, the conditions of production themselves. (p. 516)

We see this dull compulsion expressed by Australian farmers who have reluctantly come to accept chemical-dependent styles of farming that are also very likely poisonous (Lockie, 2004). This dependency on corporations should not be confused with joining forces in a new division of power. In India, for example, cotton farmers are deeply indebted to Monsanto Corporation following aggressive marketing to buy the

corporation's genetically modified seeds. Though the seeds produce higher yields because the plants are pest-resistant, this also has resulted in consequences unforeseen to the farmers. For example, the seeds are sterile by design, so farmers have to buy new seeds each year in addition to specific fertilizers and insecticides that are only marketed by Monsanto (Robin and Holoch, 2010; Stone, 2004). Thus, many of the farmers have had a difficult time returning to previous farming methods and have found themselves stuck in a cycle of dependence on the corporation.

Another major criticism of Beck's thesis is his vagueness as to how society will flow into and remain in this phase of reflexive modernity in order to solve our environmental crises. In response to this critique, Beck et al., (2003) tell readers that it is difficult to predict how reflexive modernity will manifest; nonetheless, they offer indications that society may be on the doorstep. This is realized through some important characterizations of modernity as of late. First, the authors argue that globalization is undermining the idea of societies as nation-states (Beck et al., 2003). They believe the notion of "vanishing" borders has effects that go well beyond the economy, which is affecting the very basis of "us versus them" mentalities and is ultimately blurring national borders, creating a global society (Beck et al., 2003, p. 6). Second, they argue that the welfare state has provided a basis for the "intensification of individualization" (Beck et al., 2003, p. 6). Society is freer than ever to pursue a pluralisation of the self. This is creating unknown social forms, while undermining familiar ones that were once critical to the fabric of modern society (e.g., businessperson, nuclear family, expert) (Beck et al., 2003). Lastly, the authors argue that society is increasingly coming to see nature as fundamentally connected to universal survival, while simultaneously seeing it as being destroyed by the failures of modernity (Beck et al., 2003). In sum, the authors tell us that "[h]ow these developments are expressed and the potential they have for altering the course of modernization can only be made clear through empirical research" (Beck et al., 2003, p. 7). However, the "institutionalized answers of first modern society to its self-produced problems – for example, more and better technology, more economic growth, more scientific research and more specialization – are less persuasive than they once were…" (Beck et al., 2003, p. 7). Ultimately, Beck offers a number of examples that suggest reflexive modernity is near, but how this era will unfold in practice is much more difficult to predict.

Another persuasive critique of Beck et al. (2003) is seen in the writings of Zygmunt Bauman, Emeritus Professor of Sociology at the University of Leeds, and his conceptualization of liquid modernity. Bauman argues that as opposed to humans becoming reflexive and perceptive, most are losing their sense of direction altogether, and have assigned existence to a state of constant transience (Bauman, 2005). Without any sort of meaningful direction, few of us care about the overall balance of things, and seek only to further our own immediate self-interests. Bauman (2005) analogizes that this liquid modern society:

> …may be aware that in some distant and undefined future the planet may run out of virgin forests and undepleted game-havens. This is not however, an *immediate* worry; and since it won't bear on the results of the current hunts it is surely not *their* worry, and therefore not a prospect about which a single hunter…would need to concern themselves and do something. (p.306, italics in original)

Bauman (2005) argues that without any meaningful direction, as seen in days of modernity, all social forms are "liquefying" faster than new ones can be cast (p. 303). Since nothing is "solid" these days, people have no frame of reference for meaningful human action (Bauman, 2005, p. 303). For example, with no direction or higher sense of purpose, most of us seek to redefine ourselves constantly through a consumer-oriented economy. Bauman (2005) writes that:

> ... people sticking to yesterday's clothes, computers, mobiles, cosmetics, and habits would spell disaster for an economy whose main concern…is the rapid and accelerating acquisition of purchased products and their subsequent consignment to waste, and for which swift waste disposal is a cutting-edge industry. Increasingly, timely *escape* is now the name of the most popular game in town. (p. 308, italics in original)

By "escape," Bauman (2005) refers to getting away from ourselves in search of our new selves, much of which is accomplished through gadgetry and other consumables that can simply be thrown away once they no longer provide the desired feeling (p. 308). Bauman (2005) quotes Joseph Brodsky (1995), a Russian-American philosopher-poet, describing this sort of throwaway life to his students in 1989. Brodsky tells them:

> ... you'll be bored with your work, your spouses, your lovers, the view from your window, the furniture or wallpaper in your room, your thoughts, yourselves. Accordingly, you'll try to devise ways of escape. Apart from the self-gratifying gadgets…you may take up changing jobs, residence, company, country, climate, you may take up promiscuity, alcohol, travel, cooking lessons, drugs, psychoanalysis… In fact, you may lump all these

> together, and for a while that may work. Until the day, of course, when you wake up in your bedroom amid a new family and a different wallpaper, in a different state and climate, with a heap of bills from your travel agent and your shrink, yet with the same stale feeling toward the light of day pouring through your window. (p. 308)

Bauman feels that in our liquid society humans have a longing to constantly redefine and change themselves. This powers the consumerism engine and in turn causes a great deal of environmental destruction. Bauman (2000) writes that, "[i]n the consumer race the finishing line always moves faster than the fastest of runners" (p. 72). Products must change quickly to appease people's incessant search for happiness in a world with no meaning or direction.

Ultimately, it is difficult to assess whether Bauman's or Becks' futuristic scenario is likely to unfold. Without a widespread and palpable environmental crisis, it is difficult to envision society questioning the modernist enterprise to the degree that its traditional divisions of power disband. In fact, some scholars have gone so far as to say that, though enlightening, the risk society thesis ultimately constitutes a 'mythical discourse' (Alexander and Smith, 1996). However, it is also difficult to accept Bauman's vision for an utterly liquid future. Though it is hard to imagine how members of a society obsessed with materialism and celebrities will suddenly – or even eventually – start making decisions based on Beck's enlightened reflexive post-materialist values, it also seems equally unlikely that society will completely devolve into a tirelessly self-interested group of consumers focused on little more than the next trend. In the end, unlike Beck, Bauman (2005) offers no real impetus for addressing the chronic deterioration of the biosphere. Bauman advocates for participatory democracy and suggests that society strive towards "utopia" – a goal never reached or completed – but a belief in a better world (p 310). He tells us that utopia, though unachievable, at least serves as a reminder against complacency. Much like Beck, he tells us that humans must embrace ambivalence, as this will allow them to constantly confront and negotiate their social ills (Campain, 2001). However, embracing ambivalence seems an insufficient impetus in the short sighted and egoistic world that Bauman describes. Instead, Beck's recognition of ever-increasing global risk caused by the failures of modernity seems to offer some of the incentive and direction needed for such an ambivalent world.

3.4 Conclusion

The four theories discussed in this chapter – the competing environmental functions model, the treadmill of production, ecological modernization theory, and the risk society thesis – provide a basis for interpreting the media portrayals of the Marie Lake and Fort Chipewyan controversies. The theories are also vital for understanding the sources and possible solutions to environmental harm. The competing environmental functions model by Catton and Dunlap (1989) is important, emphasizing the contingent limits of our biosphere. In particular, population and consumption are interrelated and constrained by resource supply limits, habitable living areas, and the earth's ability to assimilate waste. Their work has done much to advance realist environmental sociology and provides concrete parameters for conceptualizing as well as measuring sustainability. The model clearly sets out that environmental reform will require substantive population declines and reductions in economic growth, consumerism, and resource depletion.

Schnaiberg's (1980) neo-Marxist analogy of the treadmill of production expands on the ecologist's competing environmental functions model, exploring the self-reinforcing and relentless mechanisms of production, where core social groups and institutions have numerous motives to perpetuate an ever-expanding system of consumerism, consumption, and subsequent environmental harm. The treadmill analogy is advantageous, locating our present environmental problems amongst the inequities and weaknesses of society's human operated political, economic, and even military systems, rather than just in the abstract conflict of functions as preferred by the ecologists (Hannigan, 2006). Here, social constructionism plays a larger role in understanding the causes of environmental harm. In particular, both governments and industry often obscure, redefine, and normalize environmental harm by adopting neoliberal policies, marketing consumerist values, and selling green images to propel the treadmill of production and consumption.

Ecological modernization theory and the risk society thesis are also useful. Ecological modernization theory, as offered by Spaargaren and Mol, asks readers to reconceptualise the treadmill analogy and to carefully consider whether modernity, and in particular capitalism, can be bought into alignment with the principles of ecology. Desfor and Kelly (2004) assert that ecological modernization theory has become an important frame of reference for viewing changing economy-ecology relationships in

industrial societies, with the goal being to move entire market economies forward in sustainable ways. However, EM theorists provide little information for overcoming many of the deeply entrenched power structures that resist pro-environmental advances. For example, empirical studies have been unable to find evidence for the institutionalization of ecological modernization, especially in any sort of widespread sense, which would suggest that society is not clamoring to move in eco-friendly directions (see Konstadakopulos, 2007; York and Rosa, 2003). In particular, the individuals and institutions of power that are firmly rooted in the global marketplace (e.g., Wal-Mart, Exxon Mobil, British Petroleum, Apple, and General Electric) are not rushing to adopt ecocentric business values, nor are they reconfiguring their modes of production in eco-friendly ways.

Finally, Beck's (1992) risk society thesis offers a last resort for environmental reform, suggesting that the ever-increasing global environmental risks caused by modernity are starting to prompt a stage of reflexive modernity. His most recent book, *Twenty Observations on a World in Turmoil*, builds upon his central thesis that modernity is threatening to fail because of its successes (Beck and Cronin, 2012). Beck and Cronin argue that "global domestic politics" is now the norm (Beck and Cronin, 2012, p. x). Alternatively, proponents of the nation-state have limited outlooks, blinding them to the fundamental global changes that are now transforming our reality. The authors (2012) write,

> [a]nd indeed, climate change, financial crises, cities, migration, families, Europe, risk societies – if we open our eyes we can see that they all are already cosmopolitan. Especially world cities are examples of this reality: they are part of the world – being nodal points for the dissemination of people, goods, technologies, capital, risks and images – but are still part of their nations. They exemplify the logic of 'both/and' – of both globalism and localism, of the transnational that cohabits with the national…(p. ix)

These references to "global domestic politics" and "cosmopolitanism" reflect a belief that the global other is now, more than ever, in our midst. Beck and Cronin (2012) believe this has facilitated a global recognition and anticipation of potential catastrophe, which he believes is now undermining the key institutions of the nation-state and giving rise to political as well as social movements for resistance and reform. Beck and Cronin (2012) write that, the protestors, "who are 'Occupying Wall Street' in different countries, are calling for a return to the principles of equality, social justice and solidarity" (p. x). People are questioning why the problems that they did not cause themselves ought to be solved

at their own expense (Beck and Cronin, 2012). The authors conclude that there is an increasing global recognition that the world is in turmoil and that the age of reflexive modernity is drawing nearer (Beck and Cronin, 2012).

Though the risk society thesis is provocative, ultimately it is still questionable whether the power elite, or even the middle class for that matter, are fundamentally reconsidering modernity for its downfalls and calling for widespread social change. Despite the fact that there have been some serious environmental harms occurring in our midst as of late, such as the 2010 BP oil disaster and the Fukushima Daiichi nuclear disaster of 2011, most environmental harm is experienced on the outskirts of society where poor, minority, and vulnerable populations reside. For example, Sheila Watt-Cloutier (2013), an influential environmental, cultural, and human rights advocate in Canada, depicts a stark image of what is happening to the Inuit because of climate change in her book, *The Right to Be Cold: One Woman's Story of Protecting Her Culture, the Arctic, and the Whole Planet*. Like the proverbial canary in the coalmine, the Inuit are directly experiencing the firsthand effects of climate change. Inuit communities are seeing erosion along their northernmost coastlines, causing houses to be lost to the sea (Watt-Cloutier, 2013). The icepack is thinning and fracturing, dividing communities and making dogsledding more dangerous as well as hunting grounds more difficult to access (Watt-Cloutier, 2013). Even more problematic, Elders are finding it increasingly difficult to pass down their traditional ecological values and beliefs because Inuit youth are losing faith in their culture and the future (Watt-Cloutier, 2013). Watt-Cloutier (2013) presents a convincing image in her book of how the Inuit are losing control of their lives as their right to ice, snow, and cold is being stripped from them by climate change. The Inuit's experiences are familiar for numerous minority and poor populations around the globe who are usually the primary victims of environmental harm and the main advocates for reform. However, one is hard-pressed to find middle and upper class communities caught in the midst of prolonged and tangible environmental degradation that is forcing them to reconsider their associations with modernity on a fundamental level.

Though Beck (2012) might be right that the world is in turmoil when it comes to climate change, oil spills, and nuclear reactor meltdowns, the turmoil does not appear to be permeating our social consciousness to the point that publics are cohesively calling for widespread social changes. Instead, the modernist enterprise is perseverant in the

face of its own failures. As officials in Japan scramble to build an estimated 470 million dollar ice wall around the Fukishima reactor to prevent radioactive isotopes from seeping into the ocean (McElroy and Demetriou, 2013), Saudi Arabia is planning to build 16 nuclear reactors (16 nuclear reactors to be ready by 2030, 2013). As residents in the Gulf of Mexico are left reeling from the catastrophic effects of the 2011 Deep Water Horizon oil spill, the United States House of Representatives approved the *Offshore Energy and Jobs Act* (H.R. 2231), which calls for vast increases in oil and gas exploration and drilling in the Atlantic, Pacific and Arctic oceans (Marine Conservation Institute, 2013). Finally, as thousands of scientists warn that the irreversible impacts of climate change are upon us, Canada continues to over-harvest timber, which is a carbon sink,[31] and extract fossil fuels at a feverish pace. There are numerous troubling examples like these, which suggest that until more serious and tangible ecological harms intersect with affluent segments of society, the reflexively modern future predicted by Beck (1992) is unlikely to transpire. Instead, it seems likely that it will take a fully conscious shift in environmental thinking to move society in sustainable and ecologically modern directions. With these thoughts in mind and the theoretical framework set out, the following chapter discusses the methodology, design, and analysis procedures used to guide inquiry in this dissertation

[31] Carbon sinks absorb carbon dioxide. Forests absorb a substantial fraction of the carbon dioxide released to the atmosphere by human activities and constitute a substantive part of the entire terrestrial carbon sink (Pan et al., 2011).

Chapter 4

Methodology, Design, and Analysis

> *A constructivist approach places priority on the phenomena of study and sees both data and analysis as created from shared experiences and relationships with participants.*
>
> *-Kathy Charmaz, 2010, p. 130*

> *[Qualitative constructivist theories are] deconstructions of the way in which we construct realities and social conditions and ourselves as subjects in those realities.*
>
> *- Pertti Alasuutari, 1996, p. 382*

This chapter contains five sections. The first reiterates the research objectives and lists the central research questions. The second discusses the methodological position of the author and the implications of this position for the research endeavour. The third reviews the controversy-focused study design. The fourth explains sampling and reviews the data sources analyzed. Finally, the last section sets out the analysis procedures. Interwoven with these sections are discussions of the techniques used to increase the study's quality, rigor, and trustworthiness.

4.1 Research Objectives and Questions

The central objectives of this study were to examine social constructions across two localized environmental controversies in the province of Alberta, Canada, involving the oil sands and the environment, and to consider the ways that these social constructions shape environmental realities. Achieving these objectives depended on a critical interpretation of regional and national news media depictions of the Marie Lake and Fort Chipewyan controversies. These depictions were viewed as important producers of influential public knowledge about the oil sands and the environment.

To refresh the reader's memory, the Marie Lake controversy hinged on an attempt by Oil Sands Underground Mining to complete seismic exploration in 2007 in

order to develop a full-scale oil sands extraction project beneath Marie Lake. The attempt at development engendered fierce community resistance, resulting in numerous local and provincial news articles over an eight-month period aimed at saving the lake. The Fort Chipewyan controversy centred on a First Nations community located in northeastern Alberta, Canada. Local residents expressed concerns about the ecological and human health costs of the oil sands extraction and refining plants situated upstream from their town. In 2006, these concerns moved into the limelight when a local Fort Chipewyan medical practitioner reported to the *Canadian Broadcasting Corporation* that residents were experiencing a disproportionately high cancer rate, possibly caused by the oil sands. Following this, a series of scientific disputes, smear campaigns, and political debates involving the impacts of the oil sands industry permeated regional and national news media. Examining the news content emerging from these controversies was guided by three sets of research questions that were developed iteratively during the analysis process by contrasting the tentative themes with the conceptual and theoretical frameworks set out in Chapters 2 and 3. The questions aided in elucidating the processes of mobilizing environmental issues and helped to understand the ways in which environmental realities are socially constructed and secured. Adherence to the questions during the research process also helped to ensure that I consistently focused my attention while analyzing the data. The questions and rationales were:

1. How did the Marie Lake and Fort Chipewyan controversies unfurl in the regional and national news media in reference to economic, scientific, political, cultural and societal contexts, and which social actors, institutions, and/or organizations contributed? This two-part question elucidated relevant processes and structural contexts, as well as the roles of the central social actors across the two controversies.
2. Did the controversies result in meaningful environmental policy reforms? In addition, did the controversies result in different outcomes for the communities, and why? These questions helped to examine the impact of the controversies for the communities involved, as well as in terms of broader and meaningful environmental reforms.
3. Lastly, how were the human and environmental issues portrayed in the mainstream news media? What were the implications of these portrayals for environmental social constructionism? As one example, this two-part question

examined the ways in which environmental representations of nature were anthropocentric, ecocentric and/or biocentric (e.g., placing the value of humans and economies above or on equal footing with non-human animals and environments). The rationale for this two-part question was to examine how our environmental realities are shaped through the news.

The remainder of this chapter outlines the procedures followed to answer these questions. The following section begins by setting out the overarching methodological position taken during the course of the research. This position is important as it provides an indication of how these data were viewed by the researcher and speaks to the researcher's approach in terms of acquiring knowledge.

4.2 Methodological Position

Before outlining the specific procedures used in this study, it is important to set out the methodological position of the author. Methodology dictates how a study is carried out, the research questions asked, the data examined, and the methods deployed (Hesse-Biber and Leavy, 2011). The methodological schools of thought shaping qualitative inquiry are divided on opinions of reality (ontology), and the ways it ought to be studied and understood (epistemology). On the one hand, strict realists/positivists, argue that objective scientific methods can produce explanations that are objective renderings of reality. Realists frequently rely on deductive logic and hypothesis testing to create evidence to confirm or refute theories (Hesse-Biber and Leavy, 2011). For example, a realist might work to produce irrefutable evidence of the existence of global warming or some other environmental issue. On the other hand, strict constructivists place themselves in an irreducible relativist position, perceiving reality as being "relative to a specific conceptual scheme, theoretical framework, paradigm, discourse, society, or culture" (Bernstein, 1983, p. 8). This perspective focuses on multiple interpretations and social meanings when it comes to understanding reality. The perspective is also often critical, questioning power processes and hegemonic discourses (Hesse-Biber and Leavy, 2011). For example, constructivists might seek to understand the ways human thoughts about nature are formulated.

Essentially, this dissertation is written from between these ontological and epistemological perspectives. It is this author's belief that there is an objective and measurable reality, but this factual reality is open to vast differences in perception,

interpretation, and opinion. Though most contemporary environmental social constructionists and sociologists do not deny the validity of environmental harms such as overpopulation, deforestation, or climate change, they are less likely to involve themselves in proving such matters (Dryzek, 2005). Instead, environmental harms, whether real or not, are still open to vast social interpretation by a variety of social actors operating from multiple perspectives (Dryzek, 2005). Consequently, this dissertation project makes no attempt to prove or disprove whether the environmental harms that emerged from Marie Lake and Fort Chipewyan were substantive or not. Instead, the goal is a critical interpretive analysis of the ways the environment and the oil sands were represented in the media. To help ensure consistency during the research process, the new articles were frequently contrasted against the theoretical and conceptual frameworks set out in Chapters 2 and 3. This critical interpretive and theoretically informed perspective was reflected across all of the research decisions in this study and is succinctly illustrated by the principles offered by Kathy Charmaz in her book, *Constructing Grounded Theory* (2010). The principles have been adapted to fit this study, and are as follows:

1. The researcher is part of the study, not separate from it. Unlike studies attempting to control for researcher bias through classical experimental designs that serve to distance the researcher(s), in this study the researcher engaged in a reflexive process. Reflexivity is a critical form of introspection and self-dialogue that transpires during the course of a research endeavour (Medved and Turner, 2011). Being reflexive meant allowing for self-discovery and scholarly insight, often leading in new research directions. Being reflexive also meant trying to be aware of biases and remaining critical of the ways one's social position influenced subsequent research decisions. This was meant to improve the credibility of the final product.
2. The environmental and oil sands narratives involving the controversies unfolded at multiple sites of meaning construction. Nonetheless, this study is focused on regional and national news media depictions as the primary sources of data. This choice informed initial and subsequent methodological decisions for data collection that attempted to draw data at, and around, this important location of meaning construction.

3. The analytic processes and procedures, discussed later in this chapter, clearly shaped the conceptual content and direction in which the research progressed. As analysis evolved, this led to reliance on secondary sources of data (e.g., government reports, legislative debates, and scientific studies) to pursue inquires at multiple sites of meaning construction, while still trying to remain anchored in media depictions of public, scientist, politician, and activist voices. Remaining anchored to the media depictions was critical for maintaining the authenticity of the research and helped in developing rich and varied themes about the environment and the oil sands.
4. Finally, the central objective of this study was to develop a theoretical framework for evaluating social constructions involving the environment through successive levels of abstract analysis. This iterative process required continually rewriting and reformulating the evolving memos and themes over the course of the analysis process that were constituted by the primary and secondary sources of data. The analytic directions and conclusions of this research arose from how the researcher interacted with these data, the research literature, and the analysis as it progressed. Ultimately, the thematic representations are this researcher's interpretation of the media's depiction of the Marie Lake and Fort Chipewyan controversies. The media depictions were critical, viewed as indicative of an important public conversation about environmental realities when it comes to the Alberta oil sands.

4.3 Controversy-Focused Study Design

This study is best characterized as a content analysis of two community controversies as depicted in the mainstream news media. This is somewhat different from other forms of content analyses that are routinely underpinned by realist and positivist approaches to building knowledge that attempt to establish objective facts and general laws through quantification. Hesse-Biber and Leavy (2011) in *The Practice of Qualitative Research,* discuss that much content analysis is quantitative in nature. For example, in the realm of environmental sociology, researchers often draw random

samples of news articles or other content about particular topics like animal rights, environmental injustice, or global warming based on the belief that embedded in this content are larger meanings about environmental realities (see Jacobson, Langin, Carlton and Kaid, 2012; Kirilenko and Stepchenkova, 2012; Lewis, 2000). The goal of these sorts of studies is to count the predominant frames, claims, and/or discourses embedded in the content in order to make theoretical generalizations about how the environment is conceptualized in broader social spheres. For example, a study by Lewis (2000) sampled newspaper abstracts from 1989 to 1997 from across the United States using the keyword "sustainable development." She found that sustainable development was generally presented within an economic growth paradigm as opposed to an environmental protection paradigm. However, a different approach to understanding environmental content is proposed in this dissertation. Rather than counting a class of events (i.e., the number of times that sustainable development is linked to economic growth across a random sample of newspaper sources), an in-depth qualitative thematic examination of regional/national news media content from the Marie Lake and Fort Chipewyan controversies is presented. The controversy-focused design used in this study has advantages over quantitative and mixed-methods designs that can decontextualize environmental issues. Focusing on the Marie Lake and Fort Chipewyan controversies, as opposed to on a generic class of events has the advantage of positioning the researcher in the "thick of it," examining a valuable body of social constructions forged during environmental strife where a great deal is at stake. For example, the residents of Marie Lake faced the very real threat of an ecologically damaging and long-term oil sands project in close proximity to their homes. Even more troubling, the people of Fort Chipewyan had reason to be seriously concerned about cancer, death, and widespread environmental contamination. It was felt that the social constructions that emerged from these substantive contexts would be more authentic and realistic than those found in news articles focused on a generic class of environmental topics, such as global warming or sustainability.

The controversy-focused approach differs from subjective qualitative studies focused on detailed descriptions of a particular individual or the voices from a small group as in focus group research. This study brings together the voices of many social actors as depicted in the media. Like Bogard's (2001) informative approach in her study of the social constructions of homelessness, this dissertation treats mainstream news media articles as indicative of the "dominant and elite voices in the public conversation

about a social problem" (Bogard, 2001, p. 431). In particular, the data were approached from the perspective that regional and national newspapers are in many ways the producers and oftentimes, the arbiters, of influential public knowledge about the oil sands and the environment in and around Marie Lake and Fort Chipewyan. Boykoff (2009) writes that,

> Through time, mass media coverage has proven to be a key contributor ... that has stitched the spaces of environmental science, governance, and daily life together. Mass media has given voice to the environment itself by articulating environmental change in particular ways, via claimsmakers or authorized definers. More formal spaces of science, policy, and politics operating on multiple scales often find meaning in people's everyday lives and livelihoods through mass media—albeit in messy, nonlinear and diffuse ways. (p. 434)

In this light, the social actors and their stories intersected in the regional and national news and were taken to indicate an important epicenter of public meaning construction, striking a balance between depth and breadth, as well as micro and macro concerns. At this intersection, the two environmental controversies received detailed and sustained media attention that played out to a large audience of individuals affected by the events. Thus, the stories about Marie Lake and Fort Chipewyan are this author's theoretical and conceptual interpretation of the events unfolding at what Best (1999, p. 68) calls the "iron quadrangle" which comprises the intersection of voices between journalists, politicians, scientists, and the public. In this way, the controversy-focused approach is beneficial, contrasting multiple perspectives from numerous social actors who occupied various positions amongst the unfolding debates. Utilizing multiple perspectives is a form of "structural corroboration" that bolsters the researcher's interpretations (Eisner, 2005, p. 46). As well, Golafshani (2003) writes, "Constructivism values multiple realities that people have in their minds" (p. 604). It is felt that the multiple perspectives analyzed in this study ultimately strengthened many of the conclusions set out in the following chapters.

4.4 Data Sources and Sampling Procedure

The primary data sources for this study were regional and national news media articles. Secondary data sources included Alberta legislative debates, government documents, scholarly research studies, and professional investigative documents. The primary and secondary data were obtained through access to Canadian Newsstand

Major Dailies - New ProQuest electronic databases, Google search engine, the *Canadian Broadcasting Corporation* Archive, the Summon from Serials Solutions (a Simon Fraser University ProQuest database) search engine, and the Alberta Hansard search engine. Primary sources were gathered to answer the research questions listed in the introduction of this chapter and to begin to construct the main themes of this study, while secondary sources were used to bolster the conceptual density and trustworthiness of the themes under development. The secondary sources were important for elucidating disparities and differences between how the stories were presented in the media and how the stories were presented in the secondary sources. Using multiple sources of data is a form of triangulation where "researchers search for convergence among multiple and different sources of information to form themes or categories in a study" (Creswell & Miller, 2000, p. 126).[32] A complete list of the primary and secondary sources for each controversy is set out in Appendix A and Appendix B for the reader's reference. In brief, the Marie Lake sample spanned from April 2, 2007 to May 15, 2008. It contained 45 *Edmonton Journal* articles, seven *Cold Lake Sun* articles, seven *Calgary Herald* articles, five industry-sponsored periodicals, eight Alberta Hansard Legislative debate transcripts, one government report, and one scientific article. The Fort Chipewyan sample spanned from March 8, 2007 to September 29, 2011. It contained 53 *Edmonton Journal* articles, 34 *Canadian Broadcasting Corporation* Articles, 16 *Globe and Mail* articles, five Alberta Hansard legislative debate transcripts, seven scientific studies regarding the impacts of the Athabasca oil sands operations, one College of Physicians and Surgeons investigative report, and one Canadian Federal government oil sands advisory panel transcript. The Marie Lake and Fort Chipewyan sampling dates began in concordance with the first news articles published by regional news sources (e.g., The *Cold Lake Sun*, The *Edmonton Journal*, and The *Canadian Broadcasting Corporation*). The closing dates represent the periods when the controversies lost momentum in the news. The Marie Lake issue received no further media coverage after May 15, 2008. The Fort Chipewyan controversy continues to receive news coverage,

[32] I owe thanks to Dr. Sheri Fabian for pointing out that this is but one of many methods of triangulation. Denzin (1970, 1978) argues that triangulation permits a researcher to validate their observations by "drawing on multiple sources and perspectives within the same investigation (as cited in Palys and Atchison, 2014, p. 392). Methods of triangulation include securing the perspectives of a number of different researchers, operating from different theoretical perspectives, using different data sources, using both quantitative and qualitative methods, and/or adopting multiple methods of analysis (as cited in Palys and Atchison, 2014).

but the issue fell out of prominence throughout much of late 2011 following federal government promises to resolve the resident's concerns.

Sampling techniques from grounded theory helped gather the primary and secondary sources (Glaser and Strauss, 1967). Respectively, this involved initial sampling and theoretical sampling (Charmaz, 2010). Charmaz (2010) explains that "[i]nitial sampling in grounded theory is where you start, whereas theoretical sampling directs you where to go" (p. 100). She also asserts that "theoretical sampling pertains only to conceptual and theoretical development; it is *not* about representing a population or increasing the statistical generalizability of your results" (p. 101, italics in original). Theoretical sampling involves searching data for cues to other important secondary sources, as opposed to just focusing on the primary sample (Benz and Newman, 2008). Theoretical sampling is thorough and can improve the depth and richness of qualitative research. For this dissertation, data collection started by compiling the initial (primary) sample. For Marie Lake, this started with one primary source—*Edmonton Journal* newspaper articles obtained using the Canadian Newsstand Major Dailies - New ProQuest electronic databases. Aside from wanting to focus on the intersection of voices at the provincial level, the rationale for choosing the *Edmonton Journal* was that Edmonton is geographically close to Marie Lake and the oil sands.[33] In addition, this paper has the highest provincial readership in the area, and devoted sustained attention to the issue.[34] The *Edmonton Journal* has likely played a large part in how many Albertans view the oil sands and the environment. The initial ProQuest search of the *Edmonton Journal* was restricted to the search terms, "Marie Lake and oil sands or oilsands." The pertinent articles from this search were imported into *NVivo*. Subsequent, ProQuest searches were completed using a variety of search terms such as "Marie Lake and Seismic" as well as "Marie Lake and OSUM." It was also determined that the *Cold Lake Sun*, a smaller city newspaper with wide readership in close proximity to Marie Lake, ran articles covering the controversy. As well, the *Calgary Herald* published a few articles about the controversy that were also sampled for this study. Once no further

[33] See Chapter 1 for a map.

[34] The *Edmonton Journal* had a daily average circulation of 103,208 papers in 2011 (Newspapers Canada, 2013). Though the *Calgary Herald* has a slightly higher daily average of 130,721, Edmonton is geographically close to Marie Lake, Fort Chipewyan and the oil sands (Newspapers Canada, 2013). Additionally, the Edmonton Journal devoted sustained attention to both controversies, while the Calgary Herald did not.

news articles were found, the initial sampling process was completed and the primary sample of news content compiled. This initial sample provided a “point of departure,” as Charmaz (2010, p. 100) terms it, for the process of theoretical sampling. For example, these articles contained additional search terms (theoretical clues) to locate other conceptually important sources of data that would help in elaborating and refining the developing themes involving the Marie Lake controversy. For example, edited Alberta Hansard Legislature hearings were a valuable source of secondary data. A few environmental activist studies along with industry periodicals were also cited in primary sources as important to the Marie Lake issue. These sources were gathered and compared against the data for validation or invalidation of the important emerging themes. Ultimately, theoretical sampling was an important tool that improved the theoretical breadth of the data. Theoretical sampling also ensured a more rigorous approach to data collection, providing clues for the researcher to seek out sources that might have otherwise gone unnoticed like some of the relatively obscure industry sponsored periodicals. Finally, the secondary sources helped to bolster the credibility of the themes.

Like the Marie Lake data collection process, the Fort Chipewyan sources were also gathered using primary and theoretical sampling techniques. The same data collection limitations were carefully adhered to. The analysis began with the *Edmonton Journal*, which shares the distinction (along with Marie Lake) of being the most circulated newspaper in the closest proximity to Fort Chipewyan. The *Edmonton Journal* also devoted sustained attention to the evolving oil sands controversy out of Fort Chipewyan. Like Marie Lake, upon coding the *Edmonton Journal* data, it became apparent that other news sources were theoretically relevant to the evolving themes being developed. In particular, the Fort Chipewyan controversy received sustained attention from start to finish at the national level by the *Canadian Broadcasting Corporation* (*CBC*) in terms of online news media, and to a lesser extent by the *Globe and Mail* newspaper. The Fort Chipewyan event had moved further into the broader public realm than the events out of Marie Lake. For this reason, these national sources were also coded as important producers and arbiters of influential wide-scale public knowledge about the oil sands and the environment. Once the internet searches were exhaustive, the initial sampling process was complete and the primary sample of news content had been compiled for Fort Chipewyan. As was the case with Marie Lake, this initial sample provided a starting point for the process of theoretical sampling to collect the secondary sample. The

secondary sample included Hansard Legislative Debates, scientific studies, and government research reports. As was the case with Marie Lake, these documents all helped to bolster the credibility of the themes.

This initial and secondary (theoretical) sampling process continued for both Marie Lake and Fort Chipewyan until the themes were deemed conceptually saturated. Themes are considered saturated when gathering data "no longer sparks new theoretical insights, nor reveals new properties" (Charmaz, 2010, p. 113). Dey (1999), argues that it may be more accurate to use the term "theoretical sufficiency" over theoretical saturation, believing that the emerging themes are never really conceptually complete (p. 257). Either way, the objective was to engage in prolonged theoretical sampling in order to build conceptually varied and dense themes that could provide plausible and credible answers to the research questions posed. Collecting data in this way meant the themes were developed based on this researcher's interpretation of multiple perspectives from multiple stakeholders. Kvale and Brinkman (2009) argue that this form of data collection can conceivably improve the trustworthiness of the knowledge being developed. In summary, the analysis in this dissertation represents a serious attempt to ground the stories at the nexus of meaning construction where the controversies received widespread and sustained regional news media attention from multiple stakeholders. Arguably, it is at this nexus where many social conceptualizations about the environment are formed. This approach is rather unique to the environmental constructivist literature and there have been relatively few meso-level, controversy-focused studies bringing together public, industry, scientist, and government voices. The majority of eco-constructivist studies are either micro-level, focused on individual environmental perceptions, or macro-level, focused on a grander scale understanding how specific topics like climate change are depicted in the news. This study attempts to reach a middle ground.

4.5 Analysis Procedures: The Analytic Stages of Grounded Theory

As originally conceptualized by Glaser and Strauss (1967) grounded theory prescribes a method of analysing data to build knowledge. Early theorists argued that the method permitted the development of unbiased and objective renderings of reality through analyses that maintained a close connection to the data. Charmaz (2010) poses

a different perspective in terms of the usefulness of grounded theory for developing knowledge, arguing that renderings of reality created through the approach are interpretive as opposed to objective. In her view, grounded theory offers guidance in seeking out, examining, and interpreting data in order to elicit meaning, gain understanding, and develop empirical knowledge. The findings it produces are a social construction, just as environmental issues are socially constructed. With her perspective in mind, the remainder of this section describes the rigid analytic procedures followed for this dissertation.

4.5.1 Initial Coding: Interpreting and Organizing the Data

This dissertation did not set out to test specific hypotheses or to confirm previous qualitative interpretations of social constructionism in practice. An important goal of the analysis was to avoid overly influencing the coding process with preconceived theoretical codes, and instead to facilitate creativity through a clear framework of inductive stages aimed at discovering conceptually important themes in the data. Charmaz (2010) argues that theoretical concepts may provide a starting point for looking at data, but they should never offer automatic codes for analysing data. Glaser and Strauss (1967) agree, and argue that researchers begin their studies without the overly narrow research hypotheses common in other research designs. Consequently, once a collection of primary newspaper articles were gathered, “initial coding” (Strauss and Corbin, 1997) began with the goal of simply trying to discover segments of meaning. Once segments of meaning were discovered they were contrasted with the conceptual and theoretical frameworks set out in Chapters 2 and 3.

The first pass of initial coding unearthed the first level of abstraction in the process of creating the main Marie Lake and Fort Chipewyan themes. *NVivo 9 and 10* software was used, which supports qualitative data analyses in terms of organizational and memo-writing processes. *NVivo* provided a means to store and code the data line by line, phrase by phrase, sentence by sentence, paragraphs by paragraph, and even by whole documents in a few rare cases when the entire news article was indicative of one segment of meaning. *NVivo* aided in consistently organizing and analyzing the media depictions, helping the researcher to create tentative themes and examine relationships between the evolving stories. The software also made it easier to search documents and

track research decisions as the analysis progressed. This helped ensure that coding decisions remained consistent during the analysis process.

The development of conceptual themes started tentatively at this initial stage of coding. A standard way to start building abstract conceptual themes from segments of meaning is to ask *why* and *how* questions (Corbin and Strauss, 2008). These were more general than the research questions set out in the introductory chapter. The questions are based on the work of Corbin and Strauss (2008), and included:

- Which social actors, social groups, institutions, and/or organizations are playing a large role in constructing and securing the various definitions having to do with the environment as well as the oil sands?
- In what structures, contexts, and settings are the processes of social construction unfolding? How critical are the social contexts and structures for understanding the social constructions?
- What techniques, activities, emotions, arguments and/or other behaviours or actions are being used to construct and secure the various definitions and social constructions?
- What consequences are transpiring as the various processes unfold? For example, which social constructions appear to endure? Which do not? Have any of the constructions become conditions for additional activity?

These questions served to elucidate conceptually important themes. During this questioning stage, some initial codes were simply descriptive while most were abstract, analytical and focused on underlying processes, explanations, intentions, emotions, properties, and dimensions (Strauss and Corbin, 1997). These codes helped in forming the themes. For example, many of the Fort Chipewyan articles focused on personal stories about cancer and death in the community. These narratives provided a tentative starting point for a code entitled *Health Issues out of Fort Chipewyan*. Eventually, however, it became apparent that the stories about cancer, as well as the stories about environmental contamination in the Fort Chipewyan area were being routinely compartmentalized under a broader narrative questioning the veracity of first-hand knowledges and local experiences. Specifically, the stories about cancer and contamination were frequently reduced to scientific issues. Consequently, the theme was eventually renamed *Compartmentalizing the Fort Chipewyan Controversy as a Scientific Issue*.

In addition to asking *why* and *how* questions, the *constant comparison* method was also vitally important to coding and theme building. Constant comparison involved

iteratively coding data by constantly modifying and sharpening the growing conceptual themes (Strauss and Corbin, 1997). Charmaz (2010) argues that systematic comparisons between observations in the data and the themes can improve the credibility of the final product. For example, in the early stages of coding and theoretical sampling, many of the themes were tentative. Constant comparison aided in recognizing weakness, gaps, and helped in seeking out additional data to fill conceptual voids. For example, after spending considerable time organizing and reorganizing the initial codes using constant comparison, tentative themes began to emerge. *NVivo* was extremely helpful in this process, allowing me to track different organizational schemes. Constant comparison also aided in maintaining a close connection between the themes and sub-themes recognized in these data. *Nvivo* made it simple to refer back to different themes, sub-themes, or the original news articles. This helped to ensure that the initial segments of meaning were not taken out of context or coded under the wrong theme. Data were routinely examined to assess whether they represented a dimension of an already developing theme or were indicative of a newly emerging analytic direction. As mentioned earlier in this chapter, theoretical saturation was the ultimate goal of both data collection and the coding process. The themes were considered conceptually sufficient (theoretically saturated) once all interconnected and relevant content had been sampled at the appropriate level of analysis and once all the themes seemed conceptually dense.

Finally, memo writing was crucial to this and all other stages of the analyses. Numerous memos were written and rewritten in *NVivo*, constantly evolving in reference to the themes. Memos were important in developing the originality of the work by rendering the data in new conceptual ways and helped to “challenge, extend, [and] refine … [the] ideas, concepts, and practices” (Charmaz, 2010, p. 182) involving the social construction of environmental problems. In the early stages, most of the extracted segments of meaning had memos attached. As coding and analytic development advanced, the memos were often rewritten and combined. These memos eventually formed the final story line of both the Marie Lake and Fort Chipewyan analyses. The memos, as seen in the final storylines in Chapters 6 and 7, also provide a part of the audit trail. Memos bolster reliability, and point out gaps in the research process, but most importantly, they help in treating codes like conceptual themes to analyze (Charmaz, 2010). Put differently, memos provide a method to raise initial codes, which are often disparate and ambiguous, into conceptually relevant themes (Charmaz, 2010).

4.5.2 Focused Coding and Story Line Creation

Focused coding was the second stage of analysis. According to Glaser (1978), this form of coding is more focused and conceptual than initial coding. Charmaz (2010) tells us that once researchers begin to notice the conceptual direction in which their analysis is headed they can begin to focus their coding to “synthesize and explain larger segments of data” (p. 57). An important part of this stage of coding is deciding which initial themes will cohesively capture all the data that remain (Charmaz, 2010).This involved the use of storylines that helped to reorganize and reassemble the data into themes. This reflexive introspective process questioned preconceived notions with regard to how the data ought to be reorganized. The goal was to explore new ways of conceptualizing the information by making connections between and within the evolving themes. This was facilitated with the use of a “coding paradigm” sensitive to “conditions, context, action/interaction, and consequences” (Strauss and Corbin, 1997, p. 96). The coding paradigm helped the researcher to “draw out the contextual factors and identify relationships between context and process” by considering three main questions in reference to the data (Corbin and Strauss, 2008, p. 89). Condition questions prompted the researcher to be attentive to the particular circumstances leading to a response. For example, the researchers might explore the various conditions prompting a particular outcome by a particular stakeholder. Interaction/action questions helped to expose responses to the various conditions under consideration. Finally, consequence questions help elucidate the various outcomes across the controversies examined. At the most basic level, the “coding paradigm” helped to order within and between the themes.

The coding paradigm questions helped to organize and construct the storylines. The storylines served as both a means and an end in terms of the analysis (Birks and Mills, 2011). As a means, they were both a help and a hindrance. They helped for recognizing conceptual gaps in the evolving stories. Stories rely on logic, consistency, coherence and flow (Birks and Mills, 2011). As a result, there were times that it was necessary to theoretically sample more data, filling in the gaps. This helped to ensure that the stories about Marie Lake and Fort Chipewyan were detailed and conceptually complete. In addition, many direct quotations were used when writing the storylines in order to maintain a closer connection to the data. However, using storylines also resulted in reductionism. In particular, they present an organized version of what were very messy events. This should not mislead the reader into believing that the stories

unfolded in such an orderly fashion. The Marie Lake and Fort Chipewyan controversies were not nearly as sequenced as they appear in Chapters 6 and 7. Most of the issues were debated iteratively within and across differing domains as well as during different times. As an ends, the storylines help to present the findings in a way that is "digestible for the reader and reflective of the analysis" (Birks and Mills, 2011, p. 119).

Once focused coding was complete, *NVivo* was used to provide reference coverage for each theme. Reference coverage provides a count of the segments of meaning that fell under each theme. Stated differently, reference coverage produces a count of the number of codes per theme. Importantly, reference coverage is not synonymous with how much news coverage a particular theme received. The theoretical sampling process resulted in a wide array of data sources, many of which were not news articles. Reference coverage provides an indication of the density and robustness of each theme. In the end, five Marie Lake themes and five Fort Chipewyan themes were constructed. Table 4.1 displays the titles for each theme, the number of documents analysed, and the number of references (codes) each theme comprises.

Table 4.1: Number of documents analysed, themes created, and references coded: Marie Lake and Fort Chipewyan

Marie Lake Analysis (74 documents analysed)	**References**
Theme 1: Deny an Environmental Policy Problem, but if the Policy is the Problem then Blame the Rule Of Law	181
Theme 2: Embracing Anthropocentric Portrayals of the Natural Environment	116
Theme 3: When Environmental Sensationalism Backfires	68
Theme 4: Challenges for an Ecologically Sound Future	96
Theme 5: Providing an Outlet to Repair a Symbolically Charged Issue	136
Fort Chipewyan Analysis (120 documents analysed)	
Theme 6: Compartmentalizing the Fort Chipewyan Controversy as a Scientific Issue	136
Theme 7: Putting a Lid on the Erupting Cancer Controversy	110
Theme 8: Genuine Scientific Uncertainty versus Ideological Manoeuvring Disguised as Science	113
Theme 9: Questioning the Entire Cancer Controversy	102
Theme 10: Regaining Control of a Runaway Environmental Situation	112

4.5.3 Selective Coding and Building a Constructivist Evaluative Framework

Selective coding was the final analytic process whereby the themes were unified to build a framework for evaluating socially constructed environmental realities. Social constructivists often view theories as frameworks, or different viewpoints to social reality, and less often as a set of generalized or "universal social mechanisms" to explain various phenomena (Alasuutari, 1996, p. 372). This view is to be expected, since the very nature of social constructionists is skeptical of universal explanations. The entire dissertation analysis moved toward building a constructivist framework for evaluating the ways that environmental realities come to be forged. Composing the framework involved iterative writing, referring back to memos, consulting the literature, summarizing the themes, and asking questions like: What are the main analytic ideas in this research? If the findings are to be conceptualized in a few sentences, what do they say? How can the between-and-within category variation be concisely explained (Corbin and Strauss, 2008)? Partial frameworks for Marie Lake and Fort Chipewyan are presented in the conclusion sections of Chapters 5 and 6 respectively. Chapter 7 depicts the entire framework uniting the themes from both analyses. Composing the constructivist framework helped to improve the study's credibility and highlighted the shared processes and contextual factors as well as the major distinctions between the controversies.

Building a framework for analysing social constructions pertaining to the natural environment is somewhat different from traditional grounded approaches where building a formal theory to shed light on a general system is the objective (Alasuutari, 1996). From the outset, the decision to focus in-depth on two controversies automatically hindered the likelihood of creating a formal grounded theory, and was not the ultimate goal. Though each controversy was constituted by many voices, the sample size was still only two cases. Formal grounded theories are often built through continued theoretical sampling of cases that allows for the construction of a cohesive and dense theory that applies to a wide range of disciplinary issues and problems (Corbin and Strauss, 2008). Examining two oil sands controversies was insufficient for these purposes, and future researchers may choose to pursue alternate sampling methods to develop theories that are more formal. However, the absence of a formal grounded theory does not undercut the importance of the evaluative framework developed in this dissertation. The framework is an attempt to "particularize understandings of the social"

(Alasuutari, 1996, p 372). Instead of assuming that social reality provides glimpses into universal truths, this study endeavours to reveal two local and circumscribed environmental events (Stake, 1995). To explain, constructivist researchers take a “one-step” distance from the perspective of those being researched (Alasuutari, 1996, p. 382). This is not “narrow or incorrect”, but instead results in examinations of how particular social realities come to be constituted (Alasuutari, 1996, p. 382). Alasuutari (1996) writes that qualitative constructivist theories are therefore “deconstructions of the way in which we construct realities and social conditions and ourselves as subjects in those realities” (p. 382). Thus, qualitative constructivist theories can be thought of as attempts to make sense of layperson thinking in different forms and instances (Alasuutari, 1996). However, in this case, the qualitative constructivist framework developed is best conceptualized as an attempt to make sense of everyday journalistic portrayals across two embroiled environmental controversies. Thus, this dissertation does not set out to build a formal theory per se, but instead is a deconstruction of the ways in which environmental realities were constituted out of both Marie Lake and Fort Chipewyan in the news.

4.6 Conclusion

This chapter depicted research procedures followed in this dissertation. This entailed a discussion of the author’s methodological position and an explanation of how this position influenced the direction of study. Following this, the specific research plan, including the study’s design, sources used, sampling procedure followed, and the level of analysis achieved were set out. The chapter concluded with a description of the grounded theory methods and procedures followed. In summary, many of the research procedures used for this dissertation have been widely utilized in the qualitative literature as credible methods for developing useful knowledge about social realities. What is perhaps most unique to the methodological approach in this dissertation is the controversy-focused study design, offering an advantageous way to examine converging social narratives constituting multiple realities brought together at the hub of a public conversation during the strife of controversy. It is hoped that other researchers can expand upon this approach to studying socially constructed realities. With these thoughts in mind, the following two chapters turn to analyses—introducing, presenting, and discussing the Marie Lake and Fort Chipewyan controversies.

Chapter 5

Findings and Discussion: Stopping an Industrial Oil Sands Development beneath Marie Lake

> *[Marie Lake is] really the last significant piece of the Cold Lake bitumen deposit that isn't held by either Esso or Canadian Natural Resources or Husky or Shell. At today's prices the oil in the Marie Lake leases is worth $18 billion to $31 billion...*
>
> *- Peter Putnam, Chief Executive Officer of Oil Sands Underground Mining, (as cited in Oil riches may threaten lake, 2007, p. 1)*

This chapter and the following chapter present findings of the Marie Lake and Fort Chipewyan content analysis. The findings represent an interpretation of the public, political, and scientific narratives that intersected in the mainstream news media. This chapter presents themes one through five of the Marie Lake content analysis, while Chapter 6 depicts themes six through ten of the Fort Chipewyan analysis.[35] The themes, though primarily depictions of the ways in which the mainstream media interpreted the Marie Lake and Fort Chipewyan events, are also constituted by other theoretically relevant secondary sources of data that gave shape to the evolving controversies such as academic studies, Alberta legislature hearing transcripts, industry periodicals, and government reports.

These two chapters also provide an in-depth, abstracted, and conceptual interpretation of the Marie Lake and Fort Chipewyan themes. Each theme is followed by a discussion attaching import, considering different meanings, contextualizing the theme amongst the extant literature, incorporating examples, as well as offering potential conclusions. Occasionally, this involves situating the theme within the conceptual and theoretical frameworks built in earlier chapters, while at other times this involves discussing how the findings confirm, contribute and contradict more recent green criminological, environmental justice, and environmental social constructionist

[35] A list of data sources is found in appendices A and B. Page numbers are only listed when a data source is longer than a standard 1-2 page news article.

understandings of nature. These thematic interpretations shed light on the ways environmental controversies are portrayed in the news, and offer insight into how these depictions play a part in shaping our environmental realities. Each chapter concludes with a summary of the thematic interpretations, which speaks to the relative efficacy of the social construction mechanisms employed and offers a number of theoretical insights forming the beginnings of a constructivist framework for evaluating environmental social constructions. The following section begins with an introduction to the Marie Lake analysis.

5.1 The Battle to Protect Marie Lake

As discussed in the introductory chapter, Marie Lake is in the province of Alberta, about 300 km northeast of the city of Edmonton, and 25 km northwest of Cold Lake. It is situated inside the northern quadrant of the Cold Lake oil sands formation, which spans 780 square kilometers (Imperial Oil, 2013). The lake is small, but a popular recreational spot with numerous visitors coming from surrounding towns and cities. It has excellent beaches and warm water in the summer making for good fishing, swimming, camping, biking, all-terrain vehicle riding, and other outdoor pursuits. The winter months see snowmobiling, cross-country skiing, and ice fishing. A small portion of Marie Lake's shore-land is privately owned, and there is a subdivision located on private land on the eastern banks (Atlas of Alberta Lakes, 2005). There are approximately 80 lots, all of which are fully developed (Atlas of Alberta Lakes, 2005).

Local residents and other friends of Marie Lake had earlier expressed concerns about a proposal to seismically explore and eventually develop an oil sand extraction project under the lake, but it was not until 2007 that the controversy took shape in the media. On April 3rd, 2007, the *Cold Lake Sun*, a small nearby local city paper, ran an article titled "Oil Riches May Threaten Lake." A few days later, the *Edmonton Journal*, with its province-wide readership, ran a similar article titled "Marie Lake cottage owners say 'never' to oil sands seismic survey" (Jaremko, 2007b). These articles were the first of many that provided initial momentum to the controversy emerging between Oil Sands Underground Mining Corporation (OSUM), government spokespeople, and concerned activists and residents. In the months that followed, an opposition mounted in the form of crowded industry sponsored information sessions, community protests at various government hearings, and citizen-organized community hall meetings. There was a

barrage of letters to local MLAs, Alberta ministries, environmental NGOs, and the media. Additionally, a number of residents, politicians, lawyers, and activists took up the Marie Lake cause. For example, Denis Ducharme who at the time was a Bonnyville-Cold Lake MLA was said to have broken his conservative political ranks to question the industrial project's approval. Don Savard, a local landowner, ex-oil patch executive, and chairperson of the Marie Lake Air and Watershed Society (MLAWS) played a critical role, eventually bringing a petition with over 1200 names on it to the Alberta Legislature in opposition to the project. Overall, the burgeoning controversy resulted in extensive media coverage and a number of debates in the Alberta Legislature. The remainder of this chapter presents and discusses the five themes that emerged from analyzing these data. The themes are:

1. *Deny an Environmental Policy Problem, but if the Policy is the Problem then Blame the Rule Of Law*
2. *Embracing Anthropocentric Portrayals of the Natural Environment*
3. *When Environmental Sensationalism Backfires*
4. *Challenges for an Ecologically Sound Future*
5. *Providing an Outlet to Repair a Symbolically Charged Issue*

5.1.1 Theme 1: Deny an Environmental Policy Problem, but if the Policy is the Problem then Blame the Rule of Law

The first theme focused on the media's depiction of what were seen as flawed government procedures for making oil sands exploration and development decisions locally and across the province. From the outset of the Marie Lake controversy, many concerned stakeholders debated this issue. For example, Bob Heigh, owner of Marie Lake's only campground, echoed other residents' astonishment, stating that: "[t]he fight wasn't so much with Calgary-based [Oil Sands Underground Mining Corporation] and seismic [exploration], but with the government's 'lunacy' in allowing the project to go ahead on one of the most beautiful lakes in the province…" (as cited in Finlayson, 2007, p. A.15). Dr. Dave Swann, then Liberal Environmental Critic for Alberta who was vocal in the Marie Lake controversy, stated in legislature that several MLAs "have had contact from citizens in the Edmonton area and across the province…appalled at the poor process which allows land to be auctioned underneath lakes…"(Swann, April 10, 2007, p. 473). Journalists quoted residents who were angered, enraged, and perplexed about the lack of transparency and direct public involvement in provincial land tenure

decisions, which allowed Marie Lake to become a potential site for oil sands development in the first place (Jaremko, 2007b; Murphy, 2007a).

The central argument cited by those concerned about the future of Marie Lake was that public input into industrial exploration and development was occurring far too late in the application process and land evaluation process (Jaremko, 2007b). Social actors discussed a “complete absence of a straightforward land-use strategy” to decide which areas are sensitive (Sobey, 2007, p. A.19). The point is that public consultation should have been an obvious first step that would have ruled out Marie Lake as a point of seismic exploration in the first place. Moreover, Brian Mason, the Alberta New Democratic Party leader, argued that circumventing public consultation created an “enormous contradiction in the system" (as cited in McLean, 2007). In particular, there was much at stake in going forward with proposed projects since substantial time and resources were being expended prior to any public input. David Price of the Canadian Association of Petroleum Producers illustrated this contradiction, stating, “[c]urrently, oil companies operate on the assumption that the purchase of a lease is tacit approval for development. Once we get tenure we hope the debate is how we [get]…access, not if we get access" (as cited in New lease process a start, 2007, p. A.16). Consequently, residents, journalists, and politicians sympathetic to the Marie Lake issue were cited wondering, “how far the provincial government was willing to go in failing to protect important areas” (Pratt, 2007a). For instance, Don Savard, president of the Marie Lake Air and Watershed Society was quoted as saying, "[t]his government has a history of selling everything in this province” (Pratt, 2007b). Denis Ducharme, who was a local MLA at the time and central to the controversy, asked the Alberta Provincial Legislature if the present government policy is to “allow all lands with the exception of parks and protected areas to be sold to the highest bidder without any consideration to quality of life and environmental sensitivities?” (Ducharme, April 4, 2007, p. 404). Sheila Pratt, a journalist for the *Edmonton Journal,* wrote "[i]t was a jolt to some in the community to discover that Alberta lakes are just as open for oil extraction as a farmer's field” (Pratt, 2007a). She reminded readers that about 40 lakes had been approved for seismic work since 2001 (Pratt, 2007a). Finally, and perhaps most pointedly, then liberal MLA Bill Bonko asked rhetorically in the Provincial Legislature if “everything was for sale in Alberta?” (as cited in Idaho, 2007, p. A.18).

In response to these questions and concerns, then Premier Ed Stelmach and Ted Morton, Minister of Sustainable Resource Development at the time, argued that there were no major procedural problems with how land was tenured in the province. Morton and Stelmach told readers that seismic exploration is simply the first step when assessing land value. Mel Knight, then the Alberta Energy Minister, reported to legislature that no resource development takes place in Alberta without a very comprehensive approval process. Knight stated, "[n]o project with respect to oil sands, heavy oil, conventional oil, shale oil, deep tight gas, or any other project…go[es] ahead without the very stringent requirements that we put in place" (Knight, April 2, 2007, p. 331). Ted Morton explained further, telling legislative members that "[t]he seismic stage of exploration is completely different from the exploration stage, two different processes, two different sets of hearings" (Morton, May 16, 2007, p. 1187). In the *Edmonton Journal,* he explained that:

> …OSUM's permit allows only seismic work and authorizes no digging, drilling or pipeline construction. Any production project will still have to obtain approvals from the Alberta Energy and Utilities Board (AEUB) and Alberta Environment. The AEUB pays attention to evidence of industry damage and rejects an average of 2,000 applications a year for a range of activities. Should the company decide to proceed with the development of the project itself, then they will be required to conduct the environmental appeal hearing. We're in the seismic process right now. There'll be at least two more opportunities for public participation... (Jaremko, 2007a, p. 1)

Even as Morton and Stelmach argued that the Alberta tenure policy was procedurally rigorous, comprehensive and fair, they also abdicated blame implying the policy was broken, stating that they were simply following government procedure when it came to completing seismic exploration below Marie Lake (McLean, 2007). Ted Morton was quoted in the media and the Alberta Legislature saying, in a garbled manner, that he could not "stop companies that buy access to oil which turns out to be sensitive from trying to exercise their property rights," (as cited in Jaremko, 2007a). He also said that he was "bound by legislation," (Morton, May 16, 2007, p. 1187) while stressing, "it's a government of laws, not of men" (as cited in Jaremko, 2007a).

5.1.1.1 Discussion

This first theme entitled, *Deny an Environmental Problem, but if the Policy is the Problem then Blame the Rule of Law*, is concordant with broader concerns in the

environmental literature regarding a lack of public opportunities for input into industrial exploration and development decisions in Canada. This is a longstanding concern. For example, in 1990 the Canadian Bar Association (CBA) argued for increasing democratic decision-making for environmental issues. They argued that the public is "excluded from the process or treated as second-class citizens" (Gentler, Muldoon and Valiante, 1990, p. 79). The CBA goal was to improve accountability by industry and government, as well as increase fairness when it came to making environmental decisions. At the time, they made a number of recommendations to improve public participation opportunities, but the recommendations were never implemented (Andrews, 2000). More recently, David Boyd (2003) argues in his book, *Unnatural Law*, that a lack of meaningful opportunities for public involvement is a crucial flaw when it comes to Canadian environmental law.

> Even in the rare situations where the public has a more extensive role, as in public hearings either under the Canadian *Environmental Assessment Act* or before Parliament's Standing Committee on Environment and Sustainable Development, governments often ignore the public's input. For example, after public hearings about the *Species at Risk Act* and amendments to the Canadian *Environmental Protection Act*, the Standing Committee made extensive changes to the bills to reflect the concerns and expert evidence presented at the hearings. In both cases, the government reversed the majority of the changes made by the standing committee. (Boyd, 2003, p. 245)

Sinclair and Diduck (2005) have also researched the role of public participation in environmental decision-making. They note that the Canadian *Environmental Assessment Act* contains a number of provisions for public involvement such as giving notice to the public, providing access to vital information, allowing public comment, and determining when public hearings should occur. However, not unlike other Canadian environmental legislation, the authors stress that when and how these processes are implemented is mainly discretionary. In fact, there is a substantive body of research examining enduring deficiencies when it comes to public participation in Canadian environmental decision-making (See Petts, 1999; Sinclair and Doelle, 2003; Sinclair and Diduck, 2005). The concerns include too few opportunities for public discussion, a lack of involvement in strategic resource planning, major deficiencies in communications between concerned stakeholders, limited funding for participants to engage in the decision-making process, and accelerated decision-making (Sinclair and Diduck, 2005; Doelle and Sinclair, 2006). Additionally, even when the public is involved many of the essential elements for meaningful public participation are absent such as transparency,

integrity, accountability, fair notice, adequate legal representation, and consultation from experts, among other elements (Stewart and Sinclair, 2007).

Such deficiencies in public involvement in environmental decision-making are replicated in the events out of Marie Lake. The failure to consider public wishes prior to allocating resources for governmental approval and seismic exploration of a picturesque and ecological valuable lake serves as another indication of some of the longstanding elemental problems unaddressed by provincial and federal governments in terms of democratizing resource development decision-making. Stewart and Sinclair (2007) suggest that one explanation for the serious shortfalls has to do with the "dissonance in views between civil servants and middle management and their bosses, politician and the chief executive officer levels in industry" (p. 180). As legal scholars like David Boyd (2003) have recognized, environmental assessment in Canada is still essentially left up to industry proponents. Civil servants and the government only play a small part in comparison to industrial executives and managers. At the same time, these principally industry-run environmental assessments rarely result in a project's cancellation. For example, there were 25,000 federal environmental assessment completed between 1995 and 2000 (Canadian Environmental Assessment Agency, 2000, as cited in Boyd, 2003, p. 152). Of these, "99.9 percent" were environmental screenings, which provide the lowest level of scrutiny (Hazell, 1999, as cited in Boyd, 2003, p. 152). "Projects subject to screening are rarely found to have significant adverse environmental effects" (Hazell, 1999, as cited in Boyd, 2003, pp.152-153) and follow-ups are required for no more than five percent of screened projects. Even worse, projects subject to screenings are never stopped (Hazell, 1999, as cited in Boyd, 2003, p.153). In this context, though the events out of Marie Lake illustrate the need for repositioning and strengthening public involvement when it comes to resource development decision-making, it seems unlikely that such changes will be possible or meaningful in the face of industry dominated environmental assessments.

In addition to illustrating a critical problem involving public participation in environmental decision-making in the province of Alberta, this first Marie Lake theme also depicts how key legislators avoided blame for the policy's shortcomings with regard to public input. The politicians implicated in the Marie Lake controversy explicitly denied that the community input process was flawed. However, they also seemed to waver in their abdication of blame, reminding readers of the ways that the law bound them to

follow the policy. This implied that the policy was indeed flawed. This not only highlights a rather unabashed and unsophisticated blame avoidance tactic, but also confirms that it is pragmatically ineffective to blame politicians for environmental policy problems, and perhaps more ineffective to do so as a means for achieving environmental reform. For example, Kent Weaver (1986) discusses the *Politics of Blame Avoidance,*[36] pointing to the central importance of voter "negativity bias" as the impetus for politicians avoiding blame. Negativity bias refers to an electorate's tendency to be more sensitive to political failures than political successes. Weaver (1986) describes how it is rare for politicians to align themselves with negative events (unless of course they can be attached to opposition members or their competitors during an election), especially when votes are at stake. Instead, this suggests that environmental issues must be framed in a positive and actionable light to receive political support. More recently, Dunlap (2006) expands on this notion, arguing that politicians have become especially skilled at avoiding blame when it comes to environmental issues. He concludes that this likely began in the early 1980s when environmentalists succeeded in transforming the Reagan administration's neoliberal efforts to deregulate industry and nullify environmental policy into a successful backlash. Today, policymakers have learned to avoid blame for ecological problems by legislating reforms in piecemeal ways, normalizing environmental degradation, mislabelling their initiatives as pro-environmental, portraying themselves as "green," and/or simply denying that there is a policy problem in the first place (Cox, 2006). This was demonstrated out of Marie Lake whereby substantive environmental reforms seem unlikely when political leaders have learned to avoid blame for environmental problems and primarily strive to align themselves with electorate-friendly environmental stories.

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[36] Weaver (1986) identifies a denial stage and seven blame avoidance stages. These include:

> (1) Agenda Limitation: prevent blame-generating by keeping potentially costly choices from being considered; (2) Redefine the Issue: prevent blame-generating by developing new policy options which diffuse or obfuscate losses; (3) Throw Good Money After Bad: prevent or delay blame generating by providing resources to prevent constituencies from suffering losses; (4) Pass the Buck: deflect blame by forcing others to make politically costly choices; (5) Find a Scapegoat: deflect blame by blaming others; (6) Jump on the Bandwagons: deflect blame by supporting politically popular alternative; (7) Circle the Wagons: diffuse blame by spreading it among as many policymakers as possible; (8) 'Stop Me Before I Kill Again': Prevent blame-generation by keeping credit-claiming opportunities that conflict with policy preferences from being considered (adapted verbatim from p. 385).

In summary, this first theme highlights that the failure to consider public wishes in the early stages of resource development is one of many longstanding elemental problems unaddressed by provincial and federal governments when it comes to public involvement in environmental decision-making. However, perhaps more importantly, this theme illustrates that where possible legislators will avoid aligning themselves with negative framings of the environment. As will be discussed in the conclusion of this chapter, this suggests turning more attention toward framing environmental policy problems in empowering, as opposed to accusatory, ways.

5.1.2 Theme 2: Embracing Anthropocentric Portrayals of the Natural Environment

Many data sources included statements about Marie Lake's commercial value. Oil Sands Underground Mining Corporation (OSUM) and government actors valued Marie Lake for the potential economic benefits.[37] The Chief Executive Officer of OSUM told reporters:

> [i]t's really the last significant piece of the Cold Lake bitumen deposit that isn't held by either Esso or Canadian Natural Resources or Husky or Shell. At today's prices the oil in the Marie Lake leases is worth $18 billion to $31 billion... (as cited in Oil riches may threaten lake, 2007, p. 1)

There were estimates that the deposit beneath the lake floor would contain up to two billion barrels of oil. This put OSUM's Marie Lake lease on par with three senior oil sands ventures in the area that included "Imperial Oil's 160,000 [barrels per day] operation at Cold Lake, Husky Energy's 30,000 [barrels per day] Tucker project, and the initial 13,500 [barrels per day] phase of Shell Canada's Orion project" (Park, 2007).

Other social actors focused on the value of Marie Lake's natural environment. Residents expressed worries about the ecosystem, while others expressed specific concerns about short-term, long-term, and permanent damages in the area. For some, the proposed seismic exploration of the oil sand formation was most worrisome. For instance, in a letter to the editor of the *Edmonton Journal* a resident wondered what might have happened:

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[37] The oil sands of Alberta span over "140,000 square kilometres and contain what could be as much as 2.5 trillion barrels of oil, which is more than four times the known reserves in all the Middle East" (Hume, 2006, p. 1). Priced at $100 a barrel the oil has a gross worth of $250 trillion (Hume, 2006, p. 1).

> … to the 42 loons and nearly a dozen western grebes gathered offshore at Marie Lake last week if these magnificent birds [happened] to be diving when a seismic air gun [went] off? Marie Lake is a staging area for loon and grebe migration and to permit seismic activity on the lake when these birds are preparing to migrate shows profligate disregard for the natural order of things. (Adams, 2007b)

For others, the potential for a full-scale oil sands extraction project was the main source of contention. Residents were uneasy about excessive water use and water pollution, while many spoke of the fauna that include 11 fish species, including walleye and northern pike and other marine life (Alberta Lake Management Society, 2007), as well as the aquatic ecosystems supporting the flora and fauna (Brooymans, 2007a). For example, Don Savard was quoted as saying: "[w]e're talking about killing of the fish, we're talking about damaging the ecosystem, which is probably even more important" (Ferguson, 2007, p. A.14). Finally, a few were anxious about potentially damaging the wildlife and wilderness around the lake (Jaremko, 2007b).

Some social actors valued Marie Lake for its beauty. References to beauty were often made in the first few lines of an article. For example, the lake was called a "hidden gem" or a "jewel" that must be saved (Jaremko, 2007b). These concerns were often linked to environmental worries, as seen in numerous references to the "pristine beauty" of Marie Lake, and the idea that the lake must remain untouched to retain its beauty (Sobey, 2007, p. A.19). Beauty also seemed to make Marie Lake a candidate for protection against industry. As an example, a concerned citizen wrote in a letter to the *Edmonton Journal* that:

> Marie Lake is one of the last beautiful freshwater lakes in Alberta and the government and its environmentalists are putting no effort towards saving it. What is this world coming to? Money over beauty? (Hankey, 2007, p. A.17)

It was also apparent that many appeals for retaining beauty were not made solely out of ecological consideration, but for explicit anthropocentric (human-centred) reasons. For example, taken together "crown land," "farmers' fields," "muskeg," "wilderness," and "mosquito hatcheries" among other pieces of land were referenced a number of times as more suitable places for oil sands development than Marie Lake (Jaremko, 2007b; Marie Lake shows limits needed, 2007, p. A.16; Pratt, 2007b). This was curious considering the ecological services provided by these land areas, but also suggested that some of the appeals to retain beauty, and the lake for that matter, were not synonymous with

appeals to retain the lake's ecological integrity. Instead, some appeals appeared motivated by a desire to keep the lake beautiful for the residents.

Anthropocentric values were also apparent in numerous references to Marie Lake's recreation potential. For example, residents were interested in protecting the very popular "fishing spot," (Jaremko, 2007b) which was a "recreational gem" (Adams, 2007b) with campgrounds, and seasonal cabins and amazing "quad trails" (Oil riches may threaten lake, 2007). At one protest, "kids silently marched holding placards arguing for the protection of their favourite swimming spot" (Ferguson, 2007, p. A.14). Others, like Joyce Hildebrand, a conservation specialist with the Alberta Wilderness Association, pointed out that "with the regions beautiful lakes and wilderness, the untapped tourism potential is a more promising enterprise" than oil (as cited in Marie Lake, cottage owners vs. Osum Corp., 2007). A concerned resident wrote that it appears to be "beyond the politicians' grasp to realize that the economic and non-economic value of an intact Lakeland Park will continue to grow as our urban population expands, and the demand for good recreational opportunities increases" (Maccagno, 2007, p. A.19).

5.1.2.1 Discussion

This theme, *Embracing Anthropocentric Portrayals of the Natural Environment,* reiterates that the resident's desire to protect Marie Lake for fishing, swimming, hiking, camping, and other outdoor pursuits was an expression of environmental concern. Asserting their own right to a clean and healthy environment would extend rights to the environment (i.e., the animals and the local ecosystem). However, one got the impression that the residents and journalists did not interpret the Marie Lake controversy in this way. For example, many of the appeals to save Marie Lake that included explicit species and ecosystem considerations came across like bulwarks to strengthen what often seemed like a self-serving and human-centered cause. Articles spoke of residents wanting to protect the very popular fishing spot, which was a recreational gem, with campgrounds, seasonal cabins, and amazing trails. Then, like afterthoughts, social actors were quoted wanting to protect the fish, the forests, and the water. It was as though many of the Marie Lake residents viewed their own reasons for wanting to save the lake, as insufficient. Many Journalists also seemed to feel this way.

Shellenberger and Nordhaus (2007) allude to a similar notion in their book, *From the Death of Environmentalism to the Politics of Possibility,* arguing that the

environmental movement is dwindling because it still relies on narratives that label virtually all human endeavours as antithetical to environmentalism. Subsequently, some of us have a hard time seeing that many human interests (e.g., recreational fishing) are synonymous with environmental concern. The depictions out of Marie Lake seemed to illustrate this difficulty. As opposed appearing genuine, the ecosystem concerns often came across in the news as being self-serving.

To summarize, *Embracing Anthropocentric Portrayals of the Environment,* emphasizes that environmental images cast by humans can be used as a means to achieve ecologically harmful ends, but not all anthropocentric intentions, actions, and issues should be thought of as automatically anti-environmental. This latent theme suggests that environmentalists might be better served by deliberately framing the environment in a manner that aligns it with their own causes, as well as with broader public and political values. As Shellenberger and Nordhaus (2007) contend, environmentalists "must no longer put concepts like nature or 'the environment' at the center of [their] politics" (p. 17). They must transcend “environmentalism" (p. 17) to become promoters of a social future where saving ourselves is synonymous with saving the environment. This theme illustrates that framing social issues in environmental ways must be done deliberately and carefully. Social actors can appear self-serving when assembling environmental fortifications around their cause. These fortifications can come across as a method to assuage guilt and to deflect accusations that their motivations are self-interested. Instead, many social problems, like the issues out of Marie Lake, lend themselves to depictions that portray the objective of saving the environment (e.g., saving the forest, the flora and fauna, and the ecosystem in general) as synonymous with the objective of saving humans (e.g., their cottages, fishing spots, and hiking trails).

5.1.3 Theme 3: When Environmental Sensationalism Backfires

Early in the Marie Lake controversy, media depictions focused on whether the seismic exploration of the oil sands formation below the lake might result in environmental harm. Residents were quoted in local and provincial newspapers fervently arguing that the activity would “kill the marine life” and “destroy the lake” (as cited in Adams, 2007b; Theroux, 2007). The seismic process was often framed in vivid imagery as newspaper readers and members of the Alberta Legislature were told to imagine

living on Marie Lake as an “industrial armada sailed the shorelines completing thousands of air cannon blasts, dynamiting the shore, and stomping rare orchids” (Jaremko, 2007b). The process called for 19,000 shots by a 207-decibel air cannon, and readers were reminded by residents and journalists that a “chainsaw, makes a 117-decibel racket and a jet aircraft scores 130 on the scientific noise scale” (Jaremko, 2007b).

Less emotive tactics were also used to dispute seismic exploration. For example, Dr. Swann, then Alberta Environmental Critic for the Liberal Party, repeatedly quizzed members of the Alberta Legislature as to the “effects the intense seismic activity…would have on the aquatic environment” and whether there would be “adverse effects on the lake and the ecosystem” (Swann, April 2, 2007, p. 330). As well, Denis Ducharme, who was a local MLA at the time, argued in the Legislature that there was insufficient evidence regarding the effects of seismic on lakes, and “took a shot at his Conservative colleague,” Ted Morton, then Minister of Sustainable Resource Development, “questioning [his] judgement over approval of the tests” (McLean, 2007). Finally, a few residents quickly pointed out that any baseline studies completed this late in the game to assess the damage caused by seismic exploration could not actually be valid, nor could corporations such as OSUM be expected to produce studies contradicting their own interests (Adams, 2007b).

Alternatively, Ted Morton worked with OSUM to present a more benign image of seismic exploration. It seemed that aside from inconveniences and muffled noise the seismic survey process would not be particularly harmful to the natural environment. For example, Jim O'Neil, a veteran biologist with the Golder Associates environmental consulting firm, sought to reassure a Marie Lake crowd at an OSUM informational session that marine seismic exploration had been done on numerous lakes with no recorded ill effects. He was quoted in the *Edmonton Journal* saying, "I've never seen a fish killed by this operation" and cautioned that “[w]arning shots are fired with the volume tuned just loud enough to scare fish away before the air guns make their big bangs” (Jaremko, 2007b). In Alberta Legislature, politicians argued that so few studies existed regarding the harmfulness of seismic exploration because the process is not particularly harmful, especially when compared to other invasive and degrading industrial processes.

Despite the assertion that seismic exploration was not likely to be harmful, Ted Morton and his ministry took considerable care to address the residents' concerns. Morton reported to the Alberta Legislature that based on meetings with residents, OSUM intended to revise their plans to ensure that testing was done in a safe and secure fashion. Morton stated that:

> We're consulting with the residents of Marie Lake. We're working with the seismic company. There's been seismic done on any number of lakes previously in Alberta with no adverse effect. But I'll repeat what I said last month: before any seismic takes place [on Marie Lake], I'll ensure that there'll be base monitoring ahead of time, monitoring during any seismic, post-seismic monitoring, and if there's any damage done, the company responsible will pay for all mitigation. (Morton, May 16, 2007, p. 1187)

Similar quotes by Ted Morton also appeared in the *Edmonton Journal* and *Cold Lake Sun*. Readers were made aware on a number of occasions that OSUM was making substantive concessions so that seismic exploration could move forward safely. Eventually, the date for the seismic survey was pushed back a few months and journalists as well as politicians made much of the stricter than average measures put in place. These included an "$80,000 environmental security deposit," "widened buffer zones…protecting wildlife and cottage owners," and a "30-per-cent cut in planned shots with underwater air cannon" (Theroux, 2007, p. A.17). OSUM executives were quoted repeatedly in the news as having accepted all the limits imposed by the ministry and the people, and this was prefaced with statements like OSUM "listened very carefully" (Theroux, 2007, p. A.17; Jaremko, 2007c).

5.1.3.1 Discussion

From the outset of the Marie Lake controversy there seemed to be a disproportionate amount of media coverage focused on the seismic exploration process, with much less focused on the potential harm of the looming industrial project. Much of this coverage sensationalized the seismic exploration issue. For example, it seemed unlikely that seismic sound waves would "destroy the lake" (Theroux, 2007) or result in "fish being blasted out of the water" (Jaremko, 2007b). Preventing the inconveniences and ecological damage caused by seismic exploration was undoubtedly important for many Marie Lake residents. Some seemed genuinely concerned that the seismic activity might have adverse effects on the lake's ecosystem. However, it was also clear from the sensationalism that stopping the seismic survey was about more than just protecting the

lake from noise and boat traffic. Beyond this, it was a potential means of stopping the entire oils sands development.

The interpretation of this theme entitled, *When Environmental Sensationalism Backfires*, coincides with the literature that is replete with examples of social actors sensationalizing aspects of an environmental issue in ways to attract readers and garner additional support. Toulmin (1958) spoke of sensationalism as a crucial form of argumentative rhetoric. Snow et al. (1986) discuss motivational framing in which social actors may focus on certain aspects of a dispute in order to provide motivation for an issue. Rarely discussed in the literature, however, is the idea that some social actors will miss the mark, and sensationalize aspects of a controversy peripheral to the central issues. In doing so, they inadvertently detract from their efforts. Ryan, Carragee and Meinhofer (2001) allude to this possibility, suggesting defensiveness as the cause. They write:

> [Social actors] may express their concern, frustration or rage, but they lack an organizing schemata to prioritize which facts or arguments are most relevant or compelling. Commonly, their first definitions of an issue are defensive responses to the dominant news frame, a frame frequently articulating the views of political or corporate elites. (p. 177)

However, for Marie Lake, this did not appear to be a defensive or inexperienced response, as much as an intentional strategy aimed at stopping the entire industrial project. The problem, however, was that the sensationalism worked to divert attention from deeper concerns about the province's flawed tenure polices and the serious human and environmental implications of the looming industrial project. Worse, the hyperbole surrounding seismic exploration provided an opening for Ted Morton and OSUM spokespersons to construct and maintain the seismic survey issue as though it was central to the controversy. For example, numerous references portrayed Morton's steadfast, hard-fought efforts to secure strict and safe seismic exploration measures from OSUM. Additionally, OSUM officials pointed out to readers that the concessions they were making regarding the lake survey proved their environmental conscientiousness and empathy for the plight of the residents. In retrospect, one could not help but get the feeling that sensationalizing seismic exploration had backfired in some ways. In particular, Ted Morton and OSUM officials had been handed an opportunity to engage in what Redclift (1986) calls "environmental managerialism." Instead of making meaningful environmental changes, such as stopping the entire Marie

Lake project, Morton and OSUM executives remained focused on the seismic survey issue, negotiating stringent operational measures for what was likely to be an environmentally benign exploration process in the first place. Overall, this interpretation contradicts some of the literature on the benefits of environmental sensationalism and suggests the tactic can backfire if directed at peripheral, as opposed to central issues. Added to this, misdirected sensationalism can also provide an opportunity for politicians to engage environmental managerialism (Redclift, 1986), as opposed to making meaningful environmental changes.

5.1.4 Theme 4: Challenges for an Ecologically Sound Future

Residents, activists, and sympathetic politicians were depicted in the news expressing bleak predictions for the future of Marie Lake should the oil sands project move forward. In addition to the seismic exploration worries discussed under the previous theme, these social actors also problematized Oil Sands Underground Mining (OSUM). For example, journalists suggested that there was much more to come for the long-term project. It would be massive, noisy, and smelly. The project was expected to be invasive, exploitive, and ultimately very harmful to the environment, involving extensive road development, extraction plants, and transport traffic (Adams, 2007a; 2007b; Jaremko, 2007f). For example, a resident in a letter to the *Edmonton Journal* wrote, "[o]il development will completely destroy the lake. A lake that took forever to build will be gone in a few years, leaving nothing but roads and pipelines and tanks" (Theroux, 2007, p. A.18).

Additionally, many residents and members of the legislature also expressed concern about OSUM's informally proposed underground bitumen extraction process, "which was first developed by an Alberta Crown technology agency but never used commercially" (Markusof, 2007a).[38] OSUM's technique was described as "experimental,"

[38] Strip-mining and in situ (in place) are the two main oil sands extraction techniques. Strip-mining is currently the major form of oil sands extraction and accounts for approximately 50% of all oil sands production in the Province of Alberta (Dyer and Huot, 2007). However, as most of Alberta's oil sands resource is too deep for strip-mining, in situ extraction will become increasingly important in coming decades (Dyer and Huot, 2007). "Oil-sands suitable for in situ extraction underlie about 135,000 km² – nearly 30 times the 4,800 km² of oil-sands that is potentially surface mineable" (Moorhourse, Huot and Dyer, 2010, p.17). In situ extraction involves drilling a web of wells into a formation and then heating or diluting the oil sands with steam in order to liquefy it so it can be pumped to the surface (Dyer and Huot, 2007).

“untested,” “unproven,” and “unscientific” (Park, 2007). The concern was that the new tunnelling approach being used for steam assisted gravity drainage (SAGD) was not tested to the same extent, in terms of the length of mineshafts, or under a lake as OSUM had intended. There was unease that tunnelling for oil sands might result in hydrocarbon migration into lake water and that heating the tunnels with steam to soften the bitumen might also heat the lake causing eutrophication resulting in algae blooms that are harmful to aquatic life (Park, 2007).

Alternatively, OSUM officials and some government spokespeople argued that Marie Lake could retain its pristine beauty, recreational attributes, and environmental qualities while also providing oil. Descriptions of the proposed project included, “almost invisible,” a “small footprint,” as well as efficient and economical (Jaremko, 2007e). OSUM spokespersons told residents and journalists that the future would not be invasive and would bring a “honeycomb of horizontal tunnels and a pipeline web hidden under the lake, a processing plant on the surface, and six horizontal wells across the bitumen formation with rigs kept at least 300 meters from the shoreline” (Jaremko, 2007f). Mentioned more frequently was OSUM’s extraction technique utilizing “a modified version of conventional steam assisted gravity drainage” (Jaremko, 2007f). Conventional SAGD is widely used in oil sands extraction, except for OSUM's planned recovery mechanism, which involved “drilling shafts from the surface, excavating tunnels several miles long from the shaft, then drilling SAGD wells from the tunnels to inject steam to melt the bitumen, allowing it to flow out from under the lake to the surface” (Park, 2007). Normally, wells are drilled straight down from an increased number of pads on the surface. OSUM spokespersons quoted research suggesting that their approach was ingenious for a few major reasons. First, the environmental footprint was negligible in comparison to other methods. Gerry Stephenson, an engineer and consultant who worked on devising the method, stated in the *Edmonton Journal* that:

> Compared to prevailing production methods the system is almost invisible, producing one million barrels of bitumen with underground SAGD would disturb about one square kilometre. Standard SAGD, using wells drilled from the land surface, disturbs approximately 57 square kilometres for every million barrels produced. Standard open-pit mining scrapes off approximately 400 square kilometres. (as cited in Jaremko, 2007e)

Stephenson stated that tunnelling combined with SAGD would “double production of bitumen to 65 per cent of the deposits, and [that] steam-to-oil ratios [would be] radically

lower than conventional SAGD" (as cited in Jaremko, 2007e) translating into better energy efficiency. In addition, Andrew Squires, an OSUM executive offered more positive news regarding the extraction process, telling readers, "[w]hat we're talking about is not new technology or a science project…it's been proven by your own government" (as cited in Jaremko, 2007b). Ultimately, unlike the worried Marie Lake residents, OSUM executives and members of legislature claimed a "long, impeccable pedigree" for the plan (Jaremko, 2007b) and portrayed the technology in a very favourable light.

5.1.4.1 Discussion

Ecological modernization (EM) theorists often cast improved industrial technologies as a means of reducing ecological degradation, while still allowing for economic development (Weber and Hemmelskamp, 2005). As discussed in Chapter 3, some EM theorists argue that greener and cleaner approaches to resource development might eventually help to solve many of the world's environmental problems. However, the divergent portrayals of the oil sands extraction technologies across the Marie Lake controversy elucidate some important challenges for ecological modernists when it comes to environmental reform. First, despite numerous negative portrayals by Marie Lake residents when it came to OSUM's proposed oil sands extraction technique the SAGD approach did appear to be less invasive, less toxic, more energy efficient, and more ecologically sensitive. For instance, Gary Stephenson, an OSUM engineer said, "Alberta will lose an environmentally improved oil sands production method if protesting cottage owners stop development of a contested deposit under scenic Marie Lake" (Jaremko, 2007e). This assertion seemed especially true when compared to traditional oil sands strip-mining that shears entire forest ecosystems from the land. Yet, despite this, Marie Lake residents would have no part in the project. In fact, even the cleanest industries present implementation challenges in living areas valued for competing functions (Devine-Wright, 2005). Despite their "actual" greenness, proposed technologies may still be constructed as risky, or at the very least undesirable, especially when encroaching on areas (natural or urban) valued for competing functions (e.g., beauty, ecology, living space, and/or recreation) (Catton and Dunlap, 1989). For instance, it also seems highly unlikely that Marie Lake residents would have permitted the erection of a sustainable wind farm around the lake's shoreline (see Devine-Wright, 2005 for an examination of these issues).

A second important challenge for EM theorists highlighted by the events out of Marie Lake involves overcoming the "green" images that many industries are portraying and maintaining in the public domain. Though OSUM's extraction process might have represented a step in the right ecological direction, it was also by no means a sustainable approach for the future. Marie Lake residents seemed to recognize this, depicting OSUM's extraction technique, not as an ecological improvement, but as a duplicitous way to exploit an extremely sensitive and valued ecosystem, in a particularly difficult to reach spot underneath a lake. In general, more efficient and cleaner methods of oil sands extraction, coal production, ore mining, or hydraulic fracking[39] can never produce truly sustainable energy sources. These are still non-renewable extraction processes cloaked in ways that allow industry to continue exploiting sensitive and valuable pieces of land in increasingly difficult to reach areas. Though EM proponents rarely suggest these technologies are clean, the happenings out of Marie Lake suggest there is still much work to do in determining how to compel industry to move beyond presenting "greener images," towards completely reconfiguring their operations in truly sustainable directions.

Taken together, these two challenges for EM advocates do not mean that an ecologically sound future is impossible. They do mean, however, that in application the theory often falls short. This theme, *Challenges for an Ecologically Sound Future,* reiterates the need to carefully examine the claims of ecological modernists against the problems posed by the competing environmental functions model that include exponential population growth, capitalist development in third-world countries, and worldwide industrial sprawl (Catton and Dunlap, 1989). It is extremely difficult to comprehend how members of society will begin to see through the green images erected by industry. In fact, government officials are increasingly constructing these images for industry themselves. As of late 2013, for example, Canadians must decipher the reasons behind a 40 million dollar federally funded oil and gas advertising campaign (Oil and gas ad campaign cost feds $40M at home and abroad, 2013, p. 1). The global campaign aims to present "all the facts" in attempting to get approval for the TransCanada Keystone XL pipeline, designated to carry Alberta oil through America's heartland to the Gulf Coast (Oil and gas ad campaign cost feds $40M at home and

[39] Hydraulic fracturing (*fracking*) involves injecting fluids or gases down to natural gas pockets. The pressure causes the surrounding rock to crack (or fracture) releasing natural gas for collection (Canadian Association of Petroleum Producers, 2014a).

abroad, 2013, p. 1). The marketing tactics involve a host of green images (e.g., farmers' fields, forests, and frolicking animals), job prosperity slogans, and a myriad of safety assurances. Yet, the drawbacks such as prolonged oil dependency, increased greenhouse gas emissions, and less pressure to develop alternative energies are not portrayed.

5.1.5 Theme 5: Providing an Outlet to Repair a Symbolically Charged Issue

From the controversy's outset those opposed to developing Marie Lake also expressed concern about the pace and scope of oil sands development across the province. In numerous articles and in the Alberta Legislature, oil sands development was described as "astounding," "unprecedented," "out of control," and even "maddening" (Bonko, May 16, 2007, p. 1187; Marie Lake: cottage owners vs. Osum Corp., 2007). As an example, only a few weeks after the first local articles about the Marie Lake controversy surfaced, the *Edmonton Journal* highlighted sections of a Pembina Institute report echoing the general concerns of residents of Marie Lake. The excerpt read that:

> [i]n the first two months of 2007, energy producers licenced 4,837 wells (82 wells per day). Last year, the province sold a record 15,425 square kilometres of oil sands rights for $1.96 billion, a four-fold increase to the previous high of 3,553 square kilometres for $433 million set in 2005… Alberta has sold a total 49,973 square kilometres of oil sands leases… (Jaremko, 2007d)

Other articles suggested that Alberta was in the midst of a dangerous oil rush unique to Alberta. Some seemingly disheartened residents described the scope of development in the province as already too far-gone (Pratt, 2007a). Overall, very few positive perspectives about the magnitude of development across the province were expressed and not surprisingly negative perspectives were communicated repeatedly in the Marie Lake documents examined.

Three main sub-themes were identified as a function of the "high speed" pace of oil sands development across the province. First, many were worried about the environment. This included concerns about losses of certain forested areas, about water body contamination, and about endangering specific wildlife habitats. Concern was expressed in various articles and by a number of residents about cumulative environmental degradation due to the sheer number of oil sands projects underway.

Second, tied to cumulative concern was trepidation that the oil sands developments were outpacing science and policy. As an example, Joyce Hildebrand, a conservation specialist with the Alberta Wilderness Association argued, "[o]il sands development is leaping ahead of the work of initiatives like the Water for Life Strategy and the Land Use Framework" (as cited in Marie Lake, cottage owners vs. Osum Corp, 2007). She was concerned that "[b]y the time recommendations [were] proposed or new policies or legislation put in place, it may well be too late for wilderness and wildlife, not to mention human health and community well-being" (as cited in Marie Lake, cottage owners vs. Osum Corp, 2007). Third, a few journalists, Marie Lake Cottage owners, and Pembina Institute activists were worried that the rapid pace of development was outpacing Alberta's infrastructure and social systems. The Pembina Institute argued that the provincial government "must rethink the rate of oil sands growth in the context of the stress it places on the….province's infrastructure, economy and social systems" (Holroyd, Dyer, and Woynillowicz, 2007).

Much of the concern about developing the oil sands expressed in these articles was directly attributed to the then Stelmach government. The government was framed repeatedly as pro-industry and not acting in the interests of the electorate (Marie Lake shows limits needed, 2007). Some wondered if the government was easily corruptible and reminded politicians not everything is about oil and money. For example, a letter by a David Swann, then Alberta Liberal Environmental Critic, to the editor of the *Edmonton Journal* concluded by stating:

> The market, on which this government bases virtually all development decisions, is not a sufficient basis on which to plan our future. Good governance consists in ensuring sound science, public interest and sustainability must have priority over the market. Marie Lake is a symbol for growing numbers of Albertans that a radical change in the pace and scope of development in this province is needed, based on a transparent plan. We demand that this government abandon its blind faith in the market and honour citizens and science in making decisions that serve our children and all future generations. (Swann, 2007)

Conversely, a number of news articles did not hold the Stelmach government responsible, but instead focused on the industrial and economic policies of former Premier, Ralph Klein. Klein served as leader of the Alberta Progressive Conservatives from 1992 until his retirement in 2006 when Ed Stelmach assumed office. Klein's approach was described as, "development at any cost," (Pratt, 2007a) and devoid of a

responsible plan (Hierlmeier, 2007). In many of these articles, those concerned about the lake goaded Stelmach to make changes for the future. Residents and activists suggested that the majority government has had too much say for too long. They were quoted saying it will take "fortitude to reverse long standing policies" (2 sensible retreats under political, 2007), "[d]on't hold your breath, …we still don't protect the environment," (Pratt, 2007b) and "[n]atural heritage protection seems to have the same low priority under the Stelmach government which it had under the Klein regime" (Maccagno, 2007).

5.1.5.1 Discussion

The fifth and final Marie Lake theme, *Providing an Outlet to Repair a Symbolically Charged Issue*, highlights the importance of symbolism when portraying an environmental issue. As the controversy progressed, those opposed to developing Marie Lake expressed serious worries about the "breakneck" pace of oil sands development across the province, as well as trepidations about lagging oil sands infrastructure and outdated provincial policies. The Marie Lake event was portrayed as symbolic of many province-wide oil sands concerns. Unlike the narrow focus on seismic exploration during the onset of the controversy, many residents cast a wide net blaming the then Stelmach government for an array of oil sands misgivings. Residents and activists "amplified" (Snow et al., 1986) the Marie Lake problem and framed the government and their policies as pro-industry, greedily focused on the economy, unsustainable, and unrepresentative to the people.

In addition, this final frame is particularly unique in that it also highlights the importance of giving policy-makers an outlet to avoid symbolically charged blame-generating issues (Weaver, 1986). The Marie Lake event was repeatedly cast in alignment with the previous Ralph Klein government; yet, the frame was imbued with the potential to be recast in a positive light should Stelmach cancel the project. Though both Ed Stelmach and Ted Morton were quoted arguing their hands were tied when it came to stopping the Marie Lake project, the residents had reason for hope. For example, Stelmach stated in Legislature that he "received a petition…that 1,292 people had signed" and he remained "committed to the position" that no oil sands development would take place until all the "relevant information was presented" (Stelmach, June 6, 2007, p. 1585). In addition, a provincial election loomed on the horizon. As the Marie Lake controversy neared conclusion, the chance to avoid blame, while also garnering

votes was too much to pass up. The multitude of province-wide concerns brought the Marie Lake issue to a boiling point. On September 5, 2007, some five months after the first news articles ran, Stelmach overturned regulatory approval for the entire project. This surprised many industry advocates, being the first time in sixteen years the government had terminated a mineral lease (Oil sands firm may sue over Marie Lake, 2007). Marie Lake residents, on the other hand, were overjoyed and ecstatic.

News providers quoted Stelmach's reasons for the decision. For example, *Platts Oilgram News*, an industry sponsored oil sands periodical, stated that, "after listening to concerns about the impact of the seismic program on wildlife and the environment, [Stelmach] said it was time to stop the testing" (Park, 2007). In the *Edmonton Journal* Stelmach was quoted saying, "[i]t shows that I'm keeping my word and trying to find a balance between continued economic growth, developing our resources, and the environment" (McLean, 2007). Liberal Leader Kevin Taft said that "[t]he Premier had responded to the tremendous public pressure from residents of Marie Lake" (Marie Lake gets a break, 2007). However, most often it was reported that, "…a plethora of safety questions about the technology involved in drilling for oil sands underwater made all the difference" (Marie Lake gets a break, 2007). Stelmach told the *CBC*, for instance, that he was not "concerned as much with the [seismic] testing as he [was] with plans to mine bitumen…" using a process he called experimental and possibly not safe (Premier halts controversial blasting under lake, 2007). Ultimately, in the end, safety was presented as his main concern, but Stelmach's decision appeared to have far more to do with the symbolically charged Marie Lake issue and the provincial election that was just around the corner. Then Alberta Liberal leader, Kevin Taft agreed, suspecting that Stelmach's decision was about satisfying a dwindling electorate (Premier halts controversial blasting under lake, 2007).

5.2 Conclusion: Marie Lake

The *Edmonton Journal* and *Cold Lake Sun* both reported that OSUM was disappointed but not stopped by the decision to cancel the oil sands project. A few articles suggested OSUM "might sue the province for damages… as Alberta law state[d] the company [was] entitled to compensation for development costs…" (Markusoff, 2007a; 2007b). However, company executives mostly appeared confused. For example, Andrew Squires stated in *Nickle's Daily Oil Bulletin* that:

> [t]here's no way you should be able to, on hearsay, cancel a project. We've never talked to them about it so where [Stelmach] gets any idea that it's unsafe or it's new technology, we're just baffled. (Bentein, 2008)

Squires was also perplexed because the underground technology was actually developed and recommended by the Alberta government in the 1990s. Despite the bewilderment, the company never sued, nor did they attempt to overturn the cancellation. Steve Spence, then development manager for OSUM, said, "[o]ur Marie Lake lease is cancelled and rescinded and we have walked away…" (as cited in Bentein, 2008). In the aftermath, OSUM did not appear overly marred by the cancellation. In fact, all along the company had been developing plans for a larger extraction project beside Cold Lake about 25 kilometers away from Marie Lake. Cold Lake is a much larger and deeper lake, providing fresh water for much of the surrounding tri-city area. As of late 2013, their new project appears to be moving forward with much less opposition and is based on conventional technology, in order to "build support in the surrounding communities" (Jaremko, 2009; Cooper, 2012).

Leading up to, and in the weeks following the cancellation, many references in both the media and Alberta Legislature discussed the need for a new land use framework to deal with future issues like Marie Lake. As of late 2012, the Alberta Environment and Sustainable Resource Division has seven separate regional land use frameworks at various stages intended to regulate land use across the province. As of late 2013, five frameworks have yet to be started and one is in the planning stages. The *Lower Athabasca Regional Plan* (LARP) (encompassing both Marie Lake and Fort Chipewyan), was approved on August 22, 2012 and became effective on September 1, 2012. The LARP depicts seven regional outcomes. These include:

> (1) the economic potential of the oil sands resource is to be optimized; (2) the region's economy is diversified into other resource areas and recreation; (3) landscapes are managed to maintain ecosystem functions and biodiversity; (4) air and water are managed to support human and ecosystem needs; (5) infrastructure development supports economic and population growth; (6) the quality of life for residents is enhanced through increased opportunities for recreation and active living; and (7) inclusion of Aboriginal peoples in land use planning is made a priority. (Environment and Sustainable Resource Division, 2012, pp. 36-73)

Not surprisingly, responses to the land use framework in both the legislature and the media have been mixed. Contradictory phrases abound like, "missing the ecological

mark," (Komers, 2011) "ecologically informed," (Draft of Lower Athabasca Regional Plan Released, 2011) a devastating "assault on the Alberta economy," (Thomson, 2011) not enough "to fix Alberta's reputation," (Brooymans, 2011) and an oil sands "reputation booster" (Land-use plan a good first step, 2012). Among these articles, some social actors present it as a revolutionary attempt at balancing the economy and the environment so that controversies like the one at Marie Lake never happen again. Others suggest it simply protects big business. Others feel the plan fails in critical areas such as protecting caribou and other woodland species. Some think it does a good job boosting conservation areas, while others contend that increasing the size of these areas will not matter because existing petroleum and natural gas leases will still be honoured. The only thing that seems clear after Marie Lake is that there are many different opinions on what the future will bring in terms of oil rich places that are also valued for a myriad of human and ecological reasons.

5.2.1 Building an Evaluative Framework for Greener Social Constructions

The final aim for this chapter is to continue laying the groundwork to build an evaluative framework for examining socially constructed environmental realities. Thus far, the analysis has involved interpreting the media's portrayals of residents, politicians, industry executives, activists, and lawyers engaged in a debate over the future of Marie Lake. The themes have been insightful in terms of the ways environmental problems transpire in the news. More importantly, they have provided valuable insight as to the relative efficacy of the various social construction mechanisms used to form our environmental realities. To summarize:

- Theme 1 titled, *Deny an Environmental Policy Problem, but if the Policy is the Problem then Blame the Rule of Law,* illustrates that the failure to consider public wishes in the early stages of resource development is just one of many longstanding elemental problems involving the democratization of environmental decision-making. More importantly, this theme also illustrates that legislators will labour to deny and/or avoid being blamed for flawed environmental policies. This suggests the importance of depicting environmental problems in empowering as opposed to accusatory ways when trying to mobilize and engender media and political support.

- Theme 2, *Embracing Anthropocentric Portrayals of the Natural Environment*, emphasizes the value of carefully framing human problems that are simultaneously environmental problems. Issue entrepreneurs can

appear to be self-serving when they manufacture environmental fortifications around their anthropocentric cause. The fortifications can appear disingenuous, resembling attempts to convey superficial environmental concern. Instead, social problems are empowered when portrayals about saving the environment (e.g., saving forests, flora, fauna, and whole ecosystems) can be explicitly framed as synonymous with portrayals about saving humans (e.g., their cottages, fishing spots, and hiking trails) as opposed to portraying these objectives in isolation. This theme illustrates that issue entrepreneurs must work to advocate for the environment and anthropocentrism.

- Theme 3, *When Environmental Sensationalism Backfires,* proposes that sensationalizing and highlighting isolated aspects of an environmental issue may not be as effective as the literature suggests. Issue entrepreneurs can inadvertently divert attention away from substantive and fundamental environmental concerns central to their cause. More importantly, they also run the risk of having their cause sidetracked by government and industry proponents who seem more than willing to help them stay focused on the periphery of an environmental controversy.

- Theme 4, *Challenges for an Ecologically Sound Future,* demonstrates the value of the competing environmental functions model (Catton and Dunlap, 1989) for critically framing ecological modernization (Mol and Spaargaren, 2000). The model aids in recognizing that non-renewable industrial processes are often disguised as "green," by portraying them as less invasive and technologically advanced. Such disguises assist industry in continuing to exploit the most sensitive and valuable pieces of land in the most difficult to reach and untouched geographic areas. In addition, even the greenest technologies are likely to be constructed as risky, or at the very least undesirable, especially when encroaching on areas valued for competing functions (Catton and Dunlap, 1989). In short, this theme illustrates there is much work to do in determining how industry will move past presenting a "green image," toward complete reconfiguration in truly sustainable, non-invasive, and social accepted directions.

- Theme 5, *Providing an Outlet to Repair a Symbolically Charged Issue*, illustrates the importance of arranging a mutually beneficial means of escape for policymakers that face a controversial environmental problem. Portraying problems as being symbolic of a multitude of wider and deeper concerns is an important first step to issue mobilization; however, it is also necessary to provide an outlet for amelioration. This theme illustrates the importance of imbuing a social problem with negative symbolism that simultaneously has the potential to be recast as a political/environmental success story.

The final stage of the Marie Lake analysis entails uniting the five themes. The integrated themes represent the first component (or the Marie Lake portion) of an

evolving theorizing framework, entitled *greener social constructions* (GSCs). The framework is useful for evaluating the "greenness" of social constructions and is discussed in detail in Chapter 7. In brief, however, the framework contributes to an evolving body of environmental social constructivist literature critical of the ways in which journalists, policymakers, scientists, environmentalists, and concerned publics include the environment and environmentalism in their communications. Ultimately, composing greener social constructions is synonymous with conceiving more compelling ways to discuss the planet's possible future. Based on the Marie Lake thematic interpretation, GSC proponents:

> are constituted by a capacity to simultaneously portray satisfying human desires/needs as synonymous with saving and protecting the natural environment. They are eco-utilitarian, assessed by their ability to symbolize, constitute, address, and encapsulate a multitude of human, nonhuman and ecological concerns in empowering and collaborative ways under one cohesive rubric.

The complete framework integrating the Marie Lake and Fort Chipewyan themes is set out and contextualized within the broader literature in Chapter 7. First, however, the following chapter depicts and discusses the media's representation of the Fort Chipewyan controversy.

Chapter 6

Findings and Discussion: Downstream, and Dealing with the Oil Sands Industry in Fort Chipewyan

> *We've had so many funerals in Fort Chipewyan, so many wakes and so many funerals that people don't go anymore, and when they go, even if they're not related to the person that passes on, they're just sitting there crying anyways. Every family in Fort Chip is affected by this. Everybody lost somebody to cancer and it's just so devastating and yet ... yet it just continues.*
>
> *-Cookie Simpson, former nurse and long-time Fort Chipewyan resident, (as cited in Brooymans, 2010c)*

Canadian First Nations, Inuit, and Métis peoples have endured catastrophic harms in the past. With the passage of the *British North America Act* of 1867, the Canadian government began a forceful colonizing plan to assimilate First Nation peoples across the country (Milloy, 2008). In the *Indian Act* of 1869, Canada's federal government set out the residential schooling system plan for successive federal governments to follow (Milloy, 2008). John. A. Macdonald told Parliament that it was Canada's duty to "do away with the tribal system and assimilate the Indian peoples in all respects to the inhabitants of the Dominion" (as cited in Milloy, 2008, p. 2). Today, Canadians are only beginning to appreciate the impact of over a century of residential schooling on the lives of First Nations, Inuit, and Métis. At the Truth and Reconciliation Commission forum in Vancouver, 2011, a number of speakers, including Commissioner Wilton Littlechild, argued that the term genocide merited close attention as an accurate descriptor of what happened for well over a century in residential schools and Aboriginal communities across Canada (MacDonald and Hudson, 2012). Residential schooling "destroyed many indigenous cultures and shattered personal lives. Problems of intergeneration trauma remain extremely serious, since survivors learned few parenting skills and were often deracinated from their languages and cultures, resulting in a myriad of social problems (MacDonald and Hudson, 2012, p. 432). Andrew Woolford (2009)

argues that, “continuing cycles of emotional, physical and sexual abuse, as well as addiction, suicide, and other markers of intergenerational trauma, within Aboriginal communities are considered residual effects of the residential school experience” (p. 85). MacDonald and Hudson (2012) argue in their legal research that terms such as “cultural genocide” and “ethno-cide” are accurate descriptors of the attempts to destroy aboriginal language, religion, and cultural practice across Canada (p. 430).

Aboriginals in Canada have also endured catastrophic industrial harms. Many indigenous peoples share a close connection to the land, making them particularly vulnerable to various forms of environmental pollution. The trauma and cultural destruction experienced by Aboriginal populations during the longstanding and brutal legacy of the residential schooling system has left many communities susceptible to environmental injustice and harm. These communities often wield less authority and possess fewer resources with which to press their environmental and human health claims on a broader political stage (see Pellow and Brulle, 2005; Saha and Mohai, 2005; Stretesky, Johnston, and Arney, 2003). An extremely tragic example of environmental injustice was seen in 1970 when the English-Wabigoon River basin downstream from Dryden, Ontario, was extensively contaminated by repeated discharges of methyl mercury from pulp and paper plants in the area (West, 1987). Scientists estimated that beginning in 1962 the Reed Paper Company was responsible for “discharging somewhere between ten and twenty pounds or mercury daily into the river – and a like amount into the air” (Troyer, 1977, p. 22). The huge amount of mercury released produced tragic effects for the 1,200 Objibway First Nations who resided on the Grassy Narrows and White Dog reserves along the River (Troyer, 1977). In the years surrounding the incident, Warner Troyer (1977), an investigative journalist, documented dramatic increases in unemployment as the Objibway people could no longer fish the contaminated river. Additionally, rates of violence and death increased, which appeared linked to the consumption of fish and other wildlife in the area contaminated by mercury poisoning (Troyer, 1977). In 1987, Leigh West, an Assistant Professor of Law at the University of Windsor, did a legal analysis of the Objibway people’s case. She concluded that in response to the contamination of the English-Wabigoon River “…the settlement and the events leading up to it provide a striking example of the fragility of Canadians’ environmental rights in the face of environmental wrongs” (p. 132). More to the point, this was a striking example of the longstanding fragility of Aboriginal rights in the face of

environmental wrongs. Ultimately, gaining access to justice has been notoriously difficult for Aboriginal victims of environmental catastrophes (West, 1987).

In a similar fashion to the tragedies experienced by the Objibway people, the Mikisew Cree First Nation, Athabasca Chipewyan First Nation, and Métis living in Fort Chipewyan, Alberta, continue to face an ongoing battle with the oil sands industry. They have repeatedly attempted to get the Alberta provincial government to take notice of the serious environmental and human health concerns being voiced out of their small community, which sits downstream from the heart of the oil sands industry. Established by the Northwest Trading Company in 1788, Fort Chipewyan is the oldest, and one of the northernmost towns in Alberta (Regional Municipality of Wood Buffalo, 2012). It is located on the banks of Lake Athabasca, at the basin of the Alberta Athabasca River (Regional Municipality of Wood Buffalo, 2012).[40] The community can only be accessed by plane or boat in the summer or by a frozen road in the winter. Trapping and fishing are commonplace and the town has approximately 1,200 residents making it is the second largest community in the Regional Municipality of Wood Buffalo (Regional Municipality of Wood Buffalo, 2012).

For generations, the people of Fort Chipewyan experienced the Canadian Government's aggressive assimilation plan in the form of residential schooling. The Holy Angels Indian Residential School operated for over a century, closing in 1974, but left behind a small community disconnected from their culture and plagued by alcohol and familial problems (Danylchuk, 1992). Added to this, the last half century has left residents to struggle with industry. In 1968, BC Hydro's dam project largely emptied the Peace River delta where most Fort Chipewyan families once trapped, hunted, fished, and resided (Danylchuk, 1992). The dam played a large part in collapsing the fur trade and many families moved to the hamlet of Fort Chipewyan, where the town is presently located at the basin of Lake Athabasca (Danylchuck, 1992). In the 1980s, residents struggled to establish stricter safety monitoring for newly built pulp mills in the area (Timoney, 2007). This was met with limited success. In the last few decades, however, the residents have been trying to contend with the extensive pollution problems caused by the oil sands industry (Timoney, 2007). In addition to the pulp mills, Fort Chipewyan sits downstream from an extensive network of oil sands tailings ponds, mines, and other

[40] See Chapter 1 for a map.

processing plants located along the Athabasca River.[41] Indigenous Elders and other residents have long claimed to be suffering environmental and human health impacts caused by the oil sands industry; yet until recently, the provincial and federal government largely dismissed their claims. For example, an Alberta Government Energy and Utilities Board study in 1999 recommended closer monitoring of pollution and human health in the area, but no additional monitoring occurred (‘Comprehensive' review of Fort Chipewyan cancer rates, 2008). In 2003, Dr. Michel Sauve, a Fort McMurray internal medicine specialist, commented on what he thought were unusual disease rates in the area (Comprehensive review of Fort Chipewyan cancer rates, 2008). Again, the Alberta Energy and Utilities Board recommended a study, but the recommendation was not followed.

It was not until 2006 that Dr. John O’Connor, a local Medical Examiner and Fort Chipewyan medical practitioner, moved these concerns into the broader public domain. This started when Chief Waquan of the Mikisew Cree First Nation brought his concerns about higher than average cancer rates in Fort Chipewyan to Dr. O’Connor in 2003 (College of Physicians and Surgeons of Alberta, 2009). At the time, Dr. O’Connor suggested that a comprehensive baseline study was required to measure changes in the incidence of cancer in the community (Cancer rate in Fort Chipewyan cause for alarm; medical examiner, 2006). A year later, in 2004, Alberta Health and Wellness (AH&W) met with Fort Chipewyan residents, Health Canada (HC) officials, and Dr. O'Connor to discuss beginning such a study (College of Physicians and Surgeons of Alberta, 2009). Two more years passed and the study had not begun; however, the health concerns had made their way into the media. In March of 2006, the *Canadian Broadcasting Corporation* (CBC) published two articles online. The first was entitled “Cancer rate in Fort Chipewyan cause for alarm; medical examiner,” and the second was “High illness rate near oil sands worrisome, says Alberta Health official.” These articles echoed the earlier concerns of Dr. O'Connor and other Fort Chipewyan residents who had suspected a disproportionate number of both rare and common cancers in their community. Dr. O’Connor, in particular, was worried about cholangiocarcinoma, a rare

[41] Oil sands companies use steam and hot water to separate very heavy oil (bitumen) from the sand and clay (Canadian Association of Petroleum Producers, 2014b). The water is then pumped into a tailings pond. The tailings ponds are often massive and include a mixture of water, clay, sand and left over bitumen. Tailings contaminants include “naphthenic acids,” “polycyclic aromatic hydrocarbons,” “phenolic compounds,” “ammonia,” “mercury” and other “trace metals” (Grant, Dyer, and Woynillowicz, 2008, p. 42).

form of bile duct cancer. He reported five “confirmed” cases to the *CBC* (College of Physicians and Surgeons of Alberta, 2009). He was also worried about other cancers such as leukemia, lymphomas, lupus, and other autoimmune diseases. Around this time, concerns also began emerging in the Alberta legislature. For example, a few weeks after the *CBC* articles, Dr. Taft, the Provincial Health Critic, addressed the house, stating, “[t]here is rapidly growing evidence supporting a possible major medical outbreak in northern Alberta. The town of Fort Chipewyan is reporting extremely high rates of cancers and other serious illnesses among its small population” (May 8, 2006, p. 1341). During this period, it seemed that the media had finally helped move the residents’ cancer and environmental concerns into the public spotlight. In the years that followed the controversy burgeoned, resulting in extensive media coverage, numerous scientific articles, an official inquiry into the conduct of Dr. John O’Connor, a number of debates in the Alberta Legislature, and a Federal Government review of the situation. The remainder of this chapter presents and discusses the results of analyzing these data. Where the Marie Lake themes were numbered one through five, the Fort Chipewyan themes are numbered six through ten. The themes are entitled:

6. *Compartmentalizing the Fort Chipewyan Controversy as a Scientific Issue*
7. *Putting a Lid on the Cancer Controversy*
8. *Genuine Scientific Uncertainty versus Ideological Manoeuvring Disguised as Science*
9. *Questioning the Entire Cancer Controversy*
10. *Regaining Control of a Runaway Environmental Situation*

6.1.1 Theme 6: Compartmentalizing the Fort Chipewyan Controversy as a Scientific Issue

Though Fort Chipewyan residents expressed a number of general environmental worries about the oil sands, these stories received relatively scant media attention. In particular, there were provincial, national, and even international protests and political rallies over the course of this dispute where Fort Chipewyan residents, with the support of environmental groups like the Pembina Institute, tried to raise awareness about the oil sands cumulative environmental damages, its contributions to climate change, and the unsustainability of the industry. In a few instances, they also warned that legal challenges were forthcoming and that the ongoing pollution in Fort Chipewyan was a blatant example of an environmental injustice pitting a small rural minority community

against an industrial behemoth supported by government. Overall, however, the residents' cancer concerns and their worries about toxic pollutants from the oil sands industry took centre stage. In particular, almost every article about Fort Chipewyan mentioned cancer and/or death. For example, Lionel Lepine of the Athabasca Chipewyan First Nation was quoted saying, "[t]he graveyard is getting full…we're dying" (Ho, 2008, p. A15). Warren Simpson, a resident of Fort Chipewyan who fought off cancer said, "[m]y dad, my sister, my aunt, a lot of my cousins have it, my friends' families ... a lot of them have died of cancer and some of them are dying now…" (as cited in High illness rate near oil sands worrisome, 2006). Elizabeth Kusiak remembered six family members she lost to cancer. Stephanie Courtoreille spoke about her late cousin Grant Courtoreille who was diagnosed with a rare type of cancer that affected his blood vessels and fatty tissue. Cookie Simpson, a former nurse and long-time Fort Chipewyan resident, said:

> …we've had so many funerals in Fort Chipewyan, so many wakes and so many funerals that people don't go anymore, and when they go, even if they're not related to the person that passes on, they're just sitting there crying anyways. Every family in Fort Chip is affected by this. Everybody lost somebody to cancer and it's just so devastating and yet ... yet it just continues. (as cited in Brooymans, 2010c, p. A1)

The cancer issue was central to the controversy in Fort Chipewyan and many suspected the oil sands were the source. Ominous depictions of the industry were common in the news. For example, John Rigney of Fort Chipewyan wrote a particularly vivid letter to the editor of the *Edmonton Journal* in which he asked readers to "[i]magine 4,000 square kilometres of open pit mines and toxic tailings ponds, and 40,000 square kilometres of land injected with steam to liquefy the subsoil to extract oil" (Rigney, 2007, p. A17). He went on to describe how you could see miles of tailings' ponds sitting right beside the river. To him, there was "no way that [the ponds did] not leak into the Athabasca River" (Rigney, 2007, p. A17) which flowed downstream into his community. He concluded by asking readers to have empathy, and try to imagine how they would feel if their "regional environment was being reduced to a wasteland" (Rigney, 2007, p. A17). As well, journalists and activists spoke to the sheer magnitude of the ongoing projects near Fort Chipewyan using captions like "sprawling industrial behemoth" (Federal lab not testing for oil sands chemicals, 2010). Readers learned that "Syncrude and Suncor extract and process hundreds of thousands of barrels of oil a day in their oil sands projects…"and that the "oil sands contains between 1.7 trillion and 2.5 trillion

barrels of oil…second only to those in Saudi Arabia" (High illness rate near oil sands worrisome, 2006). Others articles told readers that the oil sands cover an area larger than the state of Florida.

Based on the sheer magnitude of the oil sands industry, it was difficult to comprehend how toxins were not being introduced into the environment. While government scientists argued in the news that toxins were being introduced through natural erosion of the oil sands deposits in the Fort Chipewyan area, many residents and other Albertans were doubtful that this was the only source of contamination. Massive expanses of earth were constantly being churned-up and processed with huge quantities of river water, while toxic tailings ponds sat at the Athabasca River's edge. It seemed very probable that some of these toxins would find their way into the water and food supply on which many of the residents depend. Some spoke to these suspicions as a matter of fact. For example, Lionel Lepine of the Athabasca Chipewyan First Nation felt there was a direct link; in reference to government and industry he said, "I'm here to get the message across that you're killing us" (as cited in Petroleum meeting greeted by protesters, 2008). Stephanie Courtoreille felt the same way. "We have 1,200 people," she said. "How many of those people have had rare cases of cancer? How can you not look at the tar sands?" (as cited in Fong, 2008, p. A.13) Lorraine Mercredi, in a *Globe and Mail* story titled "Why is Cancer Sweeping Tiny Fort Chipewyan…," was quoted saying, "[i]t is speculation to say it's the water. But for me, it's common sense" (Brethour, 2006, p. A.1). Ivy Simpson had narrowed down what caused her cancer. "It had to have been something from the water, air or land," said the 27-year-old, who was 17 when she contracted cervical cancer (Brethour, 2006, p. A.1). Resident Ray Ladouceur, who had fished Lake Athabasca for about 50 years, stated, "I've seen many changes in the water. There's all kinds of stuff coming down [the river]" (as cited in Study contradicts earlier findings, 2007).

The residents seemed particularly worried about their health because of their strong ties with the land. For example, Chief Adam stated that:

> [w]e live a very traditional life, we live off the land and the water. We have been told again and again that contaminants are naturally occurring, yet in the last 40 years we have seen the health of our community decline due to cancers and illness that we didn't see before. (as cited in Oil sands poisoning fish, say scientists, 2010)

Similarly, Cookie Simpson recalled her family living on the wild foods they caught, including an array of fish, from pike to gold-eye (as cited Brooymans, 2010b, p. A.1). She pointed out that some of the fish now contain so much mercury that the government warns only limited quantities can be safely consumed each week. Nonetheless, she told readers that she still eats the fish. "I try to put my fears aside because I still want to practise [sic] my culture. It's what we lived on from when I was born right till now" (as cited in Brooymans, 2010b, p. A.1). In other articles, social actors pointed to the difficulties that community members encountered when trying to avoid living off the land in order to prevent getting sick. Chief Adam stated that about 78 percent of the population relies on traditional food, including fish, for their diet. Melody Lepine, Director of Government and Industry Relations for the Mikisew Cree at the time said, it is “hard for people to stop eating fish and wild meat” (as cited in Brooymans, 2010b, p. A.1), not only because it is an important part of their culture, but because buying flown-in groceries is very expensive.

Other social actors depicted the environmental damages and health issues more tentatively, suggesting that the community simply wanted answers. For example, Dr. John O’Connor who had brought Fort Chipewyan’s concerns to the media in the first place, was repeatedly depicted as frustrated by the government’s unwillingness to conduct a proper health study in the area. Warren Simpson hoped that officials could find the underlying source of harm to curb the death toll. Arthur Noskey, the Grand Chief of Treaty No. 8, also just wanted to get to the crux of the matter, and stated that:

> ...his people would like to broaden their understanding of what is affecting their health. We would like to know what causes these cancers to be so rampant in our nations. The concern immediately is the consumption of fish and waterfowl that our First Nations hunt to sustain them…The more insight we have into this process of understanding the contaminants and their effects the better off we'll be. (as cited in Brooymans, 2008, p. B9)

Lastly, provincial government spokespersons and industry representatives cast the least blame on the oil sands industry. This group seemed to have the final word on the matter. Aspiring to remain neutral and objective, journalists would depict the tragic stories of cancer and death out of Fort Chipewyan, but virtually all of these depictions were contrasted against the perspectives of government and industry representatives who felt that the cancer issue was anecdotal. For example, Alberta Health investigators were cited saying “one of the first tasks will be to determine whether the massing

anecdotal evidence of a rising number of cancer cases is borne out by statistics; [or] whether there is, in fact, a cancer cluster" (Brethour, 2006, p. A1). This article went on to tell readers, oblivious that may Fort Chipewyan residents gather and grow their own fruits and vegetables, that cancer has multiple causes, and that, "[a]nother possible contributor is a diet poor in fresh fruits and vegetables, a near certainty in Fort Chipewyan, where a head of cauliflower costs $7" (Brethour, 2006, p. A1). Iris Evans, then Alberta Health Minister, shared a similar view stating in the legislature that:

> [The cancer issue is] not conclusive. Everything we know thus far is not conclusive, in fact, that these cases, while tragic and unfortunate, have been caused by any environmental factor... We're waiting for [Alberta Health & Wellness and Health Canada] to go through the process of the kind of work you do when you're following up on both the etiology and what the understanding is of the progression. (Evans, May 08, 2006, 1341)

Other discussions in the Alberta legislature, in news articles, and in letters to the media suggested or stated that a cancer cluster was unlikely. Additionally, if there was a cluster, its origin was open to debate. Some suggested it would be too difficult and costly to determine the source of cancer in the first place. Others, like Rob Renner, then Alberta Environmental Minister who was central to the Fort Chipewyan controversy, argued that the oil sands had nothing to do with the cancers being reported in the community. He commented on a number of rather dated, but purportedly reputable studies and monitoring efforts in the Alberta Legislature:

> …air quality monitoring, for example, has been on-going in the Fort McMurray area since the 1970s. We have extensive monitoring that continues to be carried on by an excellent organization [the Wood Buffalo Environmental Association] that we fund … We have a very extensive study that was done in the '90s, the northern river basins study…[t]hat included the Peace River, the Athabasca River, the Slave River, and Athabasca Lake. It deals with the issue of possible contaminants in the river. That study, which was a very extensive study, did not find evidence of industrial toxins… There are wells that are located around all of the tailings ponds that are monitored on a very regular basis by Alberta Environment… From that aspect we have a very high level of confidence that we are not exposing the ecosystem and the watershed to any risk of contamination... (Renner, May 16, 2007, p. 1217)

In the end, the Fort Chipewyan controversy came to be largely portrayed in the media as a debate for scientists to resolve. Though the stories out of Fort Chipewyan about cancer and death, as well as the discussions about observed changes in the

environment (e.g., deformed fish, strange tasting water, foamy rain water, and declines in hunting, fishing, and trapping) received extensive news coverage, these stories where almost always juxtaposed against government claims that the Fort Chipewyan concerns were anecdotal. Ultimately, it would take scientific experts to resolve the issue before the provincial government would provide assistance. In fact, many Fort Chipewyan residents and proponents begrudgingly accepted that scientists might be needed to validate their own firsthand observations of cancer and environmental degradation. On top of this, over the course of the dispute, residents and environmental activists argued that the oil sands were contributing to climate change, that the industry was toxic and unsustainable, that legal challenges were on the horizon, and that the happenings out of Fort Chipewyan were blatant examples of environmental injustice. These concerns, however, also failed to ascend into a prolonged and cohesive news media debate. In the end, these issues also depended on the scientific dispute that was about to unfold.

6.1.1.1 Discussion

This sixth theme, *Compartmentalizing the Fort Chipewyan Controversy as a Scientific Issue*, illustrates that early on the Fort Chipewyan controversy was classified as a debate for scientists to resolve. Casting the issue in this way coincides with the role of science in the environmental movement. In the years after Earth Day 1970, when the environmental movement began to take shape, it defined itself by its use of science to identify and solve environmental problems (Sarewitz, 2004). For example, the Montreal *Protocol* was an obvious scientific success story in Canada. In 1974, Sherwood Rowland and Mario Molina released a controversial study that pointed to the harmful effects chlorofluorocarbons on stratospheric ozone, and successfully linked these and other substances to ozone depletion (Molina and Rowland, 1974). Canada would then become one of the first countries to ban the use of propellants in a variety of consumer products (Boyd, 2003). Though industry resisted, eventually the *Montreal Protocol on Substances that Deplete the Ozone Layer* (1987) was established, mandating the virtual elimination of all ozone depleting substances. Since inception, the *Protocol* has been ratified by more than 175 nations (Boyd, 2003). Scientific findings also took centre stage throughout the 1980s for acid rain and various forms of industrial waste. In many cases, it was relatively easy for scientists to trace these forms of pollution back to their definitive sources. The 1980s also saw studies targeting and reducing emissions from smelters, effluents from petroleum refineries and pulp mills, emissions from motor vehicles, and

the lead in fuels (Boyd, 2003). Many of these scientific efforts resulted in binding and enduring legal changes in the *Fisheries Act, 1985* and the *Canadian Environmental Protection Act*, *1999*.

Today, we see scientists involved with most facets of the environmental movement. However, in certain ways, the ecological challenges facing the world at the outset of the environmental movement in the 1970s were more straightforward than the problems of today (Cox, 2006). Pope writes that at the time the challenges had "tangible, local, and immediate consequences for humans. Lake Erie was dying under the boats of fisherman, the Cuyahoga River could be seen to burn…. and children in Los Angeles could not go out and play hundreds of days of a year" (2004, p. 7). Industrial pollution and the dumping of waste often had straightforward solutions. Many of the threats we face today, however, are intangible, global, and lurking on the horizon (Cox, 2006). For example, persistent and bio-accumulative chemicals, lingering toxic pollutants, planetary erosion, long-term health effects, and climate change present challenging scientific problems characterized by increasingly complex causal sequences. Thus, in the end, it is not surprising that Fort Chipewyan social actors turned to science to legitimate their health and environmental claims. However, unbeknownst to most, the numerous intermediary steps linking cause and effect would be extremely difficult to disentangle. Added to this, science's value as a method for acquiring knowledge was repeatedly undermined across the course of the debate.

Compartmentalizing the Fort Chipewyan Controversy as a Scientific Issue would also overshadow other important environmental injustice discussions. In particular, the widespread pollution downstream from the oil sands industry left many residents concerned that the entire ecosystem was too toxic to depend on for their livelihood. Many residents wanted to regain food sovereignty and were scared to hunt, fish, gather, and take part in other cultural practices involving nature. Few news sources mentioned how poisoning the Fort Chipewyan environment shared many parallels with the legacy of abuse and harm Aboriginals experienced throughout much of the 20th century under the guise of aggressive assimilation. The ongoing industrial development downstream from Fort Chipewyan was an attack on the residents' right to self-determination. Mike Mercredi, for example, was quoted in the *Edmonton Journal* as being ready to oppose the "slow industrial genocide" (Ho, 2008. p. 1) that oil industries were waging on the people and the ecosystem in his hometown of Fort Chipewyan. However, aside from a

few disparate news articles, eco-injustice discussions were largely absent from the mainstream news media. Haluza-DeLay, O'Riley, Cole, and Agyeman (2009) write, "For the most part, the voice of Aboriginal peoples have been ignored, dismissed, or overridden since contact by the various levels of government within the country now called Canada" (p. 3). This seemed to be the case in Fort Chipewyan. Readers needed to look beyond the regional and national news to find sources framing the Fort Chipewyan issue in racial, cultural, human rights, and economic terms. For example, the Indigenous Environmental Network (2010) posted on their website that:

> Indigenous peoples, in Canada are taking the lead to stop the largest industrial project on Mother Earth: the Tar Sands Gigaproject. Northern Alberta is ground zero with over 20 corporations operating in the tar sands sacrifice zone, with expanded development being planned. The First Nations tribes land, ecosystems, cultural heritage and human health are being sacrificed for oil money that has been termed a slow industrial genocide (p. 1).

Thomas-Muller (2008), a journalist for *Rabble*, which is an independent new provider, framed oil sands exploitation as a "human rights issue, an environmental justice issue and an indigenous treaty-rights issue" (p. 2). He argued that the Alberta government enticed First Nations leadership to lease their treaty reserve lands under the pretense of prosperous economic development, but the unforeseen destruction of the Lower Athabasca region represents more of the same chronic abuse that Aboriginals have suffered over the previous century. He concludes that the government of Alberta and Canada continues to prevent First Nations from retaining their "inherent sovereignty rights to protect their lands and culture and to maintain economically sustainable and healthy communities" (Thomas-muller, 2008, pp. 2-3). Dishearteningly, however, these poignant arguments rarely appeared in regional and national news sources. Instead, the issue was most frequently portrayed as a scientific problem, when quite clearly it was much more expansive.

6.1.2 Theme 7: Putting a Lid on the Erupting Cancer Controversy

On May 17, 2006, just after the first news articles expressing concern about cancer in Fort Chipewyan reached the public, a team of representatives from the province of Alberta met with the Nunee Health Authority, Dr. John O'Connor, and Elders in Fort Chipewyan to discuss completing a patient chart review. This would entail comparing Fort Chipewyan medical charts to provincial cancer averages. A week later,

Lisa Jensen, a leading field epidemiologist, sent emails to Dr. O'Connor asking him to provide a list of names of patients with cancers and other conditions of interest. Readers later learned that Dr. O'Connor did not reply to this email (College of Physicians and Surgeons of Alberta, 2009).

Despite not receiving the information from Dr. O'Connor, one month following their initial meeting on May 17th, 2006, the Alberta Cancer Board (ACB) and Alberta Health & Wellness (AH&W) reported the results of the cancer patient chart review. The report was heard initially at an Alberta Energy Utilities Board meeting on July 17th, and then at a public meeting in Fort Chipewyan a week later (College of Physicians and Surgeons of Alberta, 2009). Iris Evans, then provincial health minister, stated that the patient review "was not so much a study, as it was an analysis, [or a] very thorough review by epidemiologists" (as cited in Local doctor doubts report, 2006). She was quoted by the *CBC* saying, "she would stand by the review" (Local doctor doubts report, 2006). Researchers had analyzed provincial and Alberta Cancer Board files, along with statistics and medical records from the community, to determine whether there was a spike in cancer rates in Fort Chipewyan. The main findings of the study were two deaths from cholangiocarcinomas, not five as Dr. O'Connor had reported to the *CBC* (as cited in College of Physicians and Surgeons of Alberta, 2009, p. 7). There was also one probable case of cholangiocarcinoma from Vital Statistics and Alberta Cancer Board data, and three cases of leukemia versus one expected (as cited in College of Physicians and Surgeons of Alberta, 2009, p. 7). Lastly, the researchers found "no evidence of a higher incidence of cancer than expected," but they did find "an elevated incidence of diabetes, hypertension, lupus (systemic lupus erythematosus), and injury-related deaths based on community assessment information" (as cited in College of Physicians and Surgeons of Alberta, 2009, p. 7).

Following the release of these findings, the *Globe and Mail* ran an article titled, "Report rebuts tiny Alberta town's cancer concerns" (Harding, 2006, p. A6). The journalist opened the piece, stating "[c]oncerns that Fort Chipewyan residents have been disproportionately affected by both rare and common cancers are unfounded, according to a provincial government review being released today at the northern Alberta village" (Harding, 2006, p. A6). Though Alberta Health investigators and legislators would later call the cancer review a first step to larger health investigation, the *Globe and Mail* journalist seemed somewhat determined to present the results of the report as

conclusive. Both, Dr. Allan Nicholson, Fort McMurray's Medical Officer of Health, and Howard May, an Alberta Health spokesperson, were quoted saying that provincial government officials are ready to put the issue to rest unless there are other concerns. In the days after the release of the findings, a few of other articles followed suit, suggesting that the review had drawn Dr. O'Connor's and the residents' fears of cancer into question.

The *CBC* framed the cancer review findings differently. Dr. O'Connor, as well as residents in Fort Chipewyan, accused Alberta Health of rushing the report to have it ready for Suncor's expansion hearings. Dr. O'Connor stated, "I was told it would take months to do a comprehensive study, not weeks" (as cited in Local doctor doubts report, 2006). A number of residents seemed to believe Dr. O'Connor's assertion was reasonable, especially since the findings were released so quickly and were first heard at an Energy Utilities Board meeting that was reviewing proposals to expand Suncor's oil sands operations (Local doctor doubts report, 2006). In addition, concern was expressed that, "without community input or involvement, the process has not been transparent" (Local doctor doubts report, 2006). In line with the residents' concerns, Dr. O'Connor called for a more comprehensive and transparent investigation into the cancer rates, saying:

> I would be very, very happy if they said the rates of disease, cancer included, are no higher in Fort Chip than a comparable community elsewhere… I would absolutely accept it, if I saw they had done a complete analysis … had all the information that they needed, and had the report peer reviewed prior to publishing it. (as cited in Local doctor doubts report, 2006)

6.1.2.1 Discussion

The College of Surgeons and Physicians portrayed the cancer review findings as inconclusive. In retrospect, however, the cancer review seemed more like an impromptu method to control the residents' demands for an examination into their health concerns and to manage public opinion on the subject. For one, Fort Chipewyan residents had been asking for a study since 2003; however, once the cancer issue reached the media the review was completed in just over a month. Secondly, ostensibly indifferent to the residents' fears about cancer the review was delivered in support of industry expansion before it was heard by the worried community. Third, readers did not learn until months after the patient review that it was just the first step to a broader health investigation.

Finally, though failing to get much press, Dr. Yiqun Chen, head of disease surveillance at the ACB, warned the CBC, and also stated years later in a second cancer report, that she did not have "the complete data set for 2005, and less complete for 2004" when reaching her conclusions about the cancer rate (in Local doctor doubts report, 2006). Yet, in the early stages as the cancer controversy unfolded, it was virtually impossible to piece together these disparate facts, while some facts had yet to be released. Instead, the release of the cancer review seriously discounted the residents' allegations and undoubtedly reshaped public opinion drawing the entire controversy into question.

This theme, *Putting a Lid on the Erupting Cancer Controversy*, can be interpreted as an impromptu method to breed indeterminacy and gain control over the controversy in its early stages. Such an interpretation is illustrative of what Robert Cox (2006) calls a *trope of uncertainty* (p. 344). (A trope is a "turn" or a reframing of a claim in a way that modifies social understandings of it.) In Fort Chipewyan, the patient review worked as a trope, redirecting the agenda by creating public doubt, altering the public's conceptualization of what was at stake, and suggesting it might be foolish to prematurely conclude that there was a cancer problem (Cox, 2006). Cox (2006) explains that:

> In a sense, the trope of uncertainty is an attempt to reverse the assumptions associated with the precautionary principle. Whereas the precautionary principle stresses the need to err on the side of caution before human or corporate actions harm the environment or human health, an appeal to uncertainty or a call for further research turns this caution against scientific claims themselves. (p. 344)

Sheldon Rampton and John Stauber (2002) found similar results when they studied corporate public relation strategies. They suggest that an "[i]ndustry's [public relation] strategy is not aimed at reversing the tide of public opinion, which may in any case be impossible. Its goal is to simply stop people from mobilizing to do anything about the problem, to create sufficient doubt in their minds… [so] that they will remain locked in debate and indecision" (Rampton and Stauber, 2002, p. 271). Though Iris Evans, then Alberta Health Minister, said "if [Fort Chipewyan] calls for an expanded study, they will get one," the damage had already been done (Local doctor doubts report, 2006). Whether intentional or not, the trope had manifested itself, effectively nurturing doubt and implicitly suggesting the residents of Fort Chipewyan were either confused, blowing things out of proportion, or simply lying to get support.

6.1.3 Theme 8: Genuine Scientific Uncertainty versus Ideological Manoeuvring Disguised as Science

The next few months saw a short lull in the news during which requests were made to the Nunee Health Authority Manager Head Nurse to facilitate the more comprehensive review of active patient files in Fort Chipewyan (College of Physicians and Surgeons of Alberta, 2009). During this time, in November of 2006, the community and province learned from both the *CBC* and the *Edmonton Journal* of a Suncor Energy study that months prior had suggested there were high arsenic concentrations found in meat in the Athabasca area. Apparently, the findings were not shared with the residents of Fort Chipewyan and instead were presented at Suncor's proposed expansion hearings held six months earlier. Suncor Energy had used prediction models that estimated arsenic levels in the vicinity of the company's proposed Voyageur oil sands project were 453 times higher than acceptable. Their research also suggested that the arsenic could lead to 450 additional cases of cancer per 100,000 population over time. Dr. John O'Connor, who had become a spokesperson for Fort Chipewyan, reflected the sentiments of some residents saying the:

> …community should have been told directly about these results, regardless of their accuracy. For myself, I'd be very concerned, hearing this second hand. I'd want to know very quickly if I had to worry about fish, rabbit, [and] the berries I'd picked… (as cited in Imperial, gov't say arsenic scare unfounded, 2006)

These Suncor arsenic and cancer predictions were immediately met with industry resistance. Imperial Oil spokesperson, Kim Fox, questioned the results saying their own study puts the arsenic estimate 15 times lower, adding that:

> [t]he people who actually conduct these studies tend to be very, very conservative in their methodologies. Even with those conservative approaches, what we've found is that the oil sands do not contribute to increases in arsenic in the area. (as cited in Imperial, gov't say arsenic scare unfounded, 2006)

The provincial government also did not believe that the Suncor results were reliable and immediately launched their own study into the issue. Spokesperson Howard May told *CBC* News that the Alberta Health Department was surprised to see such high numbers and wanted to examine the science behind them to satisfy themselves and the people of Fort Chipewyan. In April 2007, about four months later, a response to the Suncor predictions of high arsenic reached the papers. Alberta Health predicted that the cancer

risk from eating meat was much lower than Suncor had predicted, with the increased threat of cancer dropping to somewhere between 17 and 33 times the acceptable level. Alberta Health researchers had collected samples of moose and deer meat from around Edmonton, the Yukon, as well as northern Alberta and found similar elevated arsenic levels in all of the samples. This suggested that the meat around Fort Chipewyan was as good as meat found anywhere in the Yukon. However, Alex MacKenzie, a spokesperson with Alberta Health, and the researcher heading up the study, qualified this saying that "[t]here isn't now, nor has there ever been an on-going program that is directed at determining the absolute quality of the food that is running around in the wild" (as cited in Mixed reports on safety of eating, 2007). The article concluded with statements by Mary Gamberg, a researcher who had been studying toxins in wild meat for 15 years. She believed Alberta Health's standards were too strict when deciding how much arsenic people can safely consume. She was quoted saying, "[y]ou could be unnecessarily scaring people away from traditional foods, which is not a good thing" (as cited in Mixed reports on safety of eating, 2007). She added that eating the meat would be considered completely safe if Alberta Health adopted the same standards the World Health Organization uses for arsenic consumption (as cited in Mixed reports on safety of eating, 2007).

A few months following Alberta Health's rebuttal to the arsenic research by Suncor, results of another study were reported in the *Edmonton Journal* and the *CBC*. The *CBC* reported that, "Research conducted for the Athabasca Chipewyan First Nation in northern Alberta has cast doubt on a government study about the town's water quality and its connection to cancer rates" (Study contradicts earlier findings, 2007). The findings, by Dr. Kevin Timoney, a researcher with Treeline Ecological Research suggested elevated levels of arsenic, mercury, and oil related compounds in the water and wildlife were cause for health concern. Timoney had examined data from 1970 to the present, focusing on the Peace River, Athabasca River, and the Peace-Athabasca Delta near Fort Chipewyan. The report documented that "contaminants were not only found in fish, but also in waterfowl, muskrat, beavers, and moose — all of which are traditional foods that the community relies on" (Study contradicts earlier findings, 2007). The *CBC* reported, "Timoney's conclusions are in stark contrast to a government-funded study this year on cancer rates that found no elevated disease rates in connection with the Athabasca River" (Study contradicts earlier findings, 2007); it also contradicted "the

newly released Alberta Health Arsenic study" according to the *Edmonton Journal* (Brooymans, 2007b, p. B10).

Kevin Timoney's findings made their way into the Alberta Legislature. Dr. Swann, then Environmental Critic, questioned Rob Renner, the then Environmental Minister, asking why their department was dismissing Dr. Timoney's report, which demonstrated that the conditions are changing and deteriorating downstream from the refineries. Renner reiterated his earlier response, referring to the *Regional Aquatic Monitoring Program* (RAMP) that monitored the Athabasca area:

> …[Dr. Swann] seems unwilling to accept the facts – that we have been doing extensive monitoring of this river basin since the early 1990s. There are literally thousands and thousands of samples taken throughout this region, and there is no evidence to indicate that anything is changing. The minute quantities of various substances that have been identified are naturally occurring… (Renner, Nov 26, 2007, p. 2178)

The *Edmonton Journal* reported Dr. Timoney's findings, but effectively neutralized them by citing Dr. Preston McEachern, head of science in the Oil sands Environmental Management division for Alberta Environment. At the heart of it, Preston McEachern stated that it appeared as though Timoney had based his conclusions on old studies, and on a sample site where Alberta Environment discovered rising levels of oil related compounds. When McEachern went back to the site to figure out why Timoney had found such high concentrations of PACs. He and his team found heavy erosion of an oil sands-containing riverbank, which they argued was the natural cause of the contamination.

Dr. Kevin Timoney responded to Dr. Preston McEachern's statements in a scathing back-page editorial. He "set out the facts" in his letter, stating that the results in his report were new, valid, and reliable. He wrote:

> [t]he study has been subjected to peer review by respected scientists. Elevated mercury levels are almost certainly related to industrial activities. To maintain otherwise is untenable. The data indicate that current levels of arsenic, mercury, and PAHs[42] are elevated above historical levels. The finding of high and increasing levels of PAHs in sediment was not based on an erroneous site with natural erosion. It was based on a network of sample sites… (Timoney, 2007, p. A17)

[42] Polycyclic Aromatic Compounds (PACs) or Polycyclic Aromatic Hydrocarbons (PAHs) are found in oil, coal, and tar deposits. As pollutants they are concerning because some of the compounds have been identified as "carcinogenic," mutagenic," and "teratogenic" (Agency for Toxic Substances and Disease Registry, 2012, p. 1).

Timoney also expressed disdain as to how the government had somehow obtained a version of his report marked “Confidential Draft for Review” (Timoney, 2007, p. A17). He went on to ask if the Alberta government was that “desperate to prevent the public from knowing the truth about the Athabasca River and the oil sands industry” (Timoney, 2007, p. A17). He concluded his letter echoing the sentiments of many Fort Chipewyan residents by stating that:

> By dismissing the report before reading the final version, the Stelmach government demonstrates its predilection for dirty tricks and its inability to assess facts in an objective manner. The government has shown a reprehensible lack of integrity and a great disrespect to the people of Fort Chipewyan. (Timoney, 2007, p. A17)

Preston McEachern quickly responded, making readers aware that Timoney had produced the reports for the Nunee Health Board Society in Fort Chipewyan, and that McEachern was thankful that they had shared the report with him. He also felt obligated to assure *Edmonton Journal* readers that everything that the Alberta Environmental Ministry does is “aimed at presenting a true picture of the health of the river” and that this debate was healthy for democracy (McEachern, 2007, p. A.19). He concluded stating:

> [w]hat Timoney's report failed to mention is that PAHs …found in samples on other rivers in the area with absolutely no industrial oil sands activity have been found to be higher than samples taken downstream from oil sands developments. The sources in the area are natural and related to river flow and erosion. (McEachern, 2007, p. A19)

6.1.3.1 Discussion

The scientific debate about the extent of oil sands toxins in the environment was left at this point for newsreaders. During the first round of research, Suncor industry scientists had predicted arsenic levels 453 times higher than acceptable around their proposed Voyageur oil sands project. In response, government scientists quickly produced evidence that arsenic in wild meat was just as low in Fort Chipewyan as elsewhere in the Yukon, lower than World Health standards, and far below what Suncor had predicted. Aside from the fact that industry rarely produces findings of environmental harm contradicting their own interests, this first round of research seemed indicative of genuine scientific uncertainty in terms of absolute levels of arsenic in the wild. In the second round of research, Timoney (2007) presented findings of elevated levels of arsenic, mercury, and oil related compounds in the water and wildlife around Fort

Chipewyan based on an extensive network of sample sites. In response, government scientists told readers that they had found the “one site” where Dr. Timoney had drawn his erroneous conclusions and that they had found the “sites away from industry” where toxins were high due to natural erosion. This response disregarded that Timoney (2007) had drawn conclusions based on a network of sample sites. It also ignored that the issue of contention was not whether there were sample sites away from industry showing high toxin measurements, but whether industry was contributing toxins beyond naturally occurring levels, and to what degree. Unlike what appeared to be a genuine scientific disagreement about the absolute levels of arsenic in the wild, the “one site,” and the “sites away from industry” rebuttals seemed like disingenuous attempts to befuddle the science. Instead of producing new contradictory data, McEachern haphazardly attacked Timoney’s sampling methodology and offered facts unrelated to the crux of the debate. At the time, piecing these disparate facts together was extremely difficult. Instead, one was simply left with a feeling of uncertainty about the entire arsenic issue.

This interpretation of this theme entitled, *Genuine Scientific Uncertainty versus Ideological Manoeuvring Disguised as Science*, contributes to Sarewitz’s (2004) assertion that causal sequences that lead from ‘more science’ to ‘more certainty’ to ‘political action’ are often inherently flawed when it comes to most environmental issues (p. 386). The government’s haphazard critique of Timoney’s methodology suggests that Sarewitz (2004) is quite right when he says the value of science is undermined in these sorts of environmental debates. However, Sarewitz suggests that progress in addressing environmental controversies must come primarily from advances in political process rather than from scientific research. He argues that scientific findings often produce more complexity than clarity. He writes that:

> [i]n areas as diverse as climate change, nuclear waste disposal, endangered species and biodiversity, forest management, air and water pollution, and agricultural biotechnology, the growth of considerable bodies of scientific knowledge, created especially to resolve political dispute and enable effective decision-making, has often been accompanied instead by growing political controversy and gridlock. Science typically lies at the centre of the debate, where those who advocate some line of action are likely to claim a scientific justification for their position, while those opposing the action will either invoke scientific uncertainty or competing scientific results to support their position. (Sarewitz, 2004, p. 386)

The story out of Fort Chipewyan however suggests that scientific findings quite often produce multiple outcomes. As Sarewitz (2004) argues, in some cases scientific results produce more questions than answers, whereby political precepts and values must lead the environmental/industrial decision-making agenda. In other cases, scientific findings lend clarity, continuing to build upon a factual framework on which political solutions can be offered. Yet, it is often difficult to discern whether the scientific framework that is emerging is being countered with new robust studies or with ideological manoeuvring disguised as science.

Ultimately, this theme specifically illustrates the importance of carefully questioning whether ideology is contaminating scientific findings, or whether readers are simply witnessing genuine scientific uncertainty. Too often, principled methodological approaches seem to be ignored or intentionally and deceitfully misrepresented in order to serve corporate and political agendas. This suggests scientists must be prepared to deal with environmental issues in ways that explicitly attend to this sort of political maneuvering. This does not suggest scientists should misrepresent their findings, but instead they must be prepared to portray their research effectively against a barrage of political attacks and in the media sphere where offering suspenseful debates often takes precedence over presenting a more nuanced and complex environmental picture. This also suggests the importance of taking precaution in the face of scientific uncertainty. Conceived of at the *Rio Declaration for the Environment* (1992) the precautionary principle reads, "[w]here 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" (Rio Declaration on Environment and Development, 1992, Principle 15). Finally, this theme also cautions that risk assessment cannot be left in the hands of scientists alone. Expertise regarding environmental harm can come from many places. For example, Rob White (2008) writes:

> Farmers on the land and fishers of the sea, for example, have generations of expertise built up over time and under varying environmental conditions. Indigenous peoples frequently have knowledge and understanding of their environments that go back to time immemorial. The fact that some indigenous people have survived for thousands of year, and thrived, in extremely hostile environments (the frozen lands of the north, the deserts of the dry continents) is testimony to human practices that are connected positively to immediate [environments] (p. 79).

6.1.4 Theme 9: Questioning the Entire Cancer Controversy

While the industrial toxin debates unfolded, and six months after Alberta Health & Wellness (AH&W) began investigating the cancer rate in Fort Chipewyan, in January 2007, an official complaint was lodged against Dr. John O'Connor. Four Health Canada physicians who were involved in a comprehensive cancer study of Fort Chipewyan laid a formal complaint with the Alberta College of Physicians and Surgeons.[43] Health Canada did not initially explain its actions other than saying the complaint involved professional practices, and that Dr. O'Connor had been causing undue harm in the community. However, Dave Hancock, then Minister of Health and Wellness, reported to the legislature that:

> The long and short of it is that the doctor has not provided his evidence to us that there is an increased rate [of cancer] despite being requested to do so. There is no good reason to withhold that data because cancer is supposed to be reported, so that data should have been available if it was there. (Hancock, May 16, 2007, p. 1217)

The complaints lodged against Dr. O'Connor were not received well by the media or by the residents of Fort Chipewyan. The *CBC* wrote, "[a] small Alberta community is rallying behind a local doctor they believe is being silenced by Health Canada because he raised concerns about high rates of cancer near the booming oil sands" (Oil sands-area hamlet supports whistleblower, 2007). Residents expressed frustration in not being consulted about the charge. They were also in "disbelief that the very authority…charged with protecting [their] interests and [their] health was actually lodging the complaints against Dr. John O'Connor, rather than coming to the aid of [the] community to find resolution…" (as cited in Oil sands-area hamlet supports whistleblower, 2007). The Mikisew Cree First Nation called for the College and Health Canada to rescind the complaint against Dr. O'Connor. Meanwhile, health professionals working alongside Dr. O'Connor in Fort Chipewyan believed Health Canada officials were targeting their colleague because his comments potentially threatened oil sands interests. George MacDonald, Fort Chipewyan's head nurse expressed "shock that they would treat a physician of this calibre like this. There's a deliberate attempt to beat him down or shut him up…" (as cited in Oil sands-area hamlet supports whistleblower, 2007).

[43] In the news, it is often reported that three doctors lodged the complaint. However, in the College's official investigation into Dr. O'Connor's conduct, four doctors are listed.

As months passed, more elements of the complaint surfaced. Health Canada argued that O'Connor was obstructing the cancer study, and implied that he had exaggerated cancer rates. Gerry Keifer, a spokesperson for Alberta Health stated that they had:

> …repeatedly asked O'Connor for patient files and proof that rates of rare cancers are, indeed, higher in the northern Alberta community. [They went on to state that O'Connor] provided nothing…though he has claimed he has diagnosed three, four, even five cases of an unusual cancer called cholangiocarcinoma. (as cited in Sinnema, Mar 30, 2007, p. B5)

Howard May, for Health Canada, said Dr. O'Connor has been "completely unaccommodating and has refused to come forward with evidence -- and this is after repeated requests." Mr. May noted that doctors have a legal obligation to report every diagnosed case to the Alberta Cancer Board (as cited in Sinnema, Mar 08, 2007, p. B5). However, at this point readers were left waiting for the College of Surgeons and Physicians to complete their official investigation into Dr. O'Connor's attempts to incite fear in the community and delay the study he had proposed in the first place.[44]

In November 2008, despite the ongoing investigation into Dr. O'Connor, the residents finally received a draft of the more comprehensive cancer study as promised by the Alberta Cancer Board and Health Canada. The *Edmonton Journal* and the *CBC* both ran articles in which Fort Chipewyan residents and officials immediately cast doubt on the draft. The *CBC* article was entitled, "Fort Chipewyan rejects unreleased cancers study" (2008). Fred Fraser, the president of the Fort Chipewyan Métis local association, said in the release that:

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[44] Around this time, two events transpired in the related to the events out of Fort Chipewyan. First, a few articles reported on 500 ducks dying in an oil sands waste water reservoir in April 2008 (Harper promises to investigate dead ducks, 2008). The ducks had become trapped on a Syncrude tailings pond, making rescue virtually impossible. Syncrude had not reported the duck incident immediately, and residents wondered what else the corporation was hiding. Steve Gaudet, who managed the recovery effort, said staff planned to alert environment officials once they got the situation under control. A second event occurred in September 2008. Dr. David Swann, the Liberal Environment Critic at the time, released details from an internal Suncor Energy report that one million litres of waste water, "equal to the volume required to fill an Olympic-sized swimming pool," including grease and oil, had leaked into the Athabasca River eight months previously (Grease, oil leaked into Athabasca River, 2008). Residents only learned of the incident at a public meeting in Fort Chipewyan, and many would frame this as just another example of suppressing environmental harm.

> We said from the start with the original study two years ago that not only did the community need to be engaged throughout but that the methodology originally employed needed to change…there was no consideration to look at methods that would be consistent with the health board's wishes. (as cited in Fort Chipewyan rejects Alberta Cancer Board study, 2008)

The general feeling expressed in these articles was that the current draft of the cancer investigation was identical to the original patient review produced two years ago, and that this was further evidence that Fort Chipewyan should not trust the government to provide accurate information on the oil sands. However, Alberta Health told residents to wait for the findings before discounting them.

In February 2009, the comprehensive Alberta Cancer Board study was published. It was conducted by Dr. Yiqun Chen, and was reviewed by experts in Australia, New Zealand, the United States, and Canada, including one of two Aboriginal researchers recommended by the Nunee Health Board Society in Fort Chipewyan. The main findings were that:

> [t]he two cholangiocarcinomas in Fort Chipewyan were within the expected range [not four, five, or six cholangiocarcinomas like Dr. O'Connor had had supposedly diagnosed and reported to the *CBC*]. The cancer rate overall (51 cancers in 47 individuals) was 12 higher than the 39 expected. Higher than expected numbers of cancers of the blood and lymphatic system, biliary tract cancers as a group, and soft tissue cancers were found. These findings were based on a small number of cases and could be due to chance, increased detection, or increased risk in the community (Chen, 2009, p. 8).

News providers ran similar stories about these findings. The *CBC*, for example, entitled an article "Fort Chip cancer rates higher than expected" (2009). The articles seemed to recognize that Fort Chipewyan residents, at the very least, have been experiencing a disproportionately high cancer rate. As a result, community leaders reported feeling vindicated. For instance, George Poitras of the Mikisew Cree First Nation stated:

> It's about time that we're getting these results confirming what we've been saying all along…but at the same time, it's kind of upsetting. Nobody wants to know our community is afflicted with cancer because we don't know who's going to be impacted next. (as cited in Fort Chip cancer rates higher than expected, 2009)

Dr. O'Connor reportedly felt vindicated too, stating, “all along I've said I'm a simple family physician, not an expert…Somebody needs to go and look and see if what's happening in Fort Chip is normal or not" (as cited in Cancer rates elevated in Fort Chip, 2009). Yet, many news articles also stressed that the findings were based on a small number of cases, and could be due to chance, increased detection, or increased risk in the community. Furthermore, it was often mentioned that more research was required to evaluate the risk posed by living in Fort Chipewyan. For example, the head of Alberta Cancer Services, Dr. Tony Fields, argued there was no need for alarm among residents:

> …the signal that we saw is not a very strong signal…These could be due to chance. They could be due to increased detection of cancers…As so often in scientific studies and population-based studies, whereas people hope to hear a cut-and-dried, black-and-white answer, the answer is in shades of grey…Can we rule out that environment is involved? No, we can't, because there is nothing in our study that has gone that far that we can even examine the risk. (as cited in Cancer rates elevated in Fort Chip, 2009)

Overall, there was a general level of recognition by stakeholders that cancer was elevated in the community, but the causes and extent of the cancer cluster were still debatable. Rob Renner, then the Environmental Minister, backed by government scientists like Preston McEachern, continued to assert that any toxins in the Fort Chipewyan area were due to natural erosion. Most government officials argued that additional studies would be required to assess whether industry was contributing. Added to the scepticism by government, the official College of Physicians and Surgeons’ complaint against Dr. O’Connor was brought to light. Though the College was legally prohibited from releasing the report, or even confirming that they had received a complaint, the official document was somehow leaked to the media.

The College’s first complaint was that “Dr. O'Connor obstructed the Alberta Cancer Board and Health Canada in their efforts to investigate his concerns about [the] increased incidence of cancer and other illnesses in the Fort Chipewyan population” (College of Physicians and Surgeons of Alberta, 2009, p. 1). The College reported that repeated requests to gather the necessary cancer files by Alberta Health and Wellness (AH&W) and their field epidemiologist were obstructed. The following two emails between George Gerow, the Head Nurse at the Fort Chipewyan Nursing Station, and Lisa Jensen, the field epidemiologist for AH&W, were given in the report as evidence of the repeated obstruction. On October 17, 2006, Gerow wrote:

> Thanks Lisa. After I emailed you, I spoke with our physician [Dr. O'Connor], who is adamant that we not admit an outside agency access to the files. I am not sure what to do, as I believe that we need this study, but I am now caught in the middle. He suggested that we be sent a team of nurses who can do our usual work while we use a template supplied by you to go through each chart, number them, and extrapolate the data necessary… (as cited in College of Physicians and Surgeons of Alberta, 2009, p. 4)

This was followed by a second email from George Gerow to Lisa Jensen the same day:

> Hi Lisa, HELP!! I am at my wit's end. Can you please help me Dr. O'Connor's concerns re: confidentiality. I had explained to my staff and Dr. O'Connor that you and your team were expected to come and look at our active files and continue the study on cancer concerns here in Fort Chipewyan. I was immediately faced with "They can't do that because of confidentiality issues." I am pretty sure you can, but I need some help with the wording of my reply. Can you help? (as cited in College of Physicians and Surgeons of Alberta, 2009, p. 5)

Though other evidence of obstruction was mentioned, it could not be found in the report. Dr. O'Connor, in a letter from his lawyer, as well as in the news, offered a few limited responses to this charge of obstruction. First, he claimed he did not receive the emails. Second, he stated, "he could not block access to the files even if he wished to, as he did not have this authority, because he's just a visiting physician" (as cited College of Physicians and Surgeons of Alberta, 2009, p. 9). He stated that indeed, "he wanted as much information as possible to be made available to facilitate a thorough study" (as cited in College of Physicians and Surgeons of Alberta, 2009, p. 9).

The College's report also focused on "Dr. O'Connor's failure to respond to requests in a timely manner" (College of Physicians and Surgeons of Alberta, 2009, p. 10). As evidence, it was reported that "only on receipt of Dr. Grimsrud's second letter in August 2007, [who was the Acting Chief Medical Officer of Health for Alberta,] did Dr. O'Connor supply names [of the cancer patients] to the study team" (College of Physicians and Surgeons of Alberta, 2009, p. 10). However, the evidence found in the College's report in support of this allegation could only have been gathered long after the initial complaint against Dr. O'Connor had been lodged in January 2007. The College's report chronology showed that:

> On June 14, 2007, the Acting Chief Medical Officer of Health for Alberta, Dr. Karen Grimsrud, wrote Dr. O'Connor and requested that he provide the names of patients who'd suffered from colon cancer and

> cholangiocarcinoma. When no response was received, she wrote again on August 1, 2007. Dr. O'Connor promptly replied to this request with a list of names. (College of Physicians and Surgeons of Alberta, 2009, p. 4)

However, the report did not explain how evidence gathered six months after the fact could be given as evidence of Dr. O'Connor's failure to respond to requests in a timely manner. This suggested that the College's initial complaint was little more than a means to justify an ongoing investigation into Dr. O'Connor.

Related to Dr. O'Connor's failure to respond to requests for data, the College of Physicians also alleged that he "fail[ed] to fulfil his legal and ethical obligation to report all suspected cases of cancer to the Alberta Cancer Board" once diagnosed (College of Physicians and Surgeons of Alberta, 2009, p. 10). The College reported that:

> While there may have been some uncertainty about the ownership of the patient medical records in Fort Chipewyan, there is no uncertainty about the obligations of physicians to report a diagnosis of cancer under the *Alberta Cancer Programs Act*. That Dr. O'Connor was unaware of his obligation does not excuse his failure to report all of these cases of cancer either at the time of diagnosis or subsequently, when the cancer incidence investigation was undertaken. (College of Physicians and Surgeons of Alberta, 2009, p. 10, italics added)

In response, Dr. O'Connor pointed out that "family physicians do not usually diagnose cases of cancer and are therefore not obliged to report them" (as cited College of Physicians and Surgeons of Alberta, 2009, p. 9). In most cases a cancer diagnosis is made by a specialist to whom the patient is referred, typically based on a biopsy (documented then in a pathology report), which is then automatically sent to the Alberta Cancer Board. A letter from his lawyer stated that Dr. O'Connor "does not accept, therefore, that he failed to notify the Alberta Cancer Board of the identities of patients he'd diagnosed with cancer" (as cited in College of Physicians and Surgeons of Alberta, 2009, p. 9). Though it took two requests by Dr. Karen Grimsrud who was the Chief Medical Officer, he did finally report the cases (as cited in College of Physicians and Surgeons of Alberta, 2009).

The complainants also alleged that many of Dr. O'Connor's public comments were inaccurate or untruthful. He had been quoted extensively in the media discussing the types and quantities of cancer in the community and while Alberta Health agreed that some of the quotations might have been taken out of context by the news, they also said there were many mistruths and inaccuracies (College of Physicians and Surgeons of

Alberta, 2009). Alberta Health was particularly concerned about Dr. O'Connor's initial statements that there were four or five confirmed cases of cholangiocarcinoma and 12 colon cancers. These cases were unverified by specialists at the time, yet O'Connor referred to some of them as confirmed. In February 2009, the Alberta Cancer Board study finally revealed that only two cases of cholangiocarcinoma were identified in the Fort Chipewyan population and that Dr. O'Connor had misdiagnosed or simply exaggerated the other cases. As well, the report indicated that six cases of colon cancer were identified. Of the 12 cases of colon cancer reported by Dr. O'Connor, three had other forms of cancer, one had a non-cancerous colon tumour, and one had rectal cancer. In response to these complaints, Dr. O'Connor admitted that some patients he reported as having 'confirmed' cancer in fact had findings that were only suspicious for cholangiocarcinoma or other cancers. Thus, he should have used different language such as suspected cases versus confirmed cases when reporting his concerns (College of Physicians and Surgeons of Alberta, 2009). However, Dr. O'Connor admitted early on in the investigation he was mistaken in saying he had "diagnosed" the cancer cases and said he made every effort afterwards to correct that statement, by saying he "strongly clinically suspected" them (as cited in Doctor's Fort Chip cancer numbers disputed, 2009). There was some evidence of his efforts to correct these statements in the news, yet in the College's opinion, the damage had been done.

Finally, on the two remaining allegations that Dr. O'Connor's public statements harmed members of the Fort Chipewyan community and that his statements diminished the credibility of Health Canada and other public health officials with the community, the College wrote that it had "insufficient evidence to prove or disprove them" (College of Physicians and Surgeons of Alberta, 2009, p 12). Despite receiving the greatest proportion of media coverage, these complaints were dropped. In the end, a decision was made not to penalize Dr. O'Connor because, according to the report, "neither the [College of Physicians and Surgeons of Alberta] nor the complainants were of the view that imposing a penalty or some other punishment on Dr. O'Connor met the public interest" (College of Physicians and Surgeons of Alberta, 2009, p. 13). In a turn of phrase that simultaneously advocated for and against community advocacy, the College emphasized that:

> Dr. O'Connor's advocacy for the people of Fort Chipewyan, in bringing forward his concerns about a possible increase in the incidence of cancer and other health conditions, has never been and is not a matter of

> concern for either the complainants or the College of Physicians and Surgeons (CPSA), and is not and has never been an element of the complaint. To the contrary, any physician's advocacy in raising potential public health concerns is to be lauded. …The message that Dr. O'Connor and others may take from this review is the need for advocacy to be fair, truthful, balanced and respectful. (College of Physicians and Surgeons of Alberta, 2009, p. 12)

In November of 2009, the *Edmonton Journal*, the *Globe and Mail*, and the *CBC* all ran articles about Dr. O'Connor. The *Edmonton Journal*, referencing the Alberta Cancer Board study and the College's findings of misconduct suggested that O'Connor had been vindicated. O'Connor was quoted in this article saying, "The College has closed the file. There are no more complaints and I am in good standing… For me, this removes a big monkey off my back. I feel years younger" (as cited in Loyie, 2009, p. B8). The *CBC* took a more temperate approach reporting that the doctor's Fort Chipewyan cancer numbers had been "disputed" in the College's report (Doctor's Fort Chip cancer numbers disputed, 2009). This article stressed that neither the complainants nor the College of Physicians and Surgeons of Alberta wished to suggest that Dr. O'Connor acted improperly, instead "the message that Dr. O'Connor and others may take from this review is the need for advocacy to be fair, truthful, balanced and respectful" (Doctor's Fort Chip cancer numbers disputed, 2009). Finally, the *Globe and Mail*'s article seemed to discount the earlier cancer study. Titled, "Report casts doubt on MD's claims about Alberta reserve's cancer rates," (O'Neill, 2009, p. A2), its authors concluded by noting the highly ethical nature of the College's report, which found that many of Dr. O'Connor's public statements about his medical claims and the college's subsequent investigation were "inaccurate" and "untruthful" (O'Neill, 2009, p. A2). The probe also concluded that Dr. O'Connor "obstructed" efforts by the Alberta Cancer Board and Health Canada to investigate his claims by defying the law and ignoring repeated requests to turn over his clinical evidence in a "timely manner" (O'Neill, 2009, p. A2). This article in many ways seemed to question more than just Dr. O'Connor, and drew the entire comprehensive cancer study's findings into question.

Following this spate of articles, it seemed that "Fort Chip Cancer [was] still a Murky Topic" (Fort Chip Cancer still a Murky Topic, 2009). Whether the community was on the brink of receiving help was still uncertain. Neither industry executives nor government officials entertained the possibility that the oil sands industry was to blame, and most were still sceptical as to the existence of a cancer cluster. This was not only

because of repeated warnings that the disproportionate cancer rate in the community could be due to chance, based on increased detection, or caused by any number of sources, but because for much of the debate Dr. O'Connor had faced a host of accusations that seemed to cast the entire controversy in a questionable light.

Eventually, Dr. O'Connor left Fort Chipewyan to set up a medical practice in Nova Scotia. It was reported in the news he had done this because the events out of Fort Chipewyan were simply just "too much to handle" (as cited in Malek, 2011, p. 1). As of late 2011, he continued work with Fort Chipewyan patients over the internet, and periodically flew to Fort McMurray and Fort McKay to see them. The complaints against O'Connor would eventually also show up in a number of other news articles that suggested the province had been trying to suppress physician voices. For example, Sep 24, 2010 the *Edmonton Journal* ran an article titled "Ft. Mac doctors say bylaw will muzzle them; 'We have a right to advocate on patients' behalf" (Sinnema, 2010, p. B11). The article details other complaints against doctors across the province for speaking out. To date, Dr. O'Connor continues to advocate for the people of Fort Chipewyan, and to speak out against the oil sands.

6.1.4.1 Discussion

Three years had passed since the first CBC articles ran in 2006. The issues out of Fort Chipewyan still seemed unclear and inconclusive. The patient chart review in 2006 completed by the Alberta Cancer Board and Alberta Health & Wellness had been interpreted as reassuring residents not to worry about the cancer and death in their community. The 2006 round of arsenic research by Suncor Industries and the Alberta Health Department was left hanging and inconclusive for newsreaders. The 2007 environmental toxins research by Dr. Timoney and his colleagues had been effectively neutralized by Preston McEachern, head of science in the Oil sands Environmental Management division for Alberta Environment. Even when the official cancer report was completed in 2009, Fort Chipewyan residents were told that the higher than average cancer rates could be due to chance, based on increased detection, or caused by any number of sources. Added to all this, for most of the Fort Chipewyan debate, Dr. John O'Connor had been the subject of an official inquiry by the Alberta College of Physicians and Surgeons. A few months after readers learned about the disproportionately high cancer rate in Fort Chipewyan, the Alberta College of Physicians "accidentally" leaked

their investigative report. Though many news providers painted the College's findings as vindicating for Dr. O'Connor and Fort Chipewyan, in the end, this did not seem to matter. The report was an official inquiry into a prominent figure at the center of the debate. The detailed report and numerous allegations overshadowed and decontextualized many other parts of the evolving story. The Alberta government, with the help of the Alberta College of Physicians and Surgeons, had successfully disparaged Dr. O'Connor. As Gilligan and Pratt (2003) argue, official investigations, trials and public inquires purport to offer reliable and valid methods of finding the "truth" and ensuring that justice is served. When cast in this light, it was unclear whether Dr. O'Connor had truly been disingenuous with the Fort Chipewyan patient data. It mattered less that College's report seemed incomplete and only represented their "version of the truth" (McMullun, 2007), nor did it seem to matter that Dr. O'Connor had not been held accountable for any of the charges. In the end, the Alberta College of Physicians and Surgeons was widely recognized as a truth-seeking institution giving them a form of power and authority that negated much of the scientific evidence of environmental degradation that had accumulated to date.

6.1.5 Theme 10: Regaining Control of a Runaway Environmental Situation

In December of 2009, the *Edmonton Journal* ran an article titled "Oil sands Tainting Watershed" (Brooymans, 2009, p. A1). The article, and others to follow, reported on two studies undertaken by Dr. David Schindler, Erin Kelly, and colleagues (Kelly, Short, Schindler, Hodson, Ma, Kwan and Fortin 2009; Kelly, Schindler, Hodson, Short, Radmanovich and Nielson, 2010). Dr. Schindler is a Professor of Ecology in the Department of Biological Sciences at the University of Alberta in Edmonton, Canada. Erin Kelly was Schindler's graduate student at the time, and lead author of the study. The studies were published in the U.S. Proceedings of the National Academy of Sciences. The team's research examined contributions of polycyclic aromatic compounds and other elements toxic at low concentrations to the Athabasca River and its tributaries. The first study (2009) presented evidence that levels of toxic chemicals in the Athabasca watershed were up to 50 times higher downstream of oil sands developments (Kelly et al., 2009, p. 22349). The researchers also found that, Suncor and Syncrude deposit the equivalent of what was described as an oil spill's worth of bitumen into the surrounding environment each year (Kelly et al., 2009, p. 22349). News sources reported that these studies were backed by "a number of prominent scientists,"

based on “extensive data gathering,” and painted a bleak picture of the government’s *Regional Aquatic Monitoring Program* (RAMP) that Renner, then Environmental Minster, had previously proclaimed as exemplary (Brooymans, 2009, p. A1). An excerpt from the 2009 Kelly et al. study read:

> Since 1997, the RAMP, funded by industry and directed by a multistakeholder committee, has monitored aquatic ecosystems near the oil sands development. However, it lacks scientific oversight, and a peer review severely criticized its ability to detect effects. RAMP data are not publicly available, and the methods used to analyse, interpret, and report the data are not entirely transparent. (p. 22346)

The research team used a unique sampling method to collect data proving that the oil sands were in fact contributing contaminants to the environment beyond naturally occurring levels. Like the previous study by Timoney (2007), numerous water samples were taken by Kelly et al. (2009; 2010) indicating high concentrations of priority pollutants around historical industrial sites.[45] However, the researchers also sampled snowpack and snow-runoff. The snow within 50 kilometres of oil-sands operations was heavily contaminated with a long list of priority pollutants, including a neurotoxin that builds up in the food chain (Kelly et al., 2010). They specifically calculated that “about 1,200 kilograms of polycyclic aromatic compounds were released annually as part of the associated 1,800 tonnes of bitumen particulates and that there would also be another 500 kg of dissolved compounds” (Kelly et al., 2009, p. 22349). Polycyclic Aromatic Compounds (PACs) are found in oil, coal, as well as tar deposits and some PAC compounds are identified as “carcinogenic” and “mutagenic” (Agency for Toxic Substances and Disease Registry, 2012, p. 1). The researchers estimated that the “amount of bitumen released in a pulse would be equivalent to a major oil spill, repeated annually” (Kelly et al., 2009, p. 22349). As well, they found that the snowmelt runoff collected near the oil sands plants was black, and toxic to newly hatched minnows and other organisms (Kelly et al., 2009). Taken together, these findings cast serious doubt on the government’s assertion that the oil sands were not contributing toxins to the local environment.

Additionally, the provincial government had long argued that heavy metals found in the Athabasca River steadily increased in concentration proceeding downstream from

[45] Priority pollutants are legally regulated under *The Canadian Environmental Protection Act*, 1999 (CEPA 1999, section 76).

headwaters through to the river's basin due to natural erosion. In their 2010 study, Kelly et al. also tested this scenario and determined "that [heavy metals] were highest right around industrial development and as you move down river beyond that, they actually tail off, not to zero or to background, but they…tail off to a value that does reflect some natural input" (as cited in Brooymans, 2010a, p. A3). This suggested that the high toxin concentrations were not solely the result of nature erosion.

Not long after the studies were released, Schindler, Kelly, and other members of the research team presented their findings to Fort Chipewyan residents at a community hall meeting. The findings strongly suggested that the oil sands were adding toxins to the environment over and above any naturally occurring levels. As a result, both studies concluded that RAMP was "seriously defective." Kelly et al., (2009) wrote that:

> More than 10 years of inconsistent sampling design, inadequate statistical power, and monitoring-insensitive responses have missed major sources of PAC to the Athabasca watershed. Most importantly, RAMP claims that PAC concentrations are within baseline conditions and of natural origin have fostered the perception that high-intensity mining and processing have no serious environmental impacts. The existing RAMP must be redesigned with more scientific and technical oversight to better detect and track PAC discharges and effects. Oversight by an independent board of experts would make better use of monitoring resources and ensure that data are available for independent scrutiny and analyses. The scale and intensity of oil sands development and the complexity of PAC transport and fate in the Athabasca watershed demand the highest quality of scientific effort. (p. 22350)

Not surprisingly, Alberta Government scientists immediately disputed the team's findings. Preston McEachern, who had earlier disputed the arsenic study by Timoney was quoted by the *CBC* saying, "[t]he concentrations that are identified in this paper, and all of the monitoring that we have done, are very, very low for these PACs, well below any effects guideline and consistent with natural sources…" (as cited in Oil sands adding carcinogens to Athabasca River, 2009). Preston stuck to the argument that the toxins were "naturally occurring" and went on to assure readers that the *Regional Aquatic Monitoring Program* had been doing an exceptional job of monitoring the oil sands industry. He reported that the Alberta government acknowledges that oil sands plants release dust that settles in the surrounding environment, but disagreed with the contention that these toxins end up in the river or produce any environmental or human health problems (Oil sands adding carcinogens to Athabasca River, 2009). Preston also told readers that the government had been testing snowmelt runoff and had not seen the

spike in concentration of these compounds as found in the studies by Kelly, Schindler, and colleagues (as cited in Oil sands adding carcinogens to Athabasca River, 2009).

News articles surfaced over the next few months reiterating and expanding on many of the findings by Kelly et al. (2009; 2010). Some focused on mutated fish, or toxic metals, while others discussed Fort Chipewyan residents' concerns about cancer. During these months, it looked as though community members were finally gaining traction for their health and environmental concerns in the news. Then in December of 2010, The Royal Society of Canada released an expert panel report focused on the Fort Chipewyan issues. The Society describe themselves as a "pre-eminent body of independent scholars, researchers and creative people in Canada whose Fellows comprise a collegium that can provide intellectual leadership for the betterment of Canada and the world" (Royal Society of Canada, 2013, Mandate, Mission and Vision). They touted their report as "without a doubt the most comprehensive evidence based assessment of the full spectrum of major environmental and health impacts of Canada's oil sands industry" (Hrudey et al., 2010, Preface). In the report, society members were rather critical of stakeholders on all sides of the controversy and pointed out gaps in knowledge about the oil sands. For instance, the authors argued that there was no credible evidence that environmental contaminant exposures from the oil sands were reaching Fort Chipewyan at levels expected to cause cancer, and that overall, there was considerable uncertainty in the assessment of water quality responses in the downstream environment (Hrudey et al., 2010). They also found that the process for land and tailings pond reclamation was too slow, not technologically informed, and inadequate to support traditional land uses (Hrudey et al., 2010). Added to this they were uncertain how Canada could meet its international commitments for greenhouse gas emission while oil production was slated to steadily increase over the next few decades (Hrudey et al., 2010). Finally, they argued that there were valid concerns about RAMP that must be addressed. An excerpt from the report read:

> [t]he environmental regulatory capacity of the Alberta and Canadian Government does not appear to have kept pace with the rapid growth of the oil sands industry over the past decade. The environmental impact assessment relied upon by decision makers to determine whether proposed oil sands projects are in the public interest has serious deficiencies in relation to international best practice. Environmental data access for cumulative impact assessment needs to improve. (Hrudey et al., 2010, p.7)

The Royal Society's report was cast in two ways in mainstream media. The *CBC* ran an article titled, "Oil sands not boosting cancer levels: scientists," which discussed problems with monitoring of the oil sands, but opened by stating that a seven member panel from the Royal Society of Canada has determined that there is "no credible evidence" that contaminants from the oil sands are boosting cancer levels in downstream communities (2010). David Schindler responded, referring to both the Society's report as well as the *CBC* article, stating this was "awkwardly put." An excerpt read:

> [a]fter saying there's no evidence that any of these chemicals cause health effects in Fort Chip, which is guaranteed to be a red flag to people down there, they say that further study is needed. When I look at several obtuse conclusions like that, it's obvious that they are in some cases wording things to make it appear as though the absence of data means the absence of risk. (as cited in Brooymans, 2010d, p. B3) [46]

Taking a different stance, the author of a *Globe and Mail* article suggested that the report was aimed at all parties. Thus, the society's report:

> …paints Ottawa as an absentee oil-sands parent and laments Alberta's weak regulatory system, adding both governments' efforts haven't "kept pace" with development. It says industry has failed in efforts to restore mined land to its original state. But it tosses the stakeholders a bone, too, saying frequent claims of declining air quality and rising cancer rates have no scientific footing. (Wingrove, 2010, p. A15, quotation marks in original)

Despite mixed messages in the media, it seemed as though criticisms of RAMP were coming to a critical mass. The final blow had already begun to take shape on Sept. 30, 2010, a few months prior to the release of the Royal Society's report. Jim Prentice, then Federal Environment Minister, announced that the federal government was creating an independent advisory panel of experts to review the oil sands monitoring situation in its entirety. Five months later, in February 2011, not long after the Royal Society's report found its way into the press, the federal independent advisory panel reported its findings to Parliament. Elizabeth Dowdeswell, President and CEO of the Council of Canadian Academies and previous Executive Director of the United Nations Environment Program, chaired the committee. In reference to RAMP, she stated that:

[46] In 2012, Postmedia News released an article in which Kevin Timoney spent considerable time discrediting the Royal Society's Report (Souza, 2012).

> [t]he panel was unanimous in finding the current system wanting. We found fragmentation of effort. We found a lack of leadership and coordination. We found that activities were not integrated. We found that activities were not always credible because they lacked scientific rigour. We also found that raw data and information were not transparent and accessible in a timely manner in order to allow parties to draw their own conclusions and make their own basis for the judgments. We did not have confidence that the current approach was or would be sensitive to a very fast-paced, dynamic, and extensive oil sands sector or to changes either in technology or in climate… (Dowdeswell et al., 2011, p 1534)

Dowdeswell's statements, along with the Royal Society's report, and the findings by Kelly et al., stood in stark contrast to the views presented earlier in the year by the then Alberta Environmental Minister, Rob Renner. He had argued that RAMP was doing an exemplary job of monitoring the oil sands. The statements and findings also seriously discounted Dr. Preston McEachern's positive outlook on oil sands monitoring. The principal recommendation of the federal panel, led by Dowdeswell and accepted by then federal Environment Minister John Baird, was that a "shared vision was needed for monitoring the oil sands which would align priorities, policies, and programs" (Dowdeswell et al., 2011, p 1534). This vision was to be "developed collaboratively among stakeholders," and would require a "holistic and integrated monitoring and management framework be developed and implemented" (Dowdeswell et al., 2011, p 1534). In lieu of the federal panel review, the expectation was that a joint provincial/federal 'world class' oil sands monitoring system would be paid for by industry and would be in place by 2015 (Dowdeswell et al., 2011, p 1534).

Journalists reported that a "New Will to Monitor [was] Welcome" (2010, p. A16). In the months following, the *Edmonton Journal* reiterated that the federal panel found "significant weaknesses" in monitoring, and "[u]ntil this system is fixed there will continue to be uncertainty and public distrust" (New Will to Monitor Welcome, 2010, p. A16). The *CBC* reported, "A high-level scientific panel has sharply criticized the water quality monitoring system in Alberta's oil sands, going so far as to say 'there is no system'" (Oil sands panel recommends critical fixes, 2010). For the *Globe and Mail,* McCarthy wrote that the federal and provincial governments vowed to establish a "gold standard" of environmental monitoring "after a series of reports suggesting regulators were flying blind" (2010). Even Rob Renner, the Alberta Environment Minister who had repeatedly touted the Alberta oil sands monitoring system as exemplary, stated that David

Schindler, Erin Kelly and their research team would likely be consulted to put together a world-class monitoring system.

6.1.5.1 Discussion

For the people of Fort Chipewyan the sharp criticism of RAMP by the federal government seemed like good news. However, it was difficult to tell whether the federal review of provincial oil sands monitoring would result in positive outcomes. Independent scientists had already produced substantive evidence of environmental harm in the area. For instance, Dr. Timoney documented that arsenic and other “contaminants were not only found in fish, but also in waterfowl, muskrat, beavers, and moose — all of which are traditional foods that the community relies on” (as cited in Study contradicts earlier findings, 2007, p. 1). Schindler, Kelly, and colleagues demonstrated that Suncor and Syncrude deposit the equivalent of an oil spill's worth of bitumen into the surrounding environment each year (Kelly et al., 2009). Additionally, the comprehensive study completed by the Alberta Cancer Board and Health Canada had found that the cancer rate per person in Fort Chipewyan was 12 higher than the 39 expected (Chen, 2009, p. 8). There were also “higher than expected numbers of cancers of the blood and lymphatic system, biliary tract cancers as a group, and soft tissue cancers” (Chen, 2009, p. 8). Collectively, it appeared as though the mounting scientific evidence of harm had finally catalysed and that real change was on the horizon for the people of Fort Chipewyan. However, a different interpretation was that the federal government had effectively managed to unilaterally clean the slate, allowing the provincial government to regain control of the entire Fort Chipewyan environmental situation. It was as if the previous independent scientific efforts by Timoney, Schindler, and the Alberta Cancer Board had been subpar. The move to reinvigorate provincial oil sands monitoring by the federal government also seemed to supplant the firsthand environmental degradation experiences of the residents of Fort Chipewyan. In the end, the Alberta provincial government never once admitted that the oil sands industry was producing toxins; nor did they concede that Fort Chipewyan was in a health crisis. Instead, the promises to reinvigorate monitoring by the Alberta government meant that those who constituted risk in the first place would once again define it. In a way, the entire controversy seemed to vanish suddenly from the hands of Fort Chipewyan residents, concerned scientists, and the public’s consciousness.

6.2 Conclusion: Fort Chipewyan

Currently, it is difficult to say where Alberta is in terms of developing an exemplary oil sands monitoring system. Former Federal Environment Minister Peter Kent recently told the public that monitoring is on track, while the *Calgary Herald* reports that plan details are still murky (Ewart, 2012). The *Globe and Mail* reports that oil sands monitoring must be reliable if it is to be successful and then delves into reasons why monitoring is not yet a reality (Oil sands monitoring must be credible, 2012, pp. 1-2). A number of news sources have recently reported that Ottawa has broken their promises on oil sands monitoring to Aboriginal groups (Feds, Alberta 'break promise' on oil sands monitoring, 2012; Weber, 2013a). Other papers suggest that monitoring will finally allow us to determine whether the industry is truly harming the environment (McCarthy, 2010). However, as of late 2013, environmental monitoring is still not up and running (Weber, 2013a). Not to mention, even with a functioning monitoring system, it is uncertain if the warnings of government scientists will actually find their way into the mainstream media, and to the people of Fort Chipewyan. As of late, Environment Canada has essentially silenced its scientists, “ordering them to refer all media queries to Ottawa where communications officers will help them to respond with ‘approved lines’” (Munro, 2008, p. A1). Environment Canada scientists "shall not, speculate about events, incidents, issues or future policy decisions" (Munro, 2008, p. A1). More recently, government officials are issuing speaking lines to scientists (Schindler, 2013, p 2). David Schindler and many other Canadian scientists are worried. Schindler (2013) argues we

> must take government science back from politicians who would twist or hide science that reveals flaws in their policies. We deserve to know the truth about the impacts of proposed developments on our environment, in order to avoid mistakes that will be costly to future generations. (p. 3)

Schindler may be correct. Ultimately, it seems absurd to build a first-rate oil sands monitoring system, operated by silenced scientists.

Despite everything that has transpired, the residents of Fort Chipewyan continue to battle. The most recent chapter opened July 9, 2013, when *The Canadian Press* released an article titled “Oily sheen on Alberta river spreads to Fort Chipewyan; water intake still closed” (Weber, 2013b). The article quotes Eriel Deranger, spokeswoman for the Athabasca Chipewyan First Nation, stating:

> [t]here is obviously a petrochemical of some kind in the Athabasca River system in such great quantities from upstream that it is now residing on the shores of Lake Athabasca. There are numerous reports of dead fish being found along the delta, within the lake and the river system. None of the land users have ever heard of or seen anything like this on the Athabasca. (as cited in Weber, 2013b, p. 1)

Weber (2013b) adds that Chief Allan Adam and other Band members completed a helicopter survey of the river realizing that the sheen extended more than 100 kilometers in certain spots. As well, "[a] sheen was clearly visible in photographs taken by band members…" (Weber, 2013b, p. 1). Later that day, Jessica Potter and other Alberta Environment staff "took to the skies…and couldn't see anything" (as cited in Weber, 2013b, p. 1). The oil sands industry reported no spills, and both the government and the Band took samples for analysis (Weber, 2013b). Eriel Deranger, Communication Coordinator for the Athabasca Chipewyan First Nations, believed chemical analysis would "be able to tell fairly readily whether the substance is natural bitumen or a refined petrochemical" (as cited in Weber, 2013b, p. 1). In response, Potter said, "one possible explanation is that heavy rains recently caused an unusual amount of erosion along the banks of the river, which cuts through natural bitumen deposits (as cited in Weber, 2013b, p. 2). She failed to mention that the rain also leeches through some of the largest industrial projects on earth.

Finally, it appears Fort Chipewyan residents may receive the comprehensive health study they have been seeking. The proposed study will investigate residents in the tight-knit communities of Fort Chipewyan and Fort MacKay (Narine, 2013). Researchers will try to determine whether contaminants from oil sands developments in the Athabasca River are harming residents (Narine, 2013). Some, like John Rigney, director of special projects for the Athabasca Chipewyan First Nation, seem hopeful that this study might finally get them the help they need in terms of environmental and human health protection (Narine, 2013). Others, like George Poitras, CEO of the Mikisew Cree Council, are not as hopeful. Poitras states that:

> …there's no confidence by the leadership with Alberta Health or Health Canada because of our previous attempts to study health in Fort Chipewyan… The Council felt [the new study] was just more window dressing…[and] delay tactics. They felt they wouldn't get the degree of satisfaction…[that] was a priority for the community. (as cited in Narine, 2013, p. 13)

Ultimately, only time will tell what the future will bring for Fort Chipewyan and the surrounding Aboriginal communities. Perhaps the only certainty is that indigenous cultures will continue to fight to protect the environment, upon which the livelihood of humanity depends.

6.2.1 Building an Evaluative Framework for Greener Social Constructions

This chapter, like the previous chapter, sets the groundwork for an evaluative framework to examine socially constructed environmental realities by bringing together the dominant and influential stakeholders in a public conversation about the oil sands, human health, and the environment. However, unlike Marie Lake, most of the efforts to protect the Fort Chipewyan environment appeared less effective. This provides a different perspective in terms of the social construction mechanisms that form environmental realities. To summarize:

- Theme 6 titled, *Compartmentalizing the Fort Chipewyan Controversy as a Scientific Issue,* illustrates how the Fort Chipewyan controversy was primarily framed by stakeholders in the media as a scientific issue. Though residents' first-hand experiences with environmental and human harm received considerable news coverage, these were juxtaposed against government claims that the concerns were anecdotal. In fact, many Fort Chipewyan residents begrudgingly accepted that research was necessary to validate their own stores of human and environmental harm. This suggests the importance of depicting environmental controversies in ways that frame science as one part of a broader landscape of environmental decision-making.

- Theme 7, *Putting a Lid on the Erupting Cancer Controversy,* depicts the ways the initial patient review in Fort Chipewyan seemed like a hurried, preemptive, and ad hoc method to control the residents' demands for an examination into their safety, and to breed indeterminacy and indecision in the early stages of the controversy. The initial patient chart review reframed the Fort Chipewyan debate creating public doubt and altered the public's conceptualizations about what was at stake. Learning years later that the Fort Chipewyan environment was contaminated and that cancer was elevated stresses the importance of advocating for precaution in media portrayals of environmental issues.

- Theme 8, *Genuine Scientific Uncertainty versus Ideological Manoeuvring Disguised as Science,* illustrates that frequently scientific findings produce more questions than answers, which requires political precepts and values to lead environmental/industrial decision-making. In other cases, scientists improve clarity, building upon a factual framework on which

political solutions can be offered. Problematically, however, it is often difficult to discern whether emerging scientific frameworks are being countered with new empirical facts or with ideological manoeuvring disguised as science. Scientists must be prepared to portray their research effectively against a barrage of political weapons and in media atmospheres where offering suspenseful stories often takes precedence to presenting nuanced and contextualized environmental problems.

- Theme 9, *Questioning the Entire Cancer Controversy,* illustrates the hegemonic power of official and authoritative inquiries during the course of an evolving social/environmental controversy. Official investigations, trials, and public inquiries purport to offer reliable and valid methods of finding the "truth" to ensure justice is served (Gilligan and Pratt, 2003). However, such inquiries can overshadow and decontextualize other important details of an evolving dispute and supplant rival evidence indicative of environmental and human harm. Like theme one and six, this suggests the importance of depicting environmental controversies in ways that frame official legitimating authorities as just one part of a broader ideological landscape of environmental decision-making and truth-seeking.

- Theme 10, *Regaining Control of a Runaway Environmental Situation*, argues that the federal government's plan to reinvigorate provincial oil sands monitoring supplanted the residents' firsthand experiences with cancer, death, and ecological degradation. It also rendered the accumulated findings of environmental harm, impotent. The re-appropriation of the controversy meant the provincial government who initially constituted much of the risk to Fort Chipewyan once again defined the risk posed by the oil sands industry. This theme suggests the importance of recognizing attempts by government to appropriate environmental movements in order to secure how they are socially constructed and to subjugate other forms of knowledge.

Collectively, these themes form the second component (or Fort Chipewyan portion) of the evaluative framework that was introduced in the previous chapter, entitled *greener social constructions* (GSCs). As a reminder, GSC proponents are critical of the ways in which journalists, policymakers, scientists, environmentalists, and concerned publics include the environment and environmentalism in their communications. Based on the Fort Chipewyan thematic interpretation, GSC proponents:

> recognize that the constructivist environmental landscape is formed through various entities of varying power (e.g., publics, minority groups, scientists, legislators, and government agencies) trying to control depictions and definitions of risk/benefit when it comes to humans, nature, and animals. Proponents are recognized for their ability to differentiate and assess the ways these various entities gain their legitimacy/power and are particularly critical of the *legitimacy attached to*

> *certain "rules" and "methods" used above others* for seeking "the truth" in order to define our environmental realities (i.e., the rules depended upon to define the Fort Chipewyan ecosystem as toxic by nature, or the oil sands industry as eco-friendly, or local environmental concerns as warranting precaution).

The complete theorizing framework, integrating the Marie Lake and Fort Chipewyan themes, is set out and contextualized in the following chapter. This final chapter also responds to research questions in greater depth and discusses the concept of GSCs in detail.

Chapter 7

Conclusion: Greener Social Constructions

> *Can we move nations and people in the direction of sustainability? Such a move would be a modification of society comparable in scale to only two other changes: the Agricultural Revolution of the late Neolithic and the Industrial Revolution of the past two centuries. Those revolutions were gradual, spontaneous, and largely unconscious. This one will have to be a fully conscious operation, guided by the best foresight that science can provide…. If we actually do it, the undertaking will be absolutely unique in humanity's stay on the Earth.*
>
> *-William D. Ruckelshaus, 1994, p. 348*

The main research questions investigated in this dissertation are discussed in greater detail in this final chapter. In the process, many of the environmental reform challenges that Marie Lake, Fort Chipewyan, and Canada face are outlined. First, the chapter reviews the discretionary character of Canadian environmental law and policy. The implications of this discretion are discussed in relation to the events out of Marie Lake and Fort Chipewyan. Second, the chapter reviews research examining the extent to which environmental injustice is a product of racial discrimination, racial inequality, socio-political exclusion, and/or some combination of all three. Third, the chapter contextualizes the main themes developed in this dissertation amongst the broader environmental literature. The themes demonstrate some of the ways in which scientists, journalists, environmentalists, and other concerned members of the public, have been alienated from the environmental movement. It is argued that this alienation has made achieving a shared vision for environmental reform difficult. Fourth, the chapter delineates the *greener social constructions* (GSCs) framework advanced throughout this dissertation. The logic and necessity of the framework are explained. Fifth, the framework is contextualized in the broader academic literature, discussing the ways that GSCs support the aspirations of ecological modernists (Mol and Spaargaren, 2000), build upon Foucault's notions of power and knowledge (Foucault and Gordon, 1980), and add to White's and Watson's parsimonious contextual model for environmental

decision-making (as cited in White, 2008). Finally, the last section of this dissertation presents examples of *GSCs* in theory and practice. In particular, a number of researchers and policymakers have proposed solutions for meeting the needs of humans, animals, and ecosystems in collaborative and sustainable ways. Some of the more promising examples are reviewed.

7.1 Expanding on the Research Questions

Three main research questions guided the inquiry in this dissertation. The first prompted an examination of the ways in which the Marie Lake and Fort Chipewyan controversies unfurled in the provincial and national news media. Responses to this question are not discussed here, but are found instead in the contextualized depictions in Chapters 5 and 6. To rekindle the reader's memory, the first part of Question 2 asked if the Marie Lake and Fort Chipewyan controversies resulted in meaningful environmental policy reforms. For Marie Lake, the *Lower Athabasca Regional Plan* (LARP) purportedly set the "stage for robust growth, vibrant communities and a healthy environment within the region" (Environment and Sustainable Resource Division, 2012, p. 2). In Fort Chipewyan, reform would only become plausible when the federal government promised to reinvigorate provincial oil sands monitoring, bringing the *Regional Aquatic Monitoring Program* (RAMP) up to "world-class" and "gold" standards (Dowdeswell, 2011, p. 1534; McCarthy, 2010, p. 1). As of late 2013, it is too early to tell whether either of the reforms that emerged will be truly meaningful, but if Canada's environmental reform history is any indication this author is doubtful. At some point in the mid-1990s, true environmental reform virtually stopped in Canada (Boyd, 2012). In 1993, an international assessment of worldwide environmental laws concluded that, "there exists no coherent or comprehensive legislative and regulatory scheme to protect the environment" in Canada (Handy and Hamilton, 1996, p. 9).

In fact, in no other sphere have subjective inequalities come to be dominated by the powerful than in the environmental sphere (White, 2008). The environmental domain is perhaps the only realm where there has been a retrenchment of rights in Canada across the 20th and early 21st century. Human and non-human animals that are directly dependent on the environment for their livelihoods have been particularly hard-hit by this retrenchment. For example, though the Marie Lake ecosystem might have been damaged had the oil sands project proceeded beneath the lakebed, it seems unlikely

that the residents would have developed serious health problems. Fort Chipewyan residents, however, continue to experience major disruptions in their day-to-day lives. The contamination of their lands continues to impede hunting, fishing, and ceremonial activities. Even worse, the industrial pollution has likely resulted in sicknesses, cancers, and death in their community. Because most Canadians, like Marie Lake residents, are not intimately connected to the land for livelihood, cultural, and/or spiritual reasons, there is less pressure on government to take notice of the biosphere and non-human species. Instead, indigenous peoples are often left to fight these environmental battles on their own. The result is that Canada is currently home to pervasive policy weaknesses, while discretion, non-enforcement, and ambivalence are some of the main defining features of Canadian environmental law (Schrecker, 2001; Boyd, 2013). Boyd (2003) writes, "Environmental laws are almost always drafted in such a way as to give Canadian governments the *power* to take legal action or meet specified standards, but *no duty* to take action or meet those standards" (p. 231, italics in original).

Discretionary law results in scant political action aimed at protecting the environment. For example, discretion is seen in the first few lines of the *Canadian Environmental Protection Act* (1999) where the "[g]overnment of Canada acknowledges the need to *virtually* eliminate the most persistent and bio-accumulative toxic substances" (Preamble, italics added). However, there is no obligation to completely eliminate these substances, while legislators, as opposed to scientists, evaluate less toxic, persistent bio-accumulative substances on a case-by-case basis (Boyd, 2003). Discretion also shows up in almost every environmental law, regulation, and policy in Canada. Words like "should" and "may" are found in the place of "must" and many environmental laws seem to be little more than empty demonstrations of political concern. For example, Part 1 of the *Lower Athabasca Regional Plan* (2012) for oil sands development informs readers that the Introduction, Strategic Plan, and Implementation Plan are not legally binding (Environment and Sustainable Resource Division, 2012, p. 2). Only the Regulatory Details Plan is binding—subsections of which state that the Designated Minister *may choose* to follow sections of the Strategic Plan or the Implementation Plan. For example, section 16(1) reads that "[t]he Designated Minister *may* take whatever steps that *in the opinion* of the Designated Minster are *desirable* for achieving the conservation objectives of the LARP Strategic Plan and LARP Implementation Plan…" (Environment and Sustainable Resource Division, 2012, p. 43, italics added). Additionally, the sections involving actual air, land, and water protection

are worded tentatively. For example, s. 23(1) regarding Air Quality reads, “[t]he Designated Minister in the exercise of [their] powers and duties under this Part *may* determine (a) the measurement of substances of concern at monitoring stations…” (Environment and Sustainable Resource Division, 2012, p. 48, italics added). There is no requirement that the Minister must determine such measurements, nor is there a requirement that the Minister must consult scientists to set safe standards. This sort of discretion and lack of scientific input dramatically impedes political accountability and subverts the judicial system’s ability to act as a check and balance when it comes to environmentally harmful bureaucratic and corporate decision-making (Boyd, 2003). In addition, this discretion does not bode well for Marie Lake or Fort Chipewyan, as there is no legal duty to set strict oil sands monitoring standards in the province of Alberta. In particular, this means that Fort Chipewyan residents are very likely to continue to suffer the cumulative effects of expanding oil sands exploitation and pollution.

Another reason that meaningful reforms out of Marie Lake and Fort Chipewyan are unlikely is found in Canada’s overarching approach to addressing climate change. Canada is party to a *National Action Strategy on Global Warming* (Environment Canada, 1990), *Canada’s National Action Program on Climate Change* (Environment Canada, 1995), the *Government of Canada Action Plan 2000 on Climate Change* (Environment Canada, 2000), the *2009 Copenhagen Summit* (Pratt, 2013) and numerous other plans, strategies, accords, and initiatives. Nonetheless, these plans are nonbinding, unratified, and the Canadian Federal Government has taken virtually no concrete steps to decrease greenhouse gas emissions. A detailed study by the Pembina Institute concluded that only about one-third of the above initiatives have actually been acted on, almost all of which involved soft measures like voluntary initiatives, education, and research (Hornung and Bramely, 2000). Added to this, the Conservative Government, under Prime Minister Stephen Harper has:

> …stopped funding the Canadian Foundation for Climate and Atmospheric Sciences, disbanded Environment Canada's Adaptation to Climate Change Research Group, and eliminated the role of chief science advisor. And since 2008, political minders have vetted all media requests for the country's 23,000 federal scientists [regarding climate change issues]. (Nikiforuk, 2013, p. 20)

Canada also backed out of the Kyoto Protocol. The Prime Minister, Stephen Harper, described Kyoto as a "socialist scheme" that was "job-killing [and] economy-destroying"

(Nikiforuk, 2013). The Protocol committed the country to cutting greenhouse gas emissions 6% below 1990 levels (Pratt, 2013). Instead, Canadian emissions have climbed. Federal figures released in October of 2013 show moderate rises in emissions after moderate decreases in the previous half-decade (Pratt, 2013). By 2020, emissions are predicted to be 20 per cent higher than the climate change targets set at the 2009 Copenhagen Summit, and not remotely close to the targets set by the Kyoto Accord (Pratt, 2013).

Taken together, Canada's failure to address climate change, and the fact that discretion, non-enforcement, and ambivalence are some of the main defining features of Canadian environmental law, suggests that Marie Lake and Fort Chipewyan reforms are unlikely to be truly meaningful. Canadian environmental law and policy are better conceptualized as an overarching appeasement to placate activists, scientists, and concerned publics by initiating moderate measures while obscuring pervasive environmental neglect. In this discouraging legal and policymaking context, it seems improbable that the environmental reforms resulting from Marie Lake and Fort Chipewyan will be any different. For instance, though the stoppage at Marie Lake was a success, whether other eco-sensitive oil-rich places across Alberta will be protected is uncertain. As oil sands' reserves diminish and energy prices climb, as opposed to searching for alternative energy sources, the deeply entrenched oil sands industry is likely to resort to the customary strategy of using persuasive advertising campaigns, aimed at garnering public support to extract oil from beneath lakebeds in purportedly eco-friendly ways. For example, it was not until oil reserves around the world were on a downturn in the late 1980s and the price of oil reached an unsurpassed high that oil sands mining, traditionally considered too expensive, inefficient, and ecologically harmful, became a lucrative investment option (Chastko, 2004). With the oil sands industry firmly entrenched in Canada, it is difficult to predict whether the bitumen below Marie Lake will remain untouched for long.

Whether truly meaningful environmental reform is on the horizon for Fort Chipewyan is also questionable. The mega-projects in the Fort Chipewyan area seem to represent another chapter in a continued effort to abrogate the treaty rights, livelihoods, and cultures of Aboriginals in Canada. Mike Mercredi aptly termed this the "slow industrial genocide" of his people in his hometown of Fort Chipewyan (as cited in Ho, 2008). Additionally, even if the *Regional Aquatic Monitoring Program* turns into a "world-

class" system and provides robust evidence that the oil sands industry is harmful for humans and natural environments in the Fort Chipewyan area, it seems unlikely that substantive ameliorative steps will follow. As discussed in earlier chapters, even when scientific findings of harm are conclusive, political decision-making need not follow suit. For example, despite convincing evidence that numerous health consequences are directly associated with modern industrial production and toxic waste by-products, political action is seldom taken (see Lynch and Stretesky, 2001). Notwithstanding a host of scientific studies suggesting the negative effects of genetic modification on plant diversity and human health, Canada is one of the world's largest exporters of genetically modified crops (see Boyd, 2003). Finally, irrespective of scientific evidence that agricultural and urban runoff are some of the most serious pollution concerns faced in Canada, sparse political action has occurred to address this issue (see Fluegel, 2008). These apathetic responses to serious environmental problems are reiterated by the events out of Fort Chipewyan, where independent scientists produced robust evidence of environmental harm (Kelly et al. 2009; Kelly et al. 2010; Timoney, 2007) and a comprehensive government study found a disproportionate cancer rate in the community (Chen, 2009). Nevertheless, stakeholders in the media often portrayed these findings as anecdotal, indeterminate, and even anti-capitalist. In the end, the Alberta provincial government managed to regain complete control over regional monitoring in the Fort Chipewyan area. In this context, even if the RAMP does unearth robust evidence of environmental damage, Alberta's northern environment is unlikely to be protected, not simply because those who constitute the risk define it, but because evidence of environmental harm is rarely ever enough to produce meaningful environmental reforms. Even worse, this seems especially true when it is Aboriginal peoples' livelihoods at risk.

The second part of Question 2 was designed to elicit a more subjective research response, prompting a discussion of the reasons for the different outcomes between Marie Lake and Fort Chipewyan. It should be noted that the controversies were certainly not equivalent for the purposes of making controlled comparisons. Marie Lake involved a junior oil sands company that proposed to extract bitumen beneath a recreational lake bounded by a rather affluent and primarily white community. Fort Chipewyan pitted a rural Aboriginal community with relatively few resources against senior oil sands companies that had been operating in the area for decades. Marie Lake residents were successful in terminating the proposed industrial project, while Fort Chipewyan residents continue to be exposed to contaminants from the oil sands industry. They also await the

implementation of a comprehensive health investigation, as well as effective air and water quality monitoring. In addition, Fort Chipewyan residents now face the potential construction of the TransCanada Keystone XL pipeline, all but guaranteeing the continued expansion of the oil sands industry upstream from their homes.

To a degree, this author expected the different outcomes between the controversies. In particular, minority populations are subjected to a disproportionate amount of environmental pollution and health risks when compared to white communities (Pellow and Brulle, 2005; Saha and Mohai, 2005; Stretesky, Johnston, and Arney, 2003). However, why Fort Chipewyan's residents and many Aboriginal communities worldwide disproportionately suffer the effects of environmental degradation is a somewhat more difficult question to answer. Some researchers have argued that environmental injustice is a function and/or form of racism (Westra, 2008; Mascarenhas 2012). Laura Westra, an emerita professor at the University of Windsor Canada, argues that government assisted industrial pollution of indigenous peoples is a form of "environmental racism" and "biological genocide." In, *Environmental Justice and the Rights of Indigenous Peoples* (2007), Westra makes the case that continued industrial development in the West is an unalloyed, even criminal assault on the right to self-determination of indigenous peoples. She proposes that, "[i]f the rights of indigenous peoples are based, first, on their rights to biological integrity and natural function; and second, [if] these rights cannot be separated from the protection of the ecological integrity of their lands; then third, entrenching such rights would limit the freedom of Western industrial operations to commit crimes" (Westra, 2008, p. 19). She believes that because indigenous cultures have a right to their land and self-determination, any practices that degrade their ecosystems are an attack on indigenous peoples' ecological integrity and represent a form of environmental racism. Taken a step further, she argues, these attacks fit under the category of biological genocide (Westra, 2008).

In a similar vein, Michael Mascarenhas (2012) argues that race relations have changed dramatically in Canada since the introduction of neoliberal and capitalist agendas. Unlike traditional forms of racism furnished through government and legitimized using biological categories, neoliberal racism is presented in a language of the "morality of the marketplace" and the "primacy of individual solutions" when it comes to environmental problems (Mascarenhas, 2012, p. 123). Mascarenhas (2012) asks readers to conceptualize racism as a highly entrenched and institutionalized set of

practices that privilege the social reproduction of some groups over others in surreptitious and unnoticed ways. Today's racism, Mascarenhas argues, is normalized by Canadians. For example, market forces like resource extraction are viewed as "neutral and nonracist," while neoliberal and capitalist endeavours protect white Canadians and their consumptive and consumerist interests to the detriment of Aboriginals who are ostensibly more closely connected to ecological integrity (Mascarenhas, 2012, p. 137). Mascarenhas (2012) argues that this form of institutionalized racism is sanctioned through "colour blind" (p. 137) ideologies that value capitalist expansion without questioning the obvious fact that such expansion systematically harms ethnic minorities.

Environmental racism and injustice are also clearly tied to poverty and class. Though numerous researchers conclude that racism is a major factor for environmental injustice, there is disagreement about the extent to which environmental injustice is a product of racial discrimination, racial inequality, socio-political exclusion, and/or some combination of all three. Mohai, Pellow, and Roberts (2009) tell readers this controversy has come to be more simply known as the "race versus class debate" in environmental justice research (p. 411). Studies on the subject have examined the extent to which racial disparities persist when controlling for socio-economic variables. This research has practical implications in terms of determining where to focus help when it comes to environmental injustice issues. In particular, the researchers hope to differentiate to what extent efforts should be focused on race, class, and/or poverty in order to achieve environmental reform. Mohai et al., (2009) review two decades of research and conclude that "[h]undreds of studies have now documented unequal exposures by race, ethnicity, and economic class" (p. 425). The "…disproportionate impact of hazards on minority communities can occur regardless of racist intent" (p. 425). "Explanations for the existence of environmental injustice include economic inequality, socio-political exclusion, and racial discrimination" (p 425). Other researchers, such as Masuda et al., (2008) cite similar findings about the interactive effects of race, class, and power. Ultimately, all three factors play a part in environmental injustice.

The events out of Marie Lake and Fort Chipewyan seem to conform to the aforementioned findings. Affluent, white, and politically empowered Marie Lake proponents were able to fend off the looming oil sands development, while Fort Chipewyan residents, who have been disenfranchised from their land and culture for

generations, continue to fight against proponents of the oil sands. In sum, environmental degradation frequently travels the path of least resistance though impoverished, disempowered, and ethnic minority communities. Fewer resources and less political influence can make it difficult to hire lawyers, mobilize the media, enlist environmental advocates, and recruit the help of authority figures. Minority status can mean that poor communities, particularly those dependent on nature – and oftentimes on capitalist ventures - for their livelihood, are more likely to be subjected to environmental harm and are less likely to have the resources to fight back against industry and government perpetrators.

Additionally, class, racial inequality, and one's dependence on nature for survival intersect, increasing the probability of having to navigate the defunct Canadian environmental legal system. For example, Aamjiwnaang is an Aboriginal reserve near Sarnia, Ontario, that appears to be dangerously contaminated by industry (Hoover et al., 2012). The concerns out of Aamjiwnaang virtually mirror the concerns out of Fort Chipewyan. The tiny reserve is surrounded by "62 major industrial facilities located within 25 km, including oil refineries, chemical manufacturers (40% of Canada's chemical industry), and manufacturers of plastics, polymers, and agricultural products" (Hoover et al., 2012, p. 1646). Hoover et al., (2012) write that:

> Levels of air pollutants, including volatile organic compounds, are high (Atari and Luginaah 2009). In 1996, hospital admissions for women in Chemical Valley were 3.11 times the expected rates for women and 2.83 times those for men than would be expected based on other rates for Ontario. These admissions were especially pronounced for cardiovascular and respiratory ailments, and were hypothesized to be pollution related (Fung et al. 2007). About 40% of Aamjiwnaang residents require the use of an inhaler, and 17% of adults and 22% of children are reported to have asthma (MacDonald and Rang 2007). The ratio of male births declined over the period of 1984-1992 from > 0.5 to about 0.3, a change that may at least partly reflect effects of chemical exposures (Mackenzie et al. 2005.) Releases of chemicals have also interfered with the community's cultural life, affecting hunting, fishing, medicine gathering, and ceremonial activities (MacDonald and Rang 2007).

Notwithstanding these disconcerting problems, Aamjiwnaang has received no meaningful support from the federal or provincial government. The independent research cited by Hoover et al. (2012) strongly suggests that the community is being contaminated by industry, but this has not resulted in tighter emissions controls. Consequently, the law firm, EcoJustice (2013), applied for Judicial Review of the

Aamjiwnaang controversy in 2010. Lawyers are arguing that the provincial Environmental Ministry's ongoing approval of pollution in Sarnia is a Charter of Rights violation. The pollution violates the community members' right to life, liberty, and security of the person, as well as their equality rights. The lawyers are currently involved in multiple procedural conflicts. In particular, the litigants must prove the causal links between pollution and the development of health problems in the community. The events out of Fort Chipewyan suggest this will be a particularly difficult task.

In the end, it is very disconcerting that a number of Aboriginal communities across Canada have increasingly been forced to be the proverbial "canaries in the coalmine," suffering the initial and substantive effects of non-sustainable forms of production, capitalism, and environmental degradation. Ultimately, however, it is difficult to make the case that the pollution Fort Chipewyan residents continue to experience is exclusively a matter of environmental racism. In fact, exclusively focusing on environmental racism may be counterproductive to more inclusive environmental thinking. Such narrow conceptualizations have furnished portrayals of environmental harm as though these are mostly problems for Aboriginals to solve. Much pollution in Canada has begun to move beyond racial boundaries and is affecting poor communities—and communities in general—around the world that have limited resources and few legal recourses at their disposal. This is coupled with the fact that the environmental justice system is Canada is virtually unnavigable. For example, it is the legal right of all citizens to lay charges against corporations that break environmental laws, but this process is riddled with difficulties. For example, environmental citizen suits in Canada are subject to supervision by the provinces Attorney General who can either allow a prosecution to proceed, or take over the case (Boyd, 2003). Ontario has been successful allowing numerous prosecutions, while attorney generals in Alberta, British Columbia, and Newfoundland have predominately stonewalled efforts by dropping charges (Boyd, 2003, p. 247). Consequently, some environmental laws such as the *Environmental Protection Act* now contain citizen suit provisions, which explicitly recognize the right of all citizens to take alleged environmental regulation violators to civil court in situations when the attorney general fails to do so. These suits are based on proving the causes and consequences of pollution on a balance of probabilities, rather than beyond a reasonable doubt. A balance of probability standard requires much less certainty than does proving a case beyond a reasonable doubt. Despite these progressive developments, Boyd (2003) tells readers that citizen suit provisions in

Canadian environmental law are so complex as to be virtually unworkable. The recent Charter challenge out of Aamjiwnaang seems to demonstrate this reality. Citizens are highly dependent on legal and scientific expertise and must jump through a series of hoops before action is possible. In many provinces, the suits have never been used successfully (Boyd, 2003). Ultimately, race, poverty, unequal access to justice, and a virtually unworkable Canadian environmental legal system all make it extremely difficult for residents in communities such as Fort Chipewyan and Aamjiwnaang to fight against industrial polluters.

Question 3 contained two parts. The first part asked for an examination of the ways in which human interests and environmental issues were portrayed in the mainstream news media across the two controversies. The second part asked for a discussion of the implications of these portrayals for environmental social constructionism. In Marie Lake, the human and environmental concerns were portrayed as primarily separate and the dispute was initially conveyed as a number of smaller disparate issues. At times, Marie Lake was cast as a seismic exploration issue; at other times, it was a policy dilemma. Other articles portrayed it as a recreational concern, or a technological debate. Most often, however, environmental worries were presented at though they were separate from the concerns of the Marie Lake residents. Issue mobilization faltered until the Marie Lake controversy coalesced from the ground up and became symbolic of a political history encapsulating province-wide greed, relentless oil sands development, failing democracy, deteriorating infrastructures, flawed policies, slow science, and poor decision-making; all of which were connected to concerns about the cumulative environmental harms caused by the oil sands industry. The issue eventually became so symbolically charged that it was impossible for policymakers to ignore.

The Fort Chipewyan controversy was portrayed from its outset as a scientific issue that hinged on gaining access to the most powerful forms of authority, including independent scientists, government researchers, and investigative bodies in order to legitimize various claims to the “truth.” Focusing on science meant broader value based discussions about alternative energy sources, democratic decision-making, global warming, human connections to nature, and environmental injustice were frequently excluded. These issues failed to coalesce into a prolonged social commentary, while scientists alone seemed ill prepared to resolve the Fort Chipewyan debate that was

steeped in political and industrial rhetoric. Scientific findings of environmental harm were oftentimes inconclusive and politically impotent. Other times, research findings were conclusive, but easily redefined and confounded by ideology or overshadowed by other equally powerful authoritative and/or investigative bodies.

Asserting that many of the Marie Lake and Fort Chipewyan issues were compartmentalized falls in line with Shellenberger's and Nordhaus' widely debated article, *The Death of Environmentalism* (2005). The authors blame environmentalists for compartmentalizing environmental issues. They propose that activists and environmental scientists have succeeded in carving out a niche of problems that are decidedly environmental, made even more unfamiliar to society by what are often technical and scientific characterizations (Shellenberger and Nordhaus, 2005). They maintain that the green movement is on its deathbed, because it still relies on tiresome technical and scientific narratives and categories (Shellenberger and Nordhaus, 2005). In the end, they exhort environmentalists to embrace the death of environmentalism by reframing the meaning of the environment to align their causes with broader public and political values (Shellenberger and Nordhaus, 2005). In their follow up book, *Break Through: From the Death of Environmentalism to the Politics of Possibility* (2007), they argue that environmentalists "must no longer put concepts like 'nature' or 'the environment' at the center of [their] politics" (Nordhaus and Shellenberger, 2007, p. 17). They must transcend "environmentalism" to become cultural promoters of an actively imagined social future with less borders (Nordhaus and Shellenberger, 2007, p. 17). When this occurs, they believe that "post-environmental" politics will be "anthrophilic," rather than "biophilic" (Nordhaus and Shellenberger, 2007, p. 153). Thus, as opposed to seeing nature as a separate entity to be cherished (i.e., biophilic), humans will embrace their oneness and connection with nature (i.e., anthrophilic) in ways that promote a crucial new era of technological advancement melded with an ecologically informed society. They write that "[o]nce we abandon the belief that there exists a nature or a market separate from humans, we can start to think about creating natures and markets to serve the kind of world we want and the kind of species we want to become" (Nordhaus and Shellenberger, 2007, p. 235).

Shellenberger's and Nordaus' (2005; 2007) critique of compartmentalized environmental thinking is compelling, and has received considerable attention in the literature. There was certainly evidence in the media's portrayals of the Marie Lake and

Fort Chipewyan controversies, suggesting that environmentalists have contributed in building a cogent socially constructed divide alienating humans from nature. For example, Marie Lake pro-environmentalists seemed reticent to portray their own eco-friendly interests without also tacking-on conventional environmental concerns about issues like biodiversity and/or aquatic ecosystem health. Few news articles simply discussed favourite fishing spots, cottages, and hiking trails without also discussing the environment as though it was its own separate issue of concern. The media depictions seemed to present the generally eco-friendly interests of the residents and activists as insufficient reasons for saving the lake, while at the same time, many social actors seemed compelled to speak about ecological concerns as though their own reasons for saving the environment were inadequate. In Fort Chipewyan, environmental advocates also contributed to compartmentalizing the issues. The health and environmental issues were primarily categorized as scientific problems at the expense of other important conversations about Aboriginal rights, climate change, and alternative energy sources. Ultimately, both controversies saw pro-environmentalists dedicating considerable time to reducing and categorizing environmental concerns as a means to fight against government and industry, as opposed to discussing how all the issues, whether economic, political, living-space, recreational, moral, legal, or other, were fundamentally environmental issues. This repeated boxing-up of the natural environment made it difficult to meaningfully conceptualize and discuss the ways these environmental issues intersected with other social realms. This made achieving a shared vision for environmental reform difficult when it came to Marie Lake and virtually impossible when it came to Fort Chipewyan.

Ultimately, environmentalists have contributed in building a socially constructed divide alienating humans from nature. However, Shellenberger and Nordhaus only tell part of the story when they solely blame environmentalists, discounting the central role of industry and government in this process. For example, events at Marie Lake and Fort Chipewyan also demonstrated some of the ways in which industry routinely endorses itself as “eco-sensitive,” “sustainable,” and/or “green,” and often portrays ecological degradation as an unavoidable evil, necessary for jobs and economic prosperity. The controversies also illustrate that politicians frequently go to great lengths to deny and/or scapegoat flawed environmental policies that allow industry to degrade the environment. In addition, both controversies showed that policymakers often turn to powerful investigative bodies, who offer mechanisms and procedures by which the “truth” can be

aggregated, confirmed, or denied (McMullan, 2007). These authoritative bodies often support continued economic growth, thereby normalizing ecological degradation. Finally, both controversies illustrated "environmental managerialism," whereby policymakers frequently enact environmental laws for little more than appearance's sake (Redclift, 1986). From this perspective, environmentalists are not the only ones to blame; ultimately, industry and government also play a substantive role in obscuring human/nature relationships. Like environmentalists, industry executives and political leaders have also had difficulty offering any sort of eco-capitalistic vision for the future that melds human and environmental interests. For example, Canada's abysmal environmental record is not due to natural factors such as climate and geography (Gunton and Calbick, 2010, p. 1). It is instead the result of industrial and government policy. For example, Gunton and Calbick (2010) argue that:

> [i]f Canadian environmental policies were comparable to the top three OECD countries, Canada's environmental rank would move from 24th to 1st in the OECD. This finding is good news for Canadians because it shows that our poor record is caused by public policy factors that we can control; rather than factors that we cannot control, such as climate and geography. Canada has the capacity to improve its environmental performance dramatically and become a world leader in sustainability if it strengthens its environmental policies. (p.1)

Taken together with the Marie Lake and Fort Chipewyan findings, this suggests that environmentalists are not the only ones to blame for compartmentalizing nature. Instead, it has been difficult for social actors on all sides of the environmental debate to portray a cohesive green vision for the future.

In addition to the aforementioned, Question 3 also prompted a discussion of the implications of the human and environmental portrayals out of Marie Lake and Fort Chipewyan in regard to environmental social constructionism. Thus far, it has been argued that social perceptions about the environment have been badly vitiated at multiple levels and from numerous directions. Though it is true that some environmentalists expect the virtual withdrawal of humanity from nature, or depict nature as a technical problem for scientists to deal with, it is also true that industrialists and politicians deny, normalize, and repress environmental harm at every turn. The Marie Lake and Fort Chipewyan research demonstrated both realities. In general, this implies that industrialists, politicians, scientists and environmentalists, have built a deep socially constructed divide that separates humans from nature. Furthermore, this suggests that

the eco-enlightened and reflexively modern thinking envisioned by theorists like Beck (1992) as well as Mol and Spaargaren (2000) is a distant reality. Instead, Bauman's (2005) portrayal of a liquid reality seem more pertinent today, where gadgets and consumables provide escape from the seemingly insurmountable and disheartening socially constructed obstacles that alienate us from making meaningful environmental differences. Arguably, many people feel lost when it comes to truly affecting environmental change. From this perspective, the immediate priority when it comes to achieving environmental reforms is not about creating more eco-solutions or designing more eco-policies to combat environmental problems, though this is always helpful, in as much as figuring out ways to dispel the socially constructed myths that continue to impede the widespread adoption of such innovations and policies. With this idea in mind, the following section finishes answering Question 3, which focused on the implications of the human and environmental portrayals out of Marie Lake and Fort Chipewyan, by discussing the idea of *greener social constructions* that has been developed throughout much of this dissertation.

7.2 Greener Social Constructions

Arguably, Shellenberger's and Nordhaus' (2005; 2007) writings were widely debated in the literature because they advocate for a fundamental shift in how environmentalists think. They write:

> [e]nvironmental groups have spent the last 40 years defining themselves against conservative values like cost-benefit accounting, smaller government, fewer regulations, and free trade, without ever articulating a coherent morality… Most of the intellectuals who staff environmental groups are so repelled by the right's values that we have assiduously avoided examining our own in a serious way. Environmentalists and other liberals tend to see values as a distraction from "the real issues" [emphasis in original] – environmental problems like global warming. (2005, p. 33)

The authors conclude that environmentalism needs to be reformulated to close the divide between humans and nature. This, they believe, will come in the form of public opinion research elucidating the important bridging values aligning ecological imperatives and human interests. They write that, "[i]f environmentalists hope to become more than a special interest [they] must start framing [their] proposals around core American values" (Shellenberger and Nordhaus, 2005, p. 33). Problematically, however,

this not only absolves government and industry of responsibility, but also presupposes that some sort of middle ground exists between right-wing values and ecological imperatives that simply need be elicited from the public. This assertion overlooks the fact that even staunch conservative environmentalists have been unable to articulate the eco-capitalistic and reflexive values needed to get widespread electoral support and move towards a truly green future (Beck 1992; Mol and Spaargaren, 2000). More to the point, it is difficult to comprehend how society, which at every turn has been alienated from nature by industrialists, politicians, and even environmentalists as Shellenberger and Nordhaus argue, will be a window into building broad-based eco-informed values in society; especially, when environmental experts have been unable to provide such insight. Few Westerners, for example, can conceive of economy and environment relations without placing these subjects in juxtaposition. For many, environmental protection equates to fewer jobs and a weak economy. Added to this, as discussed in the introductory chapter, few Canadians express concern about the extent of environmental degradation across their country, while fewer still realize that Canadian environmental law is plagued by discretion and non-enforcement. Also, though the eco-capitalistic ideas, eco-innovations, and reflexively modern ways of thinking advocated by some theorists may be alive and well in the backrooms of the environmental movement, these ideas have only started to permeate public discourse (Caldwell, 1999). Thus, the shared bridging values and middle ground that Shellenberger and Nordhaus discuss are not ready to be elicited from the public, because they are not part of the broader public's consciousness. The values are trapped behind a myriad of socially constructed boundaries that prevent conceptualizing and discussing a tenable and workable green future.

The constructivist evaluative framework developed throughout this dissertation, entitled *greener social constructions* (GSCs), was conceived with these challenges in mind. Introduced in Chapter 5, the framework provides a mechanism to evaluate the ways in which certain social constructions misshape conceptualizations for a greener future. It contributes to an evolving body of environmental social constructivist literature (i.e., rhetorical analysis, framing analysis, claims making, and discourse analysis) critical of the ways in which journalists, policymakers, academics, scientists, concerned publics, and even environmentalists include the environment and environmentalism in their communications. In general, composing GSCs is synonymous with composing more compelling ways "of speaking to each other and to broader publics about of planet's

possible future" (Cox, 2006, p. 412). Bringing together the lessons learned from the thematic analyses of both controversies, GSC proponents recognize that the constructivist environmental landscape is formed through various entities of varying power from within and outside of the environmental movement (e.g., publics, minority groups, environmental activists, scientists, legislators, industrialists, business operators, and government agencies) trying to control depictions and definitions of risk/benefit when it comes to humans, nature, and animals. GSC proponents recognize, differentiate, and assess the ways in which these various entities gain their legitimacy/power and are particularly critical of the legitimacy attached to certain rules and methods used above others for seeking "the truth" in order to define environmental realities. Ultimately, GSC advocates are constituted by their capacity to simultaneously portray satisfying human desires/needs as synonymous with saving and protecting the natural environment. They aspire to be eco-utilitarian, assessed by their ability to constitute, symbolize, encapsulate, and address a multitude of human, nonhuman, and ecological concerns in empowering and collaborative ways under one cohesive rubric.

The GSC framework unites the five Marie Lake and five Fort Chipewyan themes. For example, proponents would:

- avoid blaming politicians and empower them in order to include the public in environmental decision-making (Theme 1);
- embrace human interests as a means to save nature (Theme 2);
- refuse to get sidetracked by peripheral or sensationalized issues (Theme 3);
- endeavour to penetrate industry's green disguises and green-washing[47] campaigns (Theme 4);
- cast environmental issues expansively, with the potential to be recast in empowering ways (Theme 5);
- portray science as just one method of environmental decision-making (Theme 6);
- stress the importance of precaution when environments (i.e., ecosystems, humans, and non-human animals) are in danger (Theme 7);
- remain critical of the ways in which ideology can defile science during an environmental controversy (Theme 8);

[47] Green-washing is a marketing tactic whereby companies present a green image without actually engaging in green practices. The tactic has been identified by both academia and the mainstream media (see Ramus and Montiel, 2005).

- understand that "truth seeking" investigations by official authoritative agencies often subjugate other important avenues to the truth (Theme 9); and
- recognize attempts by powerful entities to appropriate the natural environmental in order to define its use (Theme 10).

The GSC framework also builds upon the theoretical literature in a number of ways. For example, it supports the aspirations of ecological modernists, arguing that human and environmental objectives can be achieved simultaneously. However, GSC proponents argue that many of the essential ingredients for ecological modernization already exist; yet, socially constructed boundaries prevent their realization (Mol and Spaargaren, 2000). There are literally thousands of eco-innovations in the realms of forestry, agriculture, energy production, food production, and many others.[48] There are also a number of potentially successful eco-policies. However, the degree to which the public realizes that these policies and eco-innovations are both pragmatic and achievable is open to debate. Davidson and Frickel (2004) suggest it is difficult for most humans to envision a tenable green future. To this end, the GSC framework is meant to foster research, journalism, political discussions, and education agendas critical of the ways that Canada's potential environmental landscape is being set out. Ultimately, the framework is meant to provide a mechanism to see through the socially constructed barriers preventing the realization of a tenable ecologically sound future.

In addition to supporting the aspirations ecological modernists, the GSC framework is also critical of the rules, methods, and symbols used to construct environmental realities. This is similar to Foucault's notion that power is in a state of constant negotiation and flux (as cited in Lynch, 2011). Foucault refers to power/knowledge to signify that power is established through agreed upon forms of knowledge, science, and understandings of truth (Foucault and Gordon, 1980). Various cultures have their particular regimes of truth, or general politics of truth, which enable societies to distinguish truth from fiction (Foucault and Gordon, 1980). These general regimes of truth are a function of scientific discourses and governmental entities, and are reinforced and continually reproduced through education, the mass media, and the continued influx of economic and political ideologies (Foucault and Gordon, 1980). Foucault states:

[48] The European Commission offers particularly detailed and interesting website highlighting numerous eco-innovations from various European countries. See: http://ec.europa.eu/environment/eco-innovation/

> There is a battle 'for truth', or at least 'around truth'—it being understood once again that by truth I do not mean 'the ensemble of truths which are to be discovered and accepted', but rather 'the ensemble of rules according to which the true and the false are separated and specific effects of power attached to the true', it being understood also that it's not a matter of a battle 'on behalf of the truth,' but of a battle about the status of truth and the economic and political role it plays [quotation marks in original]. (as cited in Foucault and Gordon, 1980, p. 131)

Foucault's notion of truth as a battle was the incentive for Clarissa Rile Hayward's (1998) focus on power as boundaries that both permit and hinder possibilities for action, and on people's relative capacities to know about and shape these boundaries. The GSC framework applies both Foucault's and Hayward's notions to the environmental realm. In particular, there are boundaries and rules shaping how our environmental realities are forged. These parameters are set from within and outside of the environmental movement. There are fundamental rules for "seeking truth" that are grounded in different social interests, different institutions of social power, that provide different distinctions regarding use and abuse of the environment. For example, on one side, though every entity on the planet has an interest in survival, the specific interests of businesses and transnational corporations often hamper the implementation of strategies and policies that would extend a universal interest of humans and non-humans (White, 2008). Some corporations normalize environmental harm, while many others hide ecological degradation by broadcasting green images. On the other side, some of the interests and ideas of environmentalists hamper the implementation of strategies and policies that would allow for the maintenance of a reasonably acceptable quality of life and the development of a sustainable economic system. In essence, there are "truth-seeking" rules on all sides of the debate concerning our future that require critical appraisal. Palfreman (2006) touches on this idea in his article *A Tale of Two Fears: Exploring Media Depictions of Nuclear Power and Global Warming*. He writes that:

> [m]ost of us act as ontological realists and believe in a real world that exists independently of our knowledge and thoughts about it. In the real world some risks (e.g., driving) are, statistically speaking, much more "dangerous" than others (e.g., living close to a power line). But the importance of the psychological world of heuristics and biases cannot be denied. (Palfreman 2006, p 38)

Palfreman argues, based on this, that journalists should expand their narrative horizons to include "not just the facts about the risk in question but also how people feel about the

risk and why" (Palfreman 2006, p. 38). They should report two dimensions of a risk story—the "physical narrative" and the "psychological subtext" that discusses how the public and experts think about these risks (Palfreman, 2006, p 38). He warns that journalists should of course aspire to be accurate and avoid misrepresenting facts (Palfreman, 2006). Nonetheless, he tells readers that getting at the root of an environmental issue involves not only understanding and portraying ostensibly objective facts, but also suggesting various ways to think about the environment (Palfreman, 2006). In essence, Palfreman (2006) is asking readers to be critical of the ways in which purported environmental truths are being communicated. The GSC framework embraces this critical stance, advocating for a transformation in the ways journalists, as well as policymakers, academics, scientist and other concerned publics discuss subjects like consumption, economics, politics, morality, law, science, and progress. In the end, the GSC framework provides a tool to critically evaluate the boundaries preventing environmental reform. *Greener social construction* proponents point out that these boundaries are malleable and argue that this recognition is a critical first step toward reconceptualising the ways society envisions protecting the planet. Put differently, the GSC framework provides impetus to start questioning the reason given in public, political, scientific, journalistic and environmental discourse that are counterproductive when it comes to realizing a greener future.

Finally, in addition to supporting ecological modernization (Mol and Spaargaren, 2000) and sharing similarities with Foucault's (1980) ideas concerning power and knowledge, the GSC framework builds on White's and Watson's parsimonious contextual model for environmental decision-making. In their model, "humancentric, animalcentric, and ecocentric" interests are "weighed up" in terms of the harm inflicted on each group (as cited in White, 2008, p. 24). White provides an example of "weighing up harm" by posing the question, "what harm is there in fishing?" He surmises that:

> [w]hat HUMANS [emphasis in original] do to fish (over-fishing; contaminated fish feed) and to fish environments (pollution; over-crowding; denuding of environments via technologies related to industrial open seas fishing and aquaculture) affects the basic nature of fish (stock; genetics; health). The activities, in turn, affect what FISH [emphasis in original] do to humans (dioxins; carcinogens; scarcity) and to human environments (amenity; tourism; reputation; traditions; international relations), thus impacting upon the basic nature of humans (source of food stocks; work opportunities; genetics; health). (White, 2008, p. 24)

White's and Watson's model is useful for informing principles to control objective harms in the context of particular situations involving the environment because it avoids absolutist positions like "humans first," "animals first," or the "environment first" (As cited in White, 2008, p. 28). However, their model can also lead to interpreting potentially harmful situations involving humans, environments, and animals as though each entity must compromise to the benefit of the whole. For example, overhauling the fishing industry might also result in humans consuming less fish, reaping fewer health benefits from eating seafood, increases in fish prices, and the collapse of many communities that depend on the fishing industry for survival. Casting environmental remedies as matters of compromise has greatly detracted from environmentalism's appeal. Arguably, some see a green future that involves an extended list of annoyances such as practicing onerous green habits, cutting down on technology, walking instead of driving, spending more money on organic foods, applying for eco-rebates, and buying inferior green products, among many others. Similarly, some politicians and industrialists see a green future with fewer jobs, faltering economies, more red tape, and lower annual profits. Lastly, for some environmentalists a green future involves tirelessly calling attention to environmental harm, motivating an apathetic public, and fighting industry and government at every turn. Though a green future will undoubtedly require humans to make certain sacrifices, such portrayals have seriously impeded environmental reform. For these reasons, *greener social constructions* portray human desires and needs as synonymous with saving and protecting nature when at all possible. Offering ways for animals, ecosystems, and humans to all benefit is likely a prerequisite to achieving a societal shift in consciousness, whereby a greener future can be envisioned and realized.

7.3 Greener Social Constructions in Theory and Practice

This final section provides examples of *greener social constructions* in theory and practice. The section builds on the meaningful environmental reforms articulated in Chapter 1, which included:

- legal reforms to respond to the numerous voluntary corporate regulations and discretionary and missing environmental laws at the provincial and federal level;
- bringing environmental laws into alignment with what we do and do not know about ecological science;

- making more opportunities for the public to engage in developing and enforcing environmental laws;
- relying on a broader range of public and corporate policy options and economic instruments such a higher pollution taxes, lower rate green taxes, and low interest green loans to protect the environment;
- using eco-polices and economic instruments like the polluter pays principle as well as environmental pricing that takes environmental harm into account in order to free economic growth from the exploitation of non-renewable and scarce resources; and
- subsidizing renewable energies, energy saving urban design, and green forms of economic growth based on numerous examples of sustainable practice from around the world.

In addition to these ideas, a number of researchers and policymakers have proposed specific solutions for meeting the needs of humans, animals, and ecosystems in collaborative and mutually beneficial ways. The following sets out some of the more promising examples of *Greener Social Constructions*.

Lovins, Bustnes, Koomey, and Glasgow (2004) provide a detailed peer review for business and military leaders to eliminate oil dependency. In, *Winning the Oil Endgame: Innovation for Profits, Jobs, and Security,* the authors argue that their approach is "the first roadmap of the oil solution—one led by business for profit, not dictated by government for reasons of ideology (p. ix). Lovins et al. (2004) propose that corporations "quick to adopt innovative technologies and business models will be the winners of the 21st century" (p. x). They argue that oil, which was once a source of strength, is now a source of weakness for the United States. They contend that oil's:

> …volatile price erodes prosperity; its vulnerabilities undermine security; its emissions destabilize climate. Moreover, the quest to attain oil creates dangerous new rivalries and tarnishes America's moral standing. …The cornerstone of the next industrial revolution is therefore winning the Oil Endgame. And surprisingly, it will cost less to displace all of the oil that the United States now uses than it will cost to buy that oil. (Lovins et al., 2004, p. ix)

The authors integrate four strategies for displacing oil in the United States. First, Americans must increase oil efficiency by using proven efficiency technologies (Lovins et al., 2004). The researchers highlight examples in air and ground transport, such as the ultralight Revolution 2000, a five-seat midsize sport utility vehicle built from inexpensive carbon composite much stronger and safer than most vehicles on the road (Lovins et al., 2004). The vehicle accelerates from 0-60 mph in 8.2 seconds, gets 66 mpg from its

biofuel/gas engine, while its extra purchase price is repaid from biofuel savings in approximately three years (Lovins et al., 2004). Second, American industries and governments must adapt business models and public polices to expedite the adoption of superefficient transport, as well as efficient buildings and factories (Lovins et al., 2004). Lovins et al. (2004) discuss, "revenue- and size-neutral "feebates" that shift customer choices by combining fees on inefficient vehicles [and homes] with rebates to efficient vehicles [and homes]" (p xi). The researchers also argue for implementing eco-innovation subsidies to help reconfigure the conventional fossil fuel energy sector toward alternative energy production (Lovins et al., 2004). The third stage involves expanding biofuel production across the United States. This, they argue, will "strengthen rural America, boost net farm income by tens of billions of dollars a year, and create more than 750,000 new jobs" that are safer than those in the oil industry (Lovins et al., 2004, p. xi). Lastly, Americans must use natural gas more efficiently to help ease the transition from oil and eventually from all fossil fuels (Lovins et al., 2004). The authors conclude that though:

> …the $180-billion investment needed [to displace oil] is significant, the United States' economy already pays that much, with zero return, every time the oil price spikes up as it has done in 2004. …Several million automotive and other transportation-equipment jobs now at risk can be saved, and one million net new jobs can be added across all sectors. …Carbon dioxide emissions will shrink by one-fourth with no additional cost or effort. …The U.S. could treat oil-rich countries the same as countries with no oil…helping to restore U.S. moral leadership... By 2040, oil imports could be gone. By 2050, the U.S. economy should be flourishing with no oil at all. (Lovins et al., 2004, p. xii)

Mutually beneficial approaches for achieving a greener future for businesses and the public are also seen in solutions to problems posed by the meat industry. Meat production is a major source of animal harm, pollution and climate change, while it is also a significant consumer of fossil fuels, land, and water (Dagevos and Voordouw, 2013). Eating large quantities of meat has become a "cultural imperative throughout much of the world" as well as being a sign of "affluence and…a 'right' of consumer choice" (Corolan, 2011, p. 84). In almost every country and culture, "meat becomes more attractive and desirable as a rising standard of living makes it affordable" (Dagevos and Voordouw, 2013, p. 61). To reduce meat consumption in the face of burgeoning human populations, animal activists and environmentalists often focus on the stigma associated with meat eating, portraying the practice as an issue of animal cruelty and

pollution. Yet, despite the persistent messages, for many, eating meat remains quite acceptable (Dagevos and Voordouw, 2013). Less frequently mentioned, however, are the persuasive latent subtexts that work to seriously alienate meat-reduced diets from popular culture. For example, vegetarianism is routinely touted as a feminine endeavour. Society expects vegetarians to be women, associated with vegetables and lighter fare, while men are associated with meat and manly eating (Fox and Ward, 2008). A recent study by Jemál Nath (2011) explored the impacts of this sort of hegemonic masculinity upon the adoption of meatless diets. The data shows that most men align meat eating with masculinity and believe meat provides them with strength and vigour. Jemál (2001) argues that this is a key reason why meat reduced diets are not an appealing choice for most men. Many males think that "real men" eat meat to build muscles and will even badger others who consume vegetables. Such beliefs and behaviours are indicative of a form of masculinity constructed so narrowly as to even circumscribe food choices. In line with building *greener social constructions*, Nath (2011) suggests the importance of advocating for broader conceptualizations of masculinity that free up males to make more diverse and healthy food choices, rather than making men feel guilty about pollution and animal harm. More generally Nath's research points to the importance of advocating for broader conceptualizations of masculinity to achieve all manner of environmental reforms hindered by traditional, outdated, and overly narrow conceptualizations of gender. For example, not only are "real men" expected to eat meat, they are also expected to be the consumers of all things masculine, some of which are harmful to the environment, such as high-horsepower vehicles that produce greater greenhouse gas emissions.

Along similar lines, the meat industry has also seen examples of GSCs in practice. Scientists are now capable of producing animal-free meat bio-fabrication and will be able to market a plant-based product that is virtually indistinguishable from meat (Steinfeld and Wassenaar, 2007). In addition, the possibilities for an in-vitro meat production system are just as likely. Scientists predict the ability to produce identical cuts to farm grown meats in the next few years while also being able to control for toxins, fat content, and antibiotics (Steinfeld and Wassenaar, 2007). However, like vegetarianism, in-vitro meat faces serious image problems. Despite the possibility of virtually eliminating the harms associated with meat production, the animal substitutes are often socially constructed to engender Frankenstein-like visions of test-tube monstrosities grown in the laboratory. Taken together, many of the socially constructed hurdles surrounding in-vitro

meat and meat-reduced diets will be difficult to transcend and will likely entail devising compelling ways to socially construct these environmental progresses.

In practice, *greener social constructions* are also found in Sweden, Norway, the Netherlands, and much of Europe, especially when contrasted to Canada. For example, Sweden aims to achieve complete ecological sustainability by 2050, and is "striving to ensure that the next generation can take over a society where the major environmental problems have been solved" (Swedish Institute, 2013, p 1). Sweden easily defeats Canada in terms of environmental rankings by the Organization for Economic Cooperation and Development. Per capita, the Swedes generate less air pollution, provide superior sewage treatment, use less water and energy, use energy more efficiently, produce fewer greenhouse gases, use lower volumes of pesticides, create less garbage, and donate more GDP to promote sustainability in developing countries (Gunton and Calbick, 2010). These successes are unlikely due to material differences between the countries. Both Sweden and Canada are northern, industrialized nations with cold climates that derive about "27 percent of GDP from industry, 70 percent from services, and 2 percent from agriculture" (Boyd, 2003, p 299). Canada depends heavily on the US economy, while Sweden has a similar relationship with Europe. In 2013, the OECD ranked Sweden second and Canada third on the *Better Life Index*, which measures a number of quality of life indicators (Organization for Economic Cooperation and Development, 2013). Notwithstanding this, the environmental policies in the two countries are vastly different. For example, Sweden has a forthright nationwide sustainability strategy that establishes measurable objectives and binding timelines (Swedish Institute, 2013). The country strongly supports strategies and laws that emphasize the "de-coupling" or "de-linking"[49] of economic growth from resource extraction resulting in less waste and pollution (Boyd, 2003, p. 308). Although Sweden still pursues economic growth, the nature of growth is increasingly being based on eco-innovation. This is partially why Sweden has seen substantive reductions in pollution and waste. In fact, Sweden has recently been forced to import trash from Norway in order to support biofuel heating and electricity generation because Sweden's landfills are mostly empty (Hickman, 2012). Sweden has also seen substantive reductions in greenhouse gas emissions. For example, since 1990:

[49] De-coupling or de-linking economies from resource extraction involves policymaking aimed at engendering more environmental efficiency in production and consumption (Hueting, 1990).

> …emissions have been declining in the Swedish housing and service sector as the result of a shift from oil for heating purposes to district heating, heat pumps and biofuels. Emissions from agriculture are also on the decline, due mainly to the presence of fewer farm animals. Sweden's GHG emissions are now among the lowest in the [European Union] and OECD, whether calculated per capita or as a proportion of GDP. In 2012, Swedish GHG emissions totalled 58.3 million tons of carbon dioxide equivalents, compared with 72.7 million tons in 1990 – a near 20 per cent reduction. For 2020, Sweden aims to reduce GHG emissions by 40 per cent compared with 1990. (Swedish Institute, 2013, p. 2)

These reductions flow from successful political incentives such as carbon dioxide taxes that have been continually readjusted to reflect the amount of environmental damage caused by different energy sources, then phased in gradually so businesses and consumers could slowly make the necessary adjustments (Swedish Institute, 2013). The biggest polluters have had to make substantive changes, but were given time to do so. The "10 billion" a year generated from carbon taxes goes to "transit, research, and expansion to reduce greenhouse gas emissions, and promote renewable energy" sources such as biomass for cars (Swedish Institute, 2013, p. 3). For example, in the city of Lund, food waste methane is used to power transit. It is now illegal to dispose of food waste and other organic material that can be collected and recycled into energy (Swedish Institute, 2013). The Lund program reduces carbon emissions, reduces garbage/waste, generates cleaner energy, and reduces pollution. Additionally, Sweden plans to increase its production of sustainable biofuels to cover just over a third of automotive fuel used by its transport sector by 2030 (Strom, 2013). Forest-sourced materials such as "residue from forestry operations, wood from forests grown for bioenergy, and agricultural waste products" are some of the new materials being used to further expand biofuel productions in increasingly sustainable and carbon neutral directions (Strom, 2013, p. 1). Finally, Sweden displays a number of specific green policies not seen in Canada. For example, Swedish law makes producers of goods responsible for their products and packaging for the entire life cycle. Producers must reuse and recycle their goods – even products as large and complex as cars are covered under the law (Boyd, 2003). This provides incentive for more durable and uniquely recyclable products and packaging. For example, Swede's operate an "eco-cycle program" that includes policies to reduce the use of resources waste generation at all stages of a product's lifecycle (Boyd, 2003, p. 304). Ultimately, much of Europe, the Netherlands, and Sweden demonstrate numerous ways to simultaneously meet the

needs of humans, animals, and ecosystems. These countries are exemplars of *greener social constructions* in theory, policy, and practice.

A final example of *greener social constructions* is found in the writings of Canadian environmental law professor David Boyd, whose work has been instrumental to this dissertation. In his most recent book, *The Environmental Rights Revolution: A Global Study of Constitutions, Human Rights, and the Environment*, Boyd (2012) highlights many benefits of environmental constitution building. He argues that recognizing environmental rights will "reduce the harm that humans and the earth are experiencing" and "redistribute inequitable allocations of environmental harms" (p. 28). His extensive research into the spread of environmental rights across the globe makes a strong case for the benefits of environmental constitution building. Aside from China, Japan, the United Kingdom, the United States, Australia, and Canada, where environmental rights are not legally enshrined, constitutional environmental protection is widespread and steadily increasing. Boyd's (2012) findings suggest that increased public access to the judicial system under an environmental constitution appears to be correlated with superior environmental performance on a number of indicators without diminishing economic vitality or quality of life. Many nations have realized "stronger environmental laws," improved access to information and public participation in environmental decision-making, "increased access to justice," more ecologically informed court decisions, a breakdown in barriers to environmental law retrenchment, and a greater environmental effort by government and the people (Boyd, 2012, p. 233-252). These findings suggest that environmental constitution building is a step in the right direction. Boyd's book is important because it moves beyond arguing whether environmental rights should exist and demonstrates the tangible benefits of putting these rights into effect. Environmental constitutions can represent more than just "legalistic window dressings," providing a range of benefits including "stronger laws, enhanced public participation, and improved environmental performance" (Boyd, 2012, p. 6-7). Ultimately, the fact that publics around the world have reaped benefits for animals, ecosystems, and themselves by enshrining environmental legal rights is a prime of example of *greener social constructions* in practice.

7.4 Conclusion

A greener future will likely be situated somewhere between the present anthropocentric (human-centered) view of nature, emphasizing the biological, mental, and moral superiority and domination of humans over other living and non-living entities, and a strict species/ecosystem view that endows humans with the same moral worth as all organisms on the planet (Halsey and White, 1998). The former, emphasizing human's superiority, permits a wide range of environmental transgressions, while the latter, emphasizing nature's superiority, suggests major compromises such as humanities virtual withdrawal from nature (Halsey and White, 1998). Amidst these perspectives are the ecocentrists, refusing to place humanity's worth above or below the rest of nature (Halsey and White, 1998; Mol and Spaargaren, 2000). Ecocentrists recognize the unique capacity of humans to continually develop and deploy ingenious ways of thinking and living that help subvert environmental degradation while still allowing for fulfilling careers and high living standards. However, realizing ecocentrism involves overcoming the conceptual barriers and purportedly legitimate rules that obscure our view of a green future. This task will be difficult. Now more than ever, in the information age, we inhabit two worlds. In the real world, the sources of environmental harm, such as unsustainable consumption and population growth, are widely understood by scientists. Eco-innovations like gearless levitating maglev wind turbines (Dhareppagol and Konagutti, 2013), animal/food waste energy plants (Cuéllar and Webber, 2010), tidal powered lagoons (Nicholls-Lee and Turnock, 2008), magnetic powered hybrid cars (Hoolboom and Szabados, 1994), and geothermal heating pumps (Pal, 2013) are being realized. As well, pro-environmental policy changes, when actualized, bring about actual and meaningful environmental reforms. However, we also live in a misshapen socially constructed world, held together by half-truths and smatterings of knowledge found across all matter of modern communication mediums. In this world, environmental reforms often appear to require great sacrifice. Environmental harms are frequently hidden, legitimized and/or normalized. Innovative polices, such as those that de-link the economy from valuable resources, are frequently portrayed as economically disruptive. In this dual world, where some environmental scientists are even predicting eco-catastrophe (see Lovelock, 2007; Speth 2008), developing the tools to see beyond the socially constructed and supposedly legitimate borders preventing environmental reform is critical. Students, teachers, journalists, politicians, lawyers, environmentalists, and concerned publics will undoubtedly benefit from fostering greener social constructions

across numerous fields, and through new constructivist research agendas, allowing us to conceive more compelling ways to remake the planet's future.

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Appendix C: Preamble of the Canadian Environmental Protection Act, 1999

S.C. 1999, c. 33

Assented to 1999-09-14

An Act respecting pollution prevention and the protection of the environment and human health in order to contribute to sustainable development

Declaration

It is hereby declared that the protection of the environment is essential to the well-being of Canadians and that the primary purpose of this Act is to contribute to sustainable development through pollution prevention.

Preamble

Whereas the Government of Canada seeks to achieve sustainable development that is based on an ecologically efficient use of natural, social and economic resources and acknowledges the need to integrate environmental, economic and social factors in the making of all decisions by government and private entities;

Whereas the Government of Canada is committed to implementing pollution prevention as a national goal and as the priority approach to environmental protection;

Whereas the Government of Canada acknowledges the need to virtually eliminate the most persistent and bioaccumulative toxic substances and the need to control and manage pollutants and wastes if their release into the environment cannot be prevented;

Whereas the Government of Canada recognizes the importance of an ecosystem approach;

Whereas the Government of Canada will continue to demonstrate national leadership in establishing environmental standards, ecosystem objectives and environmental quality guidelines and codes of practice;

Whereas the Government of Canada is committed to implementing the precautionary principle that, 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;

Whereas the Government of Canada recognizes that all governments in Canada have authority that enables them to protect the environment and recognizes that all governments face environmental problems that can benefit from cooperative resolution;

Whereas the Government of Canada recognizes the importance of endeavouring, in cooperation with provinces, territories and aboriginal peoples, to achieve the highest level of environmental quality for all Canadians and ultimately contribute to sustainable development;

Whereas the Government of Canada recognizes that the risk of toxic substances in the environment is a matter of national concern and that toxic substances, once introduced into the environment, cannot always be contained within geographic boundaries;

Whereas the Government of Canada recognizes the integral role of science, as well as the role of traditional aboriginal knowledge, in the process of making decisions relating to the protection of the environment and human health and that environmental or health risks and social, economic and technical matters are to be considered in that process;

Whereas the Government of Canada recognizes the responsibility of users and producers in relation to toxic substances and pollutants and wastes, and has adopted the “polluter pays” principle;

Whereas the Government of Canada is committed to ensuring that its operations and activities on federal and aboriginal lands are carried out in a manner that is consistent with the principles of pollution prevention and the protection of the environment and human health;

Whereas the Government of Canada will endeavour to remove threats to biological diversity through pollution prevention, the control and management of the risk of any

adverse effects of the use and release of toxic substances, pollutants and wastes, and the virtual elimination of persistent and bioaccumulative toxic substances;

Whereas the Government of Canada recognizes the need to protect the environment, including its biological diversity, and human health, by ensuring the safe and effective use of biotechnology;

And whereas the Government of Canada must be able to fulfil its international obligations in respect of the environment.