

# **The Canadian Tar Sands:**

**An Edge Between the Old Industrial Paradigm and the New Sustainability Paradigm**

**By Tom Martin**

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## Preface

This paper on the Canadian Tar Sands has been written in two parts. Part I was prepared in 2008; Part II in 2011. The completion of the paper was interrupted by my need for surgery towards the end of 2008. Following recovery from my surgery, tardiness on my part further delayed the maturation process.

In Part II, I refer to the initial plan for this Process Work project to include a public forum on the tar sands to be held in either Fort McMurray or Edmonton. I went to northern Alberta, but a public forum on the tar sands has not taken place there.

## Acknowledgments

Stan Tomandl is my mentor for both this project and for my certificate program. I thank him for his patience, support, encouragement and guidance. Stan has also edited the paper and made helpful and challenging suggestions.

I thank my wife, Ana Simeon, for her constant support, advice, encouragement and love. Ana spent many hours connecting with various non-governmental organizations (NGOs) in preparation for a public forum on the tar sands. We share many concerns about the tar sands projects. Ana works for an environmental NGO based in Victoria, BC.

Tom Martin  
Victoria, BC.  
Canada.  
July, 2011.



## **PART I (2008)**

### Introduction

It was hearing about the songbirds that did it for me. I attended a workshop in March, 2008 at which I heard about the loss of songbirds in North America as a result of the “development” activities of humans. Then I heard that the Canadian Tar Sands projects might not only expand in Alberta but spread into the neighbouring province of Saskatchewan. I was appalled by the image of a great sweep of a land without songbirds.

Birds, along with other animals, plants, rocks and water, as Bruce Chatwin reminds us in his book *The Songlines*, help to sing *the world into existence*.<sup>1</sup> Bird song, like human song and music, has long been recognized to have territorial, sexual and spiritual connections. These aspects of life are essential to survival for birds and humans. Chatwin’s traveling companion in Australia put it more bluntly: *To wound the earth is to wound yourself*. It is suicidal activity to destroy nature!

Some evolutionists hypothesize that certain animals who developed specialist predatory habits, like the primate-killing *Dinofelis* (a large heavily-built, sabre-toothed cat) became extinct in short order largely because of their lack of ability to find diversified sources of food. Could it be that humans who have developed, in a few short decades, a specialist predilection for oil will also rapidly die out? An inability, or an unwillingness, to find alternative and diversified sources of energy may have had its parallels in evolutionary history. At least in some cases, the lessons are rather stark!

In 1979, the scientist James Lovelock published a book in which he described the biosphere of the earth as *a self-regulating entity with the capacity to keep our planet healthy by controlling the chemical and physical environment*.<sup>2</sup> Only 27 years later he published another book with a much more pessimistic view of the planet Earth. In 2006, Lovelock writes about the earth struggling to keep cool because of excessive human devastation of the land. In the interval of only a few decades the biosphere now has an enormous additional strain to maintain an atmosphere and temperature appropriate for its numerous life forms. He names humans as the life form giving *Gaia* (the Earth) the most difficulties. Lovelock sounds angry when he writes: *With breathtaking insolence they (humans) have taken the stores of carbon that Gaia buried to keep oxygen at its proper level and burnt them. In so doing they have usurped Gaia’s authority and thwarted her obligation to keep the planet fit for life; they thought only of their own comfort and convenience*.<sup>3</sup>

In this paper, I attempt to provide some background information to specific Canadian projects which, I believe, add significantly to the struggle the biosphere has in maintaining an

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<sup>1</sup> Chatwin, Bruce. *The Songlines*. p 2.

<sup>2</sup> Lovelock, James. *Gaia: A New Look at Life on Earth*.

<sup>3</sup> Lovelock, James. *The Revenge of Gaia*. p 146.

appropriate balance of the chemical and physical requirements for life, in all its diversity, on Earth. I call these projects collectively, the Canadian Tar Sands. I also attempt to increase awareness of the interconnections these projects have with all aspects of life.

This paper is prepared as part of the requirements for the Certificate in Process Work of the Process Work Institute, Portland, Oregon. From the above introduction, it will be clear that I see a problem for Canadians and the earth's biosphere as a result of the tar sands projects. Process work theory assumes the solution is inherent in the problem. As I begin to explore the deeper levels of this problem, perhaps some of the solutions may begin to reveal themselves.

### History

Bitumen or pitch may have been used in Noah's ark to aid survival of life (*Genesis 6:14*). Wa Pa Su, a Cree, gave a piece of bitumen to the explorer Henry Kelsey who was associated with the Hudson's Bay Company for at least 20 years. The year was 1719. The Cree used bitumen to waterproof canoes made of birch bark.

Alexander Mackenzie, while mapping for the North West Company, described *some bituminous fountains* he came across in the Athabasca area in 1789. The Geological Survey of Canada reported as early as 1884 that bitumen from around the Athabasca River had the potential for extraction of oil.

The tar sands, which the industry now prefers to call the oil sands, were again brought to attention in 1912 with a report about extensive bitumen deposits in the Peace River and Athabasca River areas of Alberta. The report was prepared for the federal Department of Mines in Ottawa. In an effort to determine their *probable economic value*, the same department collected samples from the Alberta tar sands in 1913/1914. The bitumen from these areas was used for tarring roads as early as 1915.

A site, named Bitumount by Robert Fitzsimmons, is less than 100 km north of Fort McMurray. In 1923, Fitzsimmons, a farmer and businessman, purchased the site from the Alcan Oil Company. At first Fitzsimmons drilled for oil. Results were discouraging. However in 1930, using Karl Adolf Clark's hot water extraction technique, the Bitumount site produced a small quantity of bitumen from the tar sands in that area. The bitumen was used mostly for tarring roofs. Bitumount was later named a historic site, but public access was prohibited because of *many hazards*. Some regard Bitumount, on the edge of the Athabasca River, as *the birthplace of the Canadian Oil Sands*. Others view this place with awareness that there are always ghosts around:

*Through the screen of trees  
I see ghosts of days forgotten...*

*Smoke stacks standing guard  
Grey pipes hang like dead branches  
Ghosts of industry  
Falling forgotten filtered  
Through the screen of time.<sup>4</sup>*

In 1936, an American named Max Ball opened the Absand plant on the Horse River which joins the Athabasca and Clearwater Rivers at Fort McMurray. Blasting techniques were used at this site to loosen the tar sand before hauling it to a separation plant. The federal government took over Absand in 1943, but a fire destroyed the plant two years later. The Absand site remains as another ghost of this industry.

In 1947 oil started flowing from the Leduc Number 1 Well, south of Edmonton, Alberta. Within the next few decades, numerous additional oil wells were discovered in Alberta together with a smaller number in Saskatchewan. Suncor Energy (formerly, Great Canadian Oil Sands) started open-pit mining of the tar sands in 1967. In the early 1970s, following war in the Middle East, the Arab states cut back oil production and, for a time, an embargo was placed on shipment of oil to the United States. The price of oil and petroleum increased rapidly in Canada. In 1975, the federal government in Ottawa created CANMET (Canada Centre for Mineral and Energy Technology). This was the same year that the Crown Corporation of Petro-Canada was created by Act of Parliament. Government and the petroleum industry were now even more closely associated in Canada. (The federal government retained part-ownership of Petro-Canada until 2004 although it had divested a major part of its ownership in 1995).<sup>5</sup>

### Current Situation

As of 2008, some 25 oil companies are involved in 68 actively producing tar sands sites in Alberta. Four additional sites are under construction. Fourteen new sites are proposed. (See Table 1 in the Appendix). Within the Athabasca tar sands area, a cluster of proposed new projects around Fort MacKay is coming to public attention. Syncrude shipped its first synthetic crude oil from its oil sands plant, south of Fort MacKay, in 1978. In the same area of north-eastern Alberta, Petro-Canada's MacKay River oil sands plant began in the year 2000. Syncrude has had corporate connections with Petro-Canada since the latter's formation in 1975.

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<sup>4</sup> [www.ghostsofindustry.com](http://www.ghostsofindustry.com)

<sup>5</sup> Natural Resources Canada: [www.nrcan-rncan.gc.ca](http://www.nrcan-rncan.gc.ca)  
Alberta Government: [www.oilsandsdiscovery.com/oil-sands-story](http://www.oilsandsdiscovery.com/oil-sands-story)

Fort MacKay is a hamlet or small town 55 km north of Fort McMurray on the west side of the Athabasca River. The town is near the point where the MacKay River joins the Athabasca River. Fort MacKay is now completely surrounded by active or proposed tar sands projects. The oil companies involved in these projects include Petro-Canada, Syncrude, Suncor, Shell Canada, Imperial Oil (Esso), CNRL (Canadian Natural Resources Limited), Total E&P Joslyn (formerly Deer Park), and ExxonMobil Canada. The Kearl Project, proposed by Imperial Oil, is north-east of Fort Mackay. This project received approval to proceed in June, 2008 from the Government of Canada despite a federal court requirement for a judicial review of the climate change impact of the project.

Both the Athabasca River and the Peace River flow north-east. The Athabasca River flows into Lake Athabasca near Fort Chipewyan (See later). Lake Athabasca straddles the Alberta-Saskatchewan border between the 58 and 59 degree N latitude line. The Peace River joins the Slave River flowing out of Lake Athabasca into Great Slave Lake. These lakes and rivers form part of the Mackenzie River watershed, one of the largest in the world.

It was estimated in 2006 that over 100,000 people were directly employed in the oil, gas and oil sands industry in Alberta with a cumulative investment of 60 billion dollars. Proven crude oil reserves in Canada are now regarded the second largest in the world after Saudi Arabia. The reserves in Alberta alone are over 173 billion barrels. The tar sands cover, or lie under 140,000 square kilometers of Alberta. This represents an area larger than the state of Florida. Currently about 65,000 square kilometers of Alberta has been leased to oil companies under oil sands agreements. (Ref. Alberta Government energy website, 2008). The National Energy Board of Canada states in a 2006 report on the oil sands that there is *a logjam of announced projects (for) the 2008 to 2012 period.*

## Geology

The tar sands are deposits of bitumen mixed with sand, clays and water. Bitumen is a heavy, black, molasses-like oil. Bitumen usually constitutes about 10 % of the tar sand, but this percentage may range from 1 to 20 %. On average, two tons of tar sand yield one barrel of oil after processing. In the Athabasca area, the tar sand is closer to the surface than in either the Peace River or Cold Lake areas. In the Athabasca River basin, the tar sands sit on a limestone base. Below the limestone is Precambrian granite. Above the tar sand is a covering of sandstone and shale with a layer of glacial tills closer to the surface. The sand in these areas is more than 90 % quartz. The sand particles have a triangular shape and are highly abrasive. A film of water covers the sand particle. The outermost layer of the particle is absorbed bitumen.<sup>6</sup>

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<sup>6</sup> [www.oilsandsdiscovery.com](http://www.oilsandsdiscovery.com)

Both oil and bitumen are presumed to be derived from algae and plankton together with other plant and animal matter deposited in depressions of an ancient sea bed that covered Alberta more than a million years ago. Under the influence of temperature and bacterial metabolism, most of the oxygen and nitrogen were removed leaving carbon and hydrogen. Over time and as a result of heat and pressure from layers of rocks and silt, further decomposition occurred and complex hydrocarbon molecules formed. Bitumen is about 83% carbon, 10% hydrogen, and 5% sulphur. It also contains small amounts of oxygen, nitrogen, methane, hydrogen sulphide, and traces of various metals. The origin of the oil sands is uncertain. One theory suggests that lighter crude oil migrated north-east in Alberta as a result of pressures created during the formation of the Rocky Mountains. This lighter oil was then absorbed by sand along the Peace and Athabasca River basins.

It is estimated that about 80% of the tar sands in Alberta are deep below the surface. Open-pit mining is not applicable in these areas. As we will see later, two main *in situ* methods, both using steam, are used to extract the deep lying bitumen. These methods appear to cause less damage to the surface vegetation and the ecosystem than open-pit mining. However, the long-term effects of pumping steam under high-pressure into the ground to recover the bitumen are far from clear.

In Saskatchewan, the National Energy Board stated in 2006 that exploration for *unconventional oil* is ongoing in two areas.<sup>7</sup> Deposits of crude bitumen have been found in north-west Saskatchewan adjacent to Alberta's Firebag site (Athabasca area) near the Clearwater River. The second area is in the Pasquia Hills region of eastern Saskatchewan where oil shale deposits occur. The Pasquia Hills are south of Cumberland House and south-east of Carrot River.

It is often easy to forget that the geology of the oil sands has wider connections. A very long time ago, plants learned to capture and store sunlight. Both oil and bitumen deposits on earth owe their existence to the sun. The energy that we use by burning oil and gas came ultimately from the sun. As Thom Hartmann reminds us, *We're all made out of sunlight*.<sup>8</sup> Does one of the solutions to our problem lie hidden somewhere in this important reminder?

## Ecology

Ruby Slipperjack, the Ojibway writer, grew up in the boreal forest. In 1990, Slipperjack was interviewed by Hartmut Lutz and made the following comments:

*Everything is tied with nature...*

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<sup>7</sup> National Energy Board: *Canada's Oil Sands*. June 2006 update.

<sup>8</sup> Hartmann, Thom. *The Last Hours of Ancient Sunlight*. p 9.

*The land, rocks, trees are a part of our history, a part of us.  
They live longer than we do...  
I get to know the rocks and trees everywhere I go...  
.....  
You only see what you can see...<sup>9</sup>*

Do Slipperjack's words contain another part of the solution to our problem?

The boreal forest in Canada is estimated to be 18,000 years old. Before that time, much of the area was covered with ice. The tar sands in Alberta are located within the boreal forest biome which stretches from the Yukon and the Northwest Territories across the northern part of the prairie provinces, through Ontario and Quebec to Canada's east coast. The diversity of plant species in the boreal forest is often lower than in other biomes with warmer climates. In many parts of Canada the boreal forest is largely coniferous, but in Alberta it also has a significant proportion of mixed and broadleaf forest. Aspen and balsam poplar are often more common than evergreen trees, particularly in the southern parts of the boreal forest. The most frequent evergreen trees are pine, spruce, and fir. In the boreal forest, summers may be relatively short. Coniferous trees in the boreal forest may have an advantage in the cooler areas in that they are able to photosynthesize at lower temperatures than deciduous trees. The mix of species also depends on the soil. For example, certain mosses, ferns and flowers prefer soils with limestone substrates like those found in areas where the tar sands occur. Pine trees are able to root and grow in shallow, dry soils better than many other coniferous trees. Several species of trees are able to recover from forest fires more readily than others. These include the jack pine, the black spruce, and the white (paper) birch.<sup>10</sup>

Although the diversity of tree species may be limited in the boreal forest, there are many varieties of flowers. In moist areas of the boreal forest of the prairie provinces, the northern starflower (*Trientalis borealis*) flirts with the eye of the naturalist. Some species of flowers are already rare in the boreal forests of western Canada. These include the stemless lady's slipper or moccasin flower (*Cypripedium acaule*), the insect-eating, round-leaved sundew (*Drosera rotundifolia*), the sand heather (*Hudsonia tomentosa*) and the dwarf bog-rosemary (*Andromeda polifolia*).<sup>11</sup> Will the tar sands projects result in the extinction of these already rare species?

A number of plants which grow in the boreal forest are noteworthy because of their nutritional or medicinal value for humans. For example, buds or young leaves picked in the spring from Mackenzie's willow (*Salix mackenzieana*) may be used in salads as a rich source of vitamin C. This relative of the yellow willow may be found in moist sandy areas along the

<sup>9</sup> Slipperjack, Ruby. In: *Contemporary Challenges*: Hartmut Lutz. pp 203-215.

<sup>10</sup> [www.abheritage.ca/abnature/boreal](http://www.abheritage.ca/abnature/boreal)

Johnson, D., Kershaw, L., MacKinnon, A. and Pojar, J. *Plants of the Western Boreal Forest & Aspen Parkland*.

<sup>11</sup> Vance, FR., Jowsey, JR and McLean JS. *Wildflowers Across the Prairies*.

riverbanks of the Peace and Athabasca Rivers. The prickly rose (*Rosa acicularis*) is the floral emblem of Alberta. Found in open areas of the boreal forest, its hips are a source of several vitamins. The hips may be eaten fresh after removing the seeds that may irritate the intestine. Rose hips are used to make teas and jellies. Widespread across the boreal forest is the dwarf raspberry (*Rubus acaulis*). However, the red fruit may be hard to find since birds and small animals like to eat them too!<sup>12</sup>

Boreal forests may incorporate wetlands of various types. These include bogs, fens, swamps and marshes. These varied ecosystems are sometimes collectively described as *muskeg*. Sphagnum mosses are predominant in bogs. Sedges ( a complex family of grass-like plants) are common in fens. Woody species including conifers, deciduous trees and tall shrubs may be found in swamps. Marshy areas may have a vegetation of reeds, rushes, sedges and grasses.

Among the fauna of the boreal forest is moose, deer, caribou, bear, wolf, fox, hares and chipmunks. A website on the boreal forest lists numerous birds including geese, ducks, loons, woodpeckers, hawks, owls, chickadees, nuthatches, warblers, sparrows, thrushes and grouse.<sup>13</sup>

Bridget Stutchbury refers to the boreal forest as *Canada's bird nursery*.<sup>14</sup> Yet, in her book *Silence of the Songbirds* she warns that in the last forty years the songbirds are *slowly falling from the sky*. Millions of birds are killed, directly or indirectly, by human activities such as spraying pesticides, lighting-up skyscrapers at night, erecting communication towers and destroying forests. Miners in past centuries watched the canary to see if the air in the mine was safe to breathe. Will the open-pit miners of the tar sands learn to use the songbirds as an indicator of when the boreal forest with all its life forms is about to die? Songbirds, of course, are more than indicators of the health of our environment. They are an integral part of our ecosystems, helping, for example, to keep the numbers of insects in check and to disperse seeds. Birds constitute close to 75% of vertebrates in the boreal forest. When humans interfere with the bird : insect ratio, we may be tempting fate!

The rivers and lakes of the boreal forest are inhabited by many varieties of fish. One of the lakes that drains into the Athabasca River, north of the town of Athabasca is advertised to anglers as having pike, walleye (pickerel), whitefish, perch and burbot.

The ecology of the boreal forest, including those areas where the tar sands lie below, is not confined to what may be seen by the human eye looking at the surface of the land. The soil teems with microbial life. Many of these microorganisms are in symbiotic relationships with the roots of the plants seen above the surface. Recently, researchers have discovered microbial life in

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<sup>12</sup> Marles, R.J., Clavelle, C., Monteleone, L., Tays, N. and Burns, D. *Aboriginal Plant Use in Canada's Northwest Boreal Forest*.

<sup>13</sup> [www.rook.org/earl/bwca/nature/boreal.html](http://www.rook.org/earl/bwca/nature/boreal.html)

<sup>14</sup> Stutchbury, Bridget. *Silence of the Songbirds*. p 21.

rock at a depth of 1.6 km under the sea bed. (The Athabasca area was once covered by sea water). These thermophilic microbes are called *Archaea*.<sup>15</sup> Some may metabolize oil and some, particularly those that live in the muddy muskeg, produce methane gas. So ecology and geology are connected in ways that the western scientists had not thought possible before. When these connections, dependencies and relationships are disrupted by machines, what happens to the ecosystems and biomes?

Recognizing the direct connections between nature and human health has been difficult during the era of western scientific specialization. Humans have learned many things by looking more closely at the “bits” of life. However, breaking systems down into smaller and smaller units of specialization has obscured our view of the whole. In addition some religions have taught us to separate human experience from nature. It will take time for the importance of the interconnections we have with everything to once again impact our consciousness. Deep down somewhere within each of us, I suspect, we already know this from times past. Herein may sojourn another piece of the solution to our problem with the tar sands.

It is likely that the boreal forests around the northern hemisphere store more carbon than the known fossil fuel reserves below the world’s surface. It is, therefore, a double whammy to the biosphere to cut down the forests and dig up, mine, or otherwise extract hydrocarbons from the ground. We humans must already be semi-unconscious. Otherwise, why would we intentionally suffocate ourselves to death?

### Mining and Extraction

In the Athabasca area where the bitumen is relatively close to the surface there is a number of open-pit mining sites. These sites cover vast areas. For example, the tailings pond alone at Suncor’s Millennium Mine (which has upgrading facilities) covers an area approximately equal to the surface area of the City of Vancouver, BC. Syncrude and Albian Sands Energy also have active surface mine sites north of Fort McMurray. Albian Sands is jointly owned by Shell, Chevron and Marathon. Two other mining sites are under construction and three more are proposed.<sup>16</sup>

In open-pit mining the trees are cut and cleared. Then the topsoil of the muskeg is drained, removed and stored. In the 1970s, Suncor used a massive, electric-powered, bucketwheel excavator to remove what industry calls *the overburden*. This layer of rock and clay lies above the tar sand. The same excavator was then used to remove the tar sand and place it on

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<sup>15</sup> [www.ucmp.berkeley.edu/archaea](http://www.ucmp.berkeley.edu/archaea)

<sup>16</sup> National Energy Board. *Canada’s Oil Sands: Opportunities and Challenges to 2015*. Calgary, AB. 2004. Gillespie, C. *Scar Sands*. In: *Canadian Geographic*. Vol 128, No. 3: June 2008.

conveyor belts connected to the processing plant. Today, power shovels and robust trucks have replaced the role of the giant excavator. Hydrotransport pipelines have replaced conveyor belts to transport the bitumen to the processing plant. The bitumen is mixed with a diluent at some point to facilitate transport to the upgrading plant and subsequent processing into synthetic crude oil (SCO). The synthetic crude oil or blended bitumen is then piped to refineries at Edmonton or Hardisty, Alberta. Pipelines for synthetic crude oil and blended bitumen connect Fort McMurray and the Cold lake areas to Edmonton AB, Hardisty AB, Vancouver BC, Anacortes WA, Casper WY, and Chicago IL. The pipeline network within the US connects all five PADDs (Petroleum Administration for Defense Districts). However, the traditional export markets for western Canadian crude oil have been PADD II including St. Paul and Chicago, together with PADD IV centered near Casper and in Washington State.<sup>17</sup>

As noted previously, 80% of the tar sands in Alberta lie too deep for open-pit (surface) mining. *In situ* methods that do not move the sand are used when the bitumen lies deeper than 75 meters below the surface. The two most common *in situ* methods of recovery are Steam Assisted Gravity Drainage (SAGD) and Cyclic Steam Stimulation (CSS). Both of these methods use heat to reduce the viscosity of the bitumen. SAGD recovers 40 – 60% of the original bitumen compared to 20 – 25% for the CSS method. The SAGD process uses two closely-spaced, horizontal wells connected to a pump house on the surface. Slotted liners are inserted into these wells. Low pressure steam is continuously injected into the upper well while the heated bitumen is simultaneously collected from the lower well. Water is then injected into the spaces left by the drained bitumen to help maintain the stability of the formation.

In CSS a combination of vertical and horizontal wells is used to inject high pressure steam into the layer of tar sand. In this three-stage process, high pressure steam is injected through the vertical well. The high pressure steam not only heats the bitumen, it also creates fractures in the tar sand layer which in turn improves the flow of the bitumen. Then the reservoir is closed off and allowed to soak for a period of time in steam and condensed water. The third stage involves pumping the heated crude oil and water to the surface. Imperial Oil has used CSS in the Cold Lake region since 1985. In the same area, CNRL has a CSS operation at Primrose Lake. Shell uses a variation of the CSS process called Pressure Pulsed Steamflood at its Cadotte Lake site in the Peace River area.

A number of other methods are either in use, or under experimentation, for recovery of crude oil from bituminous sand. These methods include: Cold Heavy Oil Production with Sand (CHOPS); Bitumen Gasification Process; Vapour Extraction Process (VAPEX); and Toe-to-Heel Air Injection (THAI). The VAPEX process involves injection of vaporized solvents (ethane or propane) into the tar sand layer. The THAI technique has a vertical air injection well and a

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<sup>17</sup> Penner, SS. Chair, Fossil Energy Research Working Group, University of California, San Diego, CA. 1982.

horizontal production well. It may cause less damage to the environment than most of the other methods.<sup>18</sup>

It will be evident that both mining and *in situ* methods of recovery use very large amounts of energy including natural gas and electricity. To this lay observer, using enormous amounts of energy in one form (natural gas or hydro) to produce energy in another form (oil) does not appear to be either a logical or efficient process. In addition, the trucks and power shovels use very large quantities of the product they are in the process of producing. In other words, some other motivating factors appear to be *driving* the tar sands projects.

A symbol of the mentality of the big machine, that seems to fascinate and awe the emotive forces behind the tar sands projects, stands outside a museum in Fort McMurray. This machine, nicknamed *Cyrus* is a bucketwheel excavator. It weighs 850 tons, stands six stories tall and when in use, required 18 megawatts of electricity (enough to power 600 homes). It was used by Suncor until 1983.

What I call the industrial era mindset remains frozen in the thinking of many governments and big industry. This mindset, not unlike the consistency of bitumen, states: “Nature is given to us for *exploitation*. Let’s make money while we can. The mess can be cleaned up later when someone invents a new technology.” History suggests that it may be several generations later before someone asks: “Is this machine for the public good or the public bad?” Starhawk emphasizes this concern in her statement: *As a society, we are daily making decisions and setting policies that have enormous repercussions on the natural world. And those policies are being set by officials and approved by a public who are functionally eco-illiterate.*<sup>19</sup>

The history, however short, of the tar sands glorifies the machine. An inventor makes a bigger machine. Policy makers and politicians hear about the bigness and capability of this new machine. They talk more and more about this machine and assume its usefulness, safety and appropriateness must be proven simply because they talk so much about it. The poet Rilke writes about the machine:

*The Machine never hesitates, or we might escape  
And its factories subside into silence.  
It thinks it’s alive and does everything better.  
With equal resolve it creates and destroys.*<sup>20</sup>

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<sup>18</sup> [www.oilsandsdiscovery.com](http://www.oilsandsdiscovery.com)

<sup>19</sup> Starhawk: *The Earth Path*. San Francisco CA. Harper, 2004.

<sup>20</sup> Rilke, Rainer M. *Duino Elegies & Sonnets to Orpheus*. Tr. by Anita Barrows & Joanna Macy. Riverhead Books, Berkley Publishing, New York, NY. 2005.

## Sociology and Politics

The Western Subartic and Plains areas of North America are home to a number of Aboriginal peoples. Ancestors of the Chipewyan, Plains Cree, Saulteaux, Assiniboine, Ojibwa and Blackfoot nations have lived in what is now called the Canadian prairies for centuries and, in some cases, millennia. They lived by hunting, fishing and gathering. Possibly as early as the 15<sup>th</sup> century, contact was made with European explorers. Several centuries passed and the number of European immigrants in western Canada slowly increased. Treaties were signed between some Aboriginal bands (the primary social unit) and the governments of either Britain, or later, Canada. The *British North America Act* of 1867 gave the Dominion Government jurisdiction over *Indians and the lands reserved for Indians*. The purpose of these treaties was not always made clear to those who signed them. Over time it became evident that their purpose was to remove title to lands held by Native people and to make those lands available to European immigrants for settlement and exploitation of their natural resources. Following the formation of Canada in 1867, this process was greatly facilitated by the Dominion Government of Canada under John A. MacDonald. Under MacDonald's National Policy, immigrants were offered 160 acres of *free land* to homestead and farm in western Canada. Immigrants arrived from Britain, other European countries and from the United States. Along with these immigrants came the railway, crossing the prairies and mountains, linking eastern to western Canada. In 1905 two new provinces were formed within Canada: Alberta and Saskatchewan. For a time, Ottawa retained jurisdiction over natural resources until this control was ceded to the provincial governments in the 1930s.<sup>21</sup>

The political scientist, David Laycock points out that *the large influx of immigrants to (western Canada) created a political culture that was more likely to embrace new ideas than the more traditional political culture of eastern Canada*. Thus, all three prairie provinces developed active grain growers' associations in the early 1900s. In Alberta, the United Farmers of Alberta (UFA) became increasingly active both in provincial and federal politics. Import tariffs — another arm of MacDonald's national policy — were seen to favour industries in Ontario and Quebec rather than help “development” in western Canada. Then came the economic depression. In 1935, William Aberhart's Social Credit Party won the provincial election in Alberta. Aberhart, also known as “Bible Bill,” was a Baptist who founded the Calgary Prophetic Bible Conference (Institute) in 1918 and ran a *Back to the Bible Hour* radio program. Aberhart later became interested in the monetary theories of social credit which regarded bank profits as unearned. The Social Credit League believed these profits should be distributed to all consumers by a system of dividends or credits. However, Aberhart also had a deeply rooted belief that nature's resources were God given and available for human exploitation. In this *wonderful province*, he said, *God has been gracious to us... we have enormous natural resources*. As the depression deepened, Aberhart was distracted by various fights. He expended enormous energy fighting with the

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<sup>21</sup> Waldram, James, Herring, Ann and Young, Kue. *Aboriginal Health in Canada*. University of Toronto Press, 1995.

banks, the courts, Ottawa, the media and even members of his own party. The memory of Aberhart remains strong in Alberta.<sup>22</sup>

Aberhart died in 1943 and was succeeded as premier by Ernest C. Manning. Manning was the first graduate of Aberhart's Prophetic Bible Institute in Calgary. (Ernest Manning's son was to become leader of the Reform Party of Canada). In all, Ernest Manning was elected eight consecutive times to the Legislative Assembly in Alberta. During his period as Premier he also held, for varying periods of time, the role of Provincial Treasurer, Minister of Mines and Minerals and finally, Attorney General. Perhaps more than any other political leader in Alberta, he represented for 25 years (1943 – 1968) the political psyche of the majority of Albertans. Manning discarded the more radical concepts of Social Credit and actively developed contacts with big business, especially the oil industry in Alberta. By the early 1960s over 60% of Canada's oil and gas industry was controlled by American companies. Under Ernest Manning, Alberta's provincial government became one of the most conservative in Canada.<sup>23</sup>

Alberta's last Social Credit premier was Harry Strom. Although his tenure was relatively short (1968 – 1971), he introduced a number of innovations to the political scene. Among these was the establishment of a Department of the Environment – the first in Canada.

However, the strong links between the oil industry and successive Alberta provincial governments continues to the present day. During the tenure of Peter Lougheed as Premier (1971 – 1985), his Progressive Conservative government's financial resources received increasing petroleum royalties. In 1976, Lougheed established the Alberta Heritage Fund from these royalties to help meet the future needs of the province. Lougheed was succeeded by Donald Getty who served as Premier from 1985 to 1992. Getty had worked for Imperial Oil and had later formed his own oil company before moving into politics. His government was credited with supporting *the development of non-conventional oil projects*. In 1992, the premiership of Alberta passed to a former Mayor of Calgary, Ralph Klein. Life in Alberta was affluent for many. Klein was a folksy, populist politician. But was there a plan to deal with all the newfound wealth in the province? Who was making the plans for the expansion of the tar sands? Was it being left to the oil industry to make the decisions? Did the provincial government still have control of the steering wheel? If governments relinquish their power to big industry, there should be little doubt that they will take it. In 2006, Klein was succeeded as Premier by Edward Stelmach.<sup>24</sup>

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<sup>22</sup> Laycock, David. *The Power of the Vote*. Ed. by Joanne Goodrich, Centre for Canadian Studies, Mount Allison University. 2001.

[www.mta.ca/faculty/arts](http://www.mta.ca/faculty/arts)

Archives Society of Alberta: Transcripts from William Aberhart's radio broadcasts by Fred Kennedy. 1938.

Day, Moira. *William Aberhart: The Evangelist as Subversive Political Dramatist*. Theatre Research in Canada. Vol. 11. No 2. Fall 1990.

[www.journals.hil.unb.ca](http://www.journals.hil.unb.ca)

<sup>23</sup> Alberta Online Encyclopedia: [www.abheritage.ca](http://www.abheritage.ca)

<sup>24</sup> Legislative Assembly of Alberta: [www.assembly.ab.ca](http://www.assembly.ab.ca)

## Economics

In a 2006 report from the National Energy Board of Canada, it was estimated that \$41 billion had already been invested in Canada's oil sand projects. A further \$7 billion was planned to be spent on construction alone during 2006. Projected oil sands projects to be completed before 2015 were estimated to require an additional \$85 billion.<sup>25</sup>

Alberta Energy and Utilities Board estimated in 2004 that the volume of crude bitumen in Alberta is 260 billion cubic meters or 1.6 trillion barrels. This figure could rise to 400 billion cubic meters (2.5 trillion barrels) as further exploration takes place. The Canadian Association of Petroleum Producers states that investments in the oil sands in Alberta totalled \$8.5 billion in 2005 and 48.8 billion in 2006. The Canadian Energy Research Institute (CERI) estimates that the value of bitumen and synthetic crude oil to be produced over the period 2000 – 2020 could total over \$500 billion, thereby contributing \$789 billion to Canada's gross domestic product through oil sands and oil sands-related activities. Furthermore, CERI predicts that oil sands production and development activities could generate \$123 billion for governments in Canada during the period 2000 – 2020. The Alberta Government's share of this sum would be \$44 billion. Municipalities in Alberta would make \$11 billion. While the federal government's share of the nest egg would be \$51 billion.<sup>26</sup>

In Saskatchewan, new explorations are taking place with claims that there may be even larger amounts of crude bitumen in that province.

## Environmental and Socio-Economic Impacts

The 2004 report of the National Energy Board of Canada states: *The potential cumulative effects of oil sands development and operations are not well understood.* The underlining for emphasis is mine. This statement prompts me to ask: "By whom?"

There are differing views on the tar sands. The promoters of Joseph Fitzgerald's book *Black Gold with Grit*, believe the oil sands to be *a resource indispensable to our way of life*. Fitzgerald regards the oil sands as *one more of the immeasurable Canadian natural resources that would make this one of the richest nations on earth*. Joseph Fitzgerald was *principal man in the field* for the Great Canadian Oil Sands plant near Fort McMurray. For some, writes Fitzgerald: *The lure of the black gold was too much to resist.*<sup>27</sup>

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<sup>25</sup> The National Energy Board of Canada. *Canada's Oil Sands: Opportunities and Challenges to 2015*. Calgary, AB. 2004 and 2006 update.

<sup>26</sup> Richardson, Lee. *The Oil Sands: Toward Sustainable Development*. Report of the Standing Committee on Natural Resources, House of Commons, Ottawa. 2007.

<sup>27</sup> Fitzgerald, Joseph. *Black Gold with Grit*. Sidney, BC. Gray's Publishing. 1978.

In 1995, a task force headed by Eric Newell, a former CEO of Syncrude who became Chancellor of the University of Alberta carried forward Fitzgerald's vision with a plan he sold in Edmonton, Ottawa and Washington. The plan laid the basis for a rapid expansion and "exploitation" of the tar sands.

In contrast, Christopher Hatch and Matt Price, writing for Environmental Defence, describe Canada's tar sands as *The Most Destructive Project on Earth*<sup>28</sup>. Two viewpoints of the same projects!

It is becoming increasingly clear, however, that major hazards are associated with processes used to extract oil from the tar sands. Gaseous emissions from the tar sands operations in the form of large amounts of carbon dioxide and some methane are among the heat-trapping, greenhouse gases that contribute to global warming. Other emissions discharged into the air from these processes include sulphur dioxide, nitrogen oxides, hydrogen sulphide, carbon monoxide, ozone, polycyclic aromatic hydrocarbons, other volatile organic compounds, reduced sulphur compounds and particulate matter. Emissions of sulphur dioxide and nitrous oxides have been linked to the formation of acid rain and the acidification of both soil and water.

The industry states that it has reduced carbon dioxide emissions by about 50% per barrel compared with previous levels. This raises the intensity vs. quantity argument. Although the intensity of emissions may have been reduced, the effect of enormously increased quantities of synthetic crude oil and blended bitumen being currently produced, heavily outweighs these improvements in technique. A Government of Canada paper in 2002, *Climate Change Plan for Canada*, anticipated that large industrial emitters in Canada would collectively release about half of Canada's total greenhouse gases into the atmosphere by the year 2010.

The tar sands operations use enormous quantities of fresh water. Between two and four barrels of water are required to produce one barrel of synthetic crude oil. SAGD methods for extraction are the most efficient in terms of water use with 90% of the water recycled. Yet, a 2007 House of Commons committee report estimates that two thirds of all water removed from the length of the Athabasca River is for oil sands recovery purposes.<sup>29</sup>

What may be of even greater concern is what is seeping back into the Athabasca and other rivers in the oil sands regions. The Athabasca River is part of the Mackenzie River watershed which covers an area of 1.8 million square kilometers. This area is one-sixth of Canada's land base. Migration of pollutants through the groundwater system and the possibility of leaks from the tailings ponds are a major concern for many environmental organizations and

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<sup>28</sup> Hatch, Christopher and Price, Matt. *Canada's Toxic Tar Sands*. Environmental Defence. Toronto, ON. 2008.

<sup>29</sup> *The Oil Sands: Towards Sustainable Development*. Report of the Standing Committee on Natural Resources, House of Commons, Ottawa. 2007.

First Nations communities. The industry's long term-plan is that, after six or more years, the consolidated tailings from these ponds will be deposited in mined-out pits. But what about the seepage that occurs in the meantime?

Energy use is another concern. In many of the tar sands processes, one form of energy, natural gas, is essentially being used to generate heat to produce another form of energy, petroleum. Some sites use natural gas-fired turbines to generate electricity. However you look at it, this is not an energy efficient process. The industry is now concerned that the depletion of natural gas supplies will lower the pressure for existing reservoirs of natural gas. Some people in the industry are raising the question of other sources of energy including coal and nuclear power.

The tailings ponds for the tar sands have now become a major health concern. The news organization Mostly Water claims that companies involved in the tar sands extraction processes are discharging many kilograms of oil and grease into the Athabasca River on a daily basis.<sup>30</sup> Other potential sources of pollution are groundwater seepage, surface runoff water and wind-borne, dirty sand. Toxins from the tar sands' processes of particular concern are arsenic, mercury, naphthenic acids and polycyclic aromatic hydrocarbons (PAHs). Deformed walleye fish were caught in Athabasca lake in 2007. The fish exhibited tumours, deformed spines and fins, and bulging eyes. The local doctor at Fort Chipewyan, near where the Athabasca River flows into Athabasca Lake, has publicised his alarm over the increased number of cases of cancer in that community. In 2008, Chief Vern Janvier and the Chipewyan Prairie First Nation filed a legal claim against the Government of Alberta over the continuing development of the tar sands in the region.<sup>31</sup> Environmental Defence quote a number of sources which claim that both Alberta Environment and Health Canada are caught in a state of denial about the toxicity of the tar sands projects.

Curtis Gillespie writing in the Canadian Geographic describes the destruction of the boreal forest as *the ragged scar being left on the planet*.<sup>32</sup> The photographs accompanying his article were taken from the air. The open-pit mines and tailings ponds inflict the most visible scars. The damage to nature is horrendous. The former Premier of Alberta, Peter Lougheed, is reported to be having second thoughts about the tar sands' developments. He recently described this part of Alberta as looking like a *moonscape*.

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<sup>30</sup> [www.mostlywater.org/node/6332](http://www.mostlywater.org/node/6332)

<sup>31</sup> [www.canada.com/globaliv/bc](http://www.canada.com/globaliv/bc). June 4, 2008.

<sup>32</sup> Gillespie, Curtis. *Scar Sands*. Canadian Geographic. June, 2008.

Appendix to Part I

**Table 1. Number of Oil Sands Projects in Alberta (2008)<sup>33</sup>**

Area	Type of Project	Number Producing	Number Under Construction	Number Proposed	Number of Oil Companies
Athabasca	Primary	6			18
	SAGD	6	1	4	
	Mining UPG	3	2	1	
	Mining			2	
	Pilot	1			
	Other			1	
Cold Lake	Primary	33		1	10
	CSS	5			
	SAGD	2		2	
	Experimental	1			
Peace River I and II	Primary	7	1	3	6
	CSS	3			
	Pilot	1			
Totals		68	4	14	25*

Notes:

Primary sites are those where bitumen has a high API gravity allowing it to flow using only pumping techniques without steam-assisted processes.

SAGD = Steam-Assisted Gravity Drainage.

UPG = With upgrading facilities converting bitumen or heavy oil to synthetic crude oil.

CSS = Cyclic Steam Stimulation (Injected high pressure steam).

\*A number of oil companies are active in more than one area. Hence the total in this row does not equal the total of the right-hand column.

<sup>33</sup> Source: [www.energy.gov.ab.ca/OilSands](http://www.energy.gov.ab.ca/OilSands).

## References for Part I<sup>34</sup>

- Chatwin, Bruce. *The Songlines*. London, UK. Pan Books, Picador Edition. 1988.
- Fitzgerald, J. Joseph. *Black Gold with Grit: The Alberta Oil Sands*. Sidney, BC. Gray's Publishing, 1978.
- Hartmann, Thom. *The Last Hours of Ancient Sunlight: Waking Up to Personal and Global Transformation*. New York, NY. Harmony Books, 1999.
- Johnson, Derek., Kershaw, Linda., MacKinnon, Andy., Pojar, Jim. *Plants of the Western Boreal Forest and Aspen Parkland*. Edmonton, AB. Lone Pine Publishing with the Canadian Forest Service, 1995.
- Lovelock, James E. *Gaia: A New Look at Life on Earth*. Oxford, UK. Oxford Univ. Press, 1979.
- Lovelock, James. *The Revenge of Gaia: Why the Earth is Fighting Back and How We Can Still Save Humanity*. London, UK. Allen Lane, Penguin Books, 2006.
- Lutz, Hartman. *Contemporary Challenges: Conversations with Canadian Native Authors*. Saskatoon, SK. Fifth House Publishers, 1991.
- Marles, Robin J., Clavelle, Christina., Monteleone, Leslie., Tays, Natalie., Burns, Donna. *Aboriginal Plant Use in Canada's Northwest Boreal Forest*. Vancouver, BC. UBC Press, 2000.
- Richards, JH., Fung, KI. Editors: *Atlas of Saskatchewan*. Saskatoon, SK. University of Saskatchewan and Modern Press, 1969.
- Stutchbury, Bridget. *Silence of the Songbirds: How we are losing the world's songbirds and what we can do to save them*. Toronto, ON. Harper Perennial, 2008.
- Vance, Fenton., Jowsey, James R., McLean, James S. *Wildflowers Across the Prairies*. Vancouver, BC. GreyStone Books, Douglas & McIntyre, 1993.
- Waldram, James B., Herring, Ann., Young, Kue T. *Aboriginal Health in Canada: Historical, Cultural and Epidemiological Perspectives*. Toronto, ON. Univ. of Toronto Press, 1995.

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<sup>34</sup> For additional references, see the end of Part II.

## **PART II (2011)**

### Visit to Northern Alberta

On August 10, 2008, I left Vancouver by car and headed north. The first night, I camped at Quesnel, BC. On the second night I camped at Winagami Lake (off Alberta Route 2). I arrived in Fort McMurray on August 12<sup>th</sup> and booked for two nights at a motel. The next day I visited the Oil Sands Interpretive Centre in Fort McMurray where the technology and machinery used in the extraction processes are on display. I then drove north on Route 63 past the Suncor and Syncrude plants with an enormous tailings pond on the east side of the road. Dark clouds gathered and heavy rain started to fall. The low cloud trapped the emissions from the stacks of the processing plants. The sky was dark and the feeling oppressive. I continued north on Route 63 to the end of the paved road. I could go no farther in my car without getting stuck in mud. On my way south again, I turned off into the community of Fort MacKay. There is a new Band Office in the town and a school building that looks relatively new. Many of the houses, however, do not appear to be well maintained. This community, which lies close to where the MacKay River joins the Athabasca River, is now surrounded by tar sands projects. On the way back to Fort McMurray I got stuck in a traffic-jam as people left work at the plants to return home.

While in Fort McMurray, I visited two of the local churches and met their respective clergy. Two viewpoints of the tar sands were clearly evident in my conversations with them. One of the churches was open to providing space for a public forum on the tar sands. The other, despite his suspicions about the reason for my visit, gave me contact information for the public relations director at one of the nearby oil sands plants. This PR person was a member of his parish. I also visited one of the colleges in Fort McMurray and found an openness to having a forum on the oil sands in one of their halls even though they received some funding from the oil companies. An attempt to meet with the Mayor was not successful despite a letter I sent several weeks prior to my visit.

On August 14<sup>th</sup>, I flew north on Air Mikisew from Fort McMurray to Fort Chipewyan. This town of 1200 people is located at the point where the Athabasca River (which flows north), joins Lake Athabasca. The purpose of this trip was to learn about the effects of the tar sands projects on local communities, to meet some NGO representatives,<sup>35</sup> and specifically to attend the Keepers of the Water III Gathering. The theme for this gathering was *Water is Boss!* It took place in Fort Chipewyan, Alberta from August 14 – 17, 2008.

Along with other guests, I was housed in a tent and provided with generous and nutritious meals by the local community. The weather was kind to us, but cold at night. The local

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<sup>35</sup> NGO representatives were previously contacted through the kindness of Ana Simeon.

community provided daily transportation between the camp site on the edge of the lake and the meeting hall in the town. We were made to feel very welcome and the community was eager to tell of their experiences following the “development” of the tar sands projects. During the gathering a fish with two mouths, one above the other, was placed on display in the meeting hall. The fish had been caught in Lake Athabasca by a local fisherman two day earlier. Also on display were photographs of other fish, caught in the same lake, with large tumours under their skin.

Dr. John O’Connor, the former physician to the community at Fort Chipewyan, was present at the gathering. He spoke briefly and was honoured by the gathering. He had returned, at the invitation of the conference organizers, from Nova Scotia where he now lives and practices. During the time of his practice in Fort Chipewyan, Dr. O’Conner had made public the disproportionate number of rare and unusual cancers in people living in the community. Yet, Health Canada continued to deny the need for baseline health tests and adequate environmental testing for toxins was not performed by the Province. Dr. O’Conner found it increasingly difficult to function as a physician in Alberta. I had the opportunity to speak with him. He hails from Limerick, Ireland and is a quiet and unassuming person, genuinely concerned about the community. Every day, on our way from the camp site to the meeting hall, we passed the local graveyard. People in the community told us that the number of burials there during the past decade had significantly increased over those of previous decades.

While in Fort Chipewyan, I met with representatives from five non-governmental organizations (NGOs). Ana Simeon had organized a conference call and connected with these individuals and groups before I left Vancouver. All five NGOs were initially receptive to the possibility of co-sponsoring a public forum on the tar sands in either Fort McMurray or Edmonton. Two of these groups later decided not to participate in a forum.

On the last day of the gathering, Native Chiefs and Elders from three provinces and the Northwest territories met separately from the main gathering. Following their closed meeting, they announced to the total gathering their decision to seek a moratorium on all future oil sands projects until governments and the industry assess the damage already done and find ways to mitigate it. If they failed to achieve a moratorium, legal action would be initiated for destruction of their land and the poisoning of their water. Those involved in this announcement included Athabasca Chipewyan Chief Allan Adam, Mikisew Cree Chief Roxanne Marcel, and Hereditary Dene Chief Francois Paulette. This announcement was reported on the front page of the *Edmonton Journal* on August 18, 2008.

On the flight south to Fort McMurray, I had a window seat on the plane. From the air these so-called “development” projects reveal a vast devastation of the land over a massive area

of northern Alberta. A great sadness now seems to envelope northern Alberta where once the boreal forest and all its life and beauty had abounded.

I found my car in the airport parking lot and headed for home. On the return trip I stopped in both Edmonton and Calgary to visit the offices of two NGOs. I arrived back in Vancouver late on August 20<sup>th</sup>.

Back home, during the night of August 29/30, 2008, I had a fever. The same night I had a dream. I was inside an envelope — an egg-shaped space that was red and hot. As this red envelope got hotter, I felt my fever reach a breaking point. Then, I observed the yellow excavators, one after the other, leave the tar sands and take the road leading south. Only a few yellow machines were left. Then a large white crane also left, moving away from the tar sands.

### Process Work and the Tar Sands

The concept of *edges* was introduced relatively early in the development of process-orientated psychology.<sup>36</sup> In 2008, I chose to use the term “edge” in the subtitle for this paper: *The Canadian Tar Sands: An Edge Between the Old Industrial Paradigm and the New Sustainability Paradigm*. I continue to feel the relevance of this concept as a tool or hook to begin to explore a deeper understanding of the pragmatic and ethical issues surrounding the “development” of the Canadian Tar Sands.

It seems to me that both sides of the issues relating to the tar sands have arrived at an edge — on opposite sides of a chasm. Both sides are announcing: “That, we cannot and will not do.” It may well be that people have multiple viewpoints on these issues. However, two major positions on the use of bitumen as a source of oil come to the fore, namely, the pro-oil sands and the anti-tar sands viewpoints. Is there a way to bridge this chasm and meet at a common edge?

Another process work concept that may have relevance for these issues is that of the high dream and the low dream. For many people in the oil industry and its associated government bodies, the oil sands represent their high dream. This dream is about supplying North America with oil as an energy source for decades to come and to reap the financial benefits of such a resource. For some, this dream extends beyond the North American continent so that with the building of pipelines and provision of oil tankers, oil may be shipped across the Pacific Ocean to China and other energy-hungry countries. This high dream is about what North American culture calls “progress and prosperity.” As humans, we all have our dreams. Yet, depending on how we interpret and act on our dreams, they have the potential to lead to great creativity, but also to horrendous destruction. Is there a way for those caught in the trap of this dream to step back

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<sup>36</sup> Mindell, Arnold. *River's Way: The Process Science of the Dreambody*. London, UK. Arkana, 1989 (1985).

from the edge and reflect on what is behind the dream? Is there a better way to achieve a dream of energy efficiency without destroying the environment? Is there a way to accept responsibility for the havoc these actions have already perpetrated?

What these questions bring to mind is an open community forum and a Native justice circle.

The first book I read in process-orientated psychology was *Sitting in the Fire* by Arnold Mindell. In this book, Mindell writes: *Worldwork is the politics of awareness. It is not only about solving problems, but especially about community awareness.* I suspect one of the reasons the tar sands have developed so rapidly is, not only the price of oil, but also because of the lack of awareness of both Albertans and Canadians in general of their destructive nature. Instead, the focus in the media has been on “jobs and prosperity” created by the oil sands projects. In another of his books, *The Deep Democracy of Open Forums*, Mindell writes about the ability of open forums to make people aware of their actions and their consequences. *Deep democracy*, Mindell points out, *is a new awareness procedure that respects all individuals, parts, and states of consciousness.* Open forums about the tar sands/oil sands will help to create public awareness about the issues involved.

There is also the issue of justice. How are those with major responsibility for the destructive nature of the tar sands to be held to account? Native justice circles provide a traditional way to deal with justice issues where the victim is an entire community and its surrounding environment. Such justice circles will need the leadership and participation of local Native communities. The larger question is how the presence and participation of those responsible in industry and government will be required by the justice system. Canada’s justice system currently lacks legislation to prevent ecocide. Giving support to movements attempting to put such legislation in place at the international level may be the first step in achieving such laws. (See below).

### An Imaginary Public Forum

Roles at the forum include: A public relations (PR) officer for an oil company involved in the oil sands; an oil sands engineer; Individual participants A, B, and C from the local town; an NGO representative; a Native chief; a member of a Native community downstream from the tar sands; an elder; a provincial government representative; a local investment banker; a local federal MP; two facilitators. The circle has seven men and seven women.

Facilitator1. “My name is ---- ----- . I am one of the facilitators for this public forum. I would like to welcome everyone here and to thank you for joining this circle to consider some of the

issues surrounding what some people call the oil sands and others call the tar sands. We are meeting here in Fort McMurray, Alberta which is surrounded by oil company projects. The format for this forum is based on a model developed by Dr. Arnold Mindell at the Process Work Institute, Portland, Oregon. The basic principle of the forum is what has been called *deep democracy*. That means the forum tries to respect all individuals and all viewpoints. It may even attempt to represent the viewpoints of those who are not present physically, but only present as *ghosts* at this gathering.

(The facilitator invites people in the circle to introduce themselves. This done the facilitator invites comments from the circle of participants).

Local Federal MP: “I bring you greetings from the Government of Canada and from the Prime Minister. The Prime Minister sees Canada as *an emerging energy superpower* and recognizes that Fort McMurray is a key community involved in this process. I wish you a good forum. Unfortunately, I have another commitment and have to leave you now.”

PR officer: “I have just come from watching *The Great American Race*, NASCAR’s Daytona 500. This stock car race had more than 100,000 spectators in attendance and millions of others watching on television. This race has become a symbol of America’s fascination with the car. I find it so exciting. Now NASCAR has gone *green* as its cars use a 15% ethanol mix for the gasoline-powered engines and the ethanol is made from corn grown locally in the United States. Americans love their cars and we have a chance to supply those cars with gas.”

Oil sands engineer: “I recently looked on the Internet to find out how many vehicles were in the US. The United States Department of Transportation’s figures for 2005 list 62 million registered vehicles and 6 million unregistered vehicles of all types on US roads. The Wiki Answers website claims there are 250 million vehicles of all types in use on US roads today. The numbers differ, but both show clearly the continued demand for gasoline. In addition, the many industries, including the plastic industry, using oil in the manufacture of their products will provide a continuing demand for oil for many years to come. The US remains hungry for oil. Alberta’s oil sands provide a reliable source for this oil.”

An investment banker in town: “Oil companies operating the Canadian oil sands are in an excellent position to keep their investors happy now and into the foreseeable future. When the Canadian Association of Petroleum Producers (CAPP) state on their website that *Canada’s energy future lies in the oil sands*, I believe them. Alberta’s oil sands supply 1.4 million barrels of oil to the US every day. The projected investment in the oil sands for the year 2010 is \$40 billion. Furthermore, the oil sands industry in Alberta has directly created 35,000 jobs, tens of thousands of temporary jobs, and numerous related service jobs in Fort McMurray and surrounding areas. Over 1000 job vacancies are currently (February, 2011) posted on oil sands

websites. I, as an oil sands supporter, say: ‘These figures represent progress and growth for Alberta and Canada. Canadians are proud of these achievements.’”

NGO representative: “WikiLeaks has released some cables from the US Embassy in Riyadh, Saudi Arabia stating that an oil executive from the Saudi government has warned that estimates of oil reserves in that country have been greatly inflated in order to encourage investments. Is it possible that predictions for reserves of oil located in the Alberta tar sands are also inflated?”

Participant A: “You people keep talking about the tar sands. The correct term is the oil sands. Focus on the product! The real issue is we’ve got oil right here around this town — lots of it — and the US and China want it. Why wouldn’t people want to invest in such a golden opportunity?”

Native chief: “The oil industry with the support of the provincial and federal governments is destroying our land and poisoning our water and food. This is not acceptable to us.”

Participant B: “Governments, for the most part, continue to be wedded to the old-time belief that the market is always right and will bring us all salvation. But this belief has recently been shown to be one enormous bluff by the economic collapse of 2008. The effects of this collapse continue to reverberate around the world. Is the oil industry still trying to tell us we should all believe in the wisdom of the market?”

PR officer: “It is the only system that has survived. All other economic systems have collapsed. Despite the problems of 2008, China, for example is co-opting the market system.”

NGO representative: “The market system has resulted in enormous inequalities between the super-rich and the poor. It is not a sustainable model in its present form. Why do you continue to pretend to us, and perhaps to yourself, that it is a healthy system?”

PR officer: “Look at me. I’m healthy!”

Native community member: “And in my community people are dying. Our fish are deformed. We cannot drink our water any longer. What about the health of our people?”

PR officer: “We in the industry have provided jobs, well-paid jobs for people in your community. It is up to you now to look after yourselves.”

Native chief: “How can we do that when our water and food are poisoned?”

PR officer: “We are not poisoning your water. We trap the effluents from the processing plants in tailings ponds.”

Native chief: “The poisons seep into the river.”

Participant B: “I am really angry that the oil industry is actively engaged in ecocide in northern Alberta.”

Provincial government representative: “That is a very extreme accusation. I am an optimist. I see a glorious future for Alberta and Canada. We can use some of the profits from the oil sands to clean up the environment and reforest the area. I am tired of all this pessimism. It’s too much doom and gloom.”

An elder: “It was more than 30 years ago that synthetic crude oil started to be shipped out from the tar sands. Yet, it took until March, 2011 for a scientific panel to confirm and report to the Alberta Environment Department what other scientists like Dr. David Schindler of the University of Alberta already knew — that provincial government monitoring programs weren’t even trying to determine if the oil industry was polluting the Athabasca River. This is a very sad situation.”

Participant C: “I am imagining a justice tribunal of all species sitting to assess the responsibility of *Homo sapiens* for polluting the Earth. This tribunal is charged to rule on the fitness of humans to remain on Earth based on their behaviour. How would we be judged? Would the human species be issued an eviction notice forthwith? Such a tribunal would undoubtedly hear many witnesses describing the violent and destructive human activity involved in the Canadian tar sands projects.”

Oil sands engineer: “Get real!”

Participant B: “No! No! Sir. You get real.”

Facilitator 1: “Are we beginning to get stuck here?”

An elder: “My impression is that certain basic principles are slowly emerging into peoples’ awareness about what is necessary for healthy, sustainable societies to grow and develop. These principles include: (1) Equity is healthy for everyone, both the rich and the poor; (2) The economy needs to be organized to provide secure jobs for everyone without jeopardizing the wellbeing of ecosystems; (3) Cooperation and concern for one’s neighbour is essential to building a healthy community — what used to be called social justice; (4) Humans are integrally connected to their respective ecosystems — we need to take care of the whole planet because it is

our source of air, water and food for life; (5) Education is key to sustainable and deeply democratic societies.

Facilitator II: “Wow! That was quite a statement.”

PR officer: These principles may sound great and make everyone feel good, but when it comes to practical every day operations, we work on a very simple assumption. This assumption is that our society needs jobs, prosperity, development and a growing economy. The oil sands provide this. Can we do some of these other things that people are talking about here? We are the oil industry. I don't think that is our job.”

Native community member: “Your industry came in here and took our land, destroyed our forest, poisoned our water. We think it is your job to protect the land, to stop polluting the water and to respect our people and our traditions.”

Facilitator 1: “That is a strong statement. It may be difficult for some people to hear that. I would invite everyone to notice what part of your body has been most affected by the discussion. It might be your gut, your head, or other parts of your body. Just notice and be aware of it as we sit together.”

Facilitator 1: “We have some time limitations here. So rather than continue the open discussion at this time, I would suggest a short exercise. Please feel free to participate, or not, as you wish. It is very simple, so I encourage you to participate. May we proceed?” (Some say, “Yes.” Others are silent. Some look sceptical). Well, some have said, “Yes.” So again I invite you to participate in this short exercise. If you prefer, however, just feel free to observe.”

Facilitator 1: “Focus again on that part of your body that caught your attention a moment ago at the end of our discussion. Notice its energy. Notice the feeling or sensation in that part of your body. Now think of a place in nature that matches the energy or feeling of this part of your body. It may be a place you have been to, a place that has special significance for you. It may be an imaginary place in nature. It may be an animal or a plant that caught your attention. Now, imagine yourself becoming this place in nature, this animal or plant. See it, hear it, smell it, breathe it in. Stand up and move in this place. Move like this creature, if you wish. Take a few moments to do this.” (After a brief period of time, the facilitator continues). “Now, as this place, what advice is it giving you? What is the message of this place on Earth to you about what you have heard and experienced in this circle? Again, let us take a brief moment to listen to your place in nature, or to this being you have become.”

Facilitator 1: “We have a little time left for someone to share some insight, some thoughts, some feelings you experienced from this exercise.”

Participant C: “The small finger on my right hand became tingly and itchy. It caught my attention. It made me think of a small creature full of energy. It made me think of a humming bird. This bird is so small, but so full of energy. It creates its own energy. The humming bird uses a kind of intrinsic energy to keep it hovering in space around an attractive and beautifully coloured flower. It does not need an outside source of energy other than what it eats and drinks. It creates its own source of power. I think this may be the message of the humming bird about the oil sands for us.”

Facilitator 1: “That is a wonderful image. Thank you for sharing it with us. Would anyone else like to share their experience? We have time for one more person.”

PR officer: “When you first proposed this exercise, I said to myself: ‘What is this! In a moment he is going to be asking us to bow our heads in prayer!’ Then, I realized my legs were really stiff from all this sitting and I needed to move them. This got me thinking about our family trip to Tofino on the west coast of Vancouver Island last year. My legs got lots of exercise there, both through hiking the Pacific Trail and water skiing on those powerful waves coming in from the Pacific. Then I thought: ‘You know, maybe there are alternative forms of energy to oil. How would it be if we harnessed the enormous energy of those waves?’ An interesting thought. An interesting exercise.”

Facilitator 1: Yes! That is exciting. Thank you. The waves and the humming bird — two seemingly very different forms of energy in nature. Wonderful images! So perhaps we need, somehow, to continue this discussion — maybe at another forum, or perhaps at the coffee shop. I would like to thank all those who spoke and also those who held thoughts for another time. Thank you all for your participation. Please stay and enjoy some of the goodies from the table at the side.

(For references for the content of the imaginary open forum, see below)<sup>37</sup>

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<sup>37</sup> Nikiforuk, Andrew. *Tar Sands: Dirty Oil and the Future of a Continent*. GreyStone Books, 2008.  
Canadian Association of Petroleum Producers (CAPP) website. Also: <http://oilsands.infomine.com/careers>.  
Wilkinson, Richard and Pickett, Kate. *The Spirit level: Why Equality is Better for Everyone*. Penguin, 2010.  
Edwards, Andres R. *The Sustainability Revolution*. New Society Publishers, 2009.  
*The Globe and Mail*. Toronto, Canada. March 10, 2011.  
Tomandl, Stan and Jacob, Ann. Process Work worksheets. Victoria, BC. 2010 – 2011.

## An Edge Between the Old Industrial Paradigm and the New Sustainability Paradigm

The old industrial paradigm states that human prosperity lies in exponential growth and development. Consumption is good, says the old paradigm. In the old paradigm certain words predominate. These words include: development, profits, prosperity, the market, shareholders, resources and money. The old paradigm tells me to be concerned with self-promotion. What is really important is what other people think of me and my status in society. I must endeavour to keep up with the Joneses, indeed exceed the Joneses, with the magnificence of my house, the acceleration speed of my car, or the size of my TV screen. In the old paradigm, one principle is above all others: growth in the economy is paramount.

The new sustainability paradigm declares there are limits to growth. The production and accumulation of “stuff” based on the immediate availability of seemingly endless energy supply is no longer sustainable. Words used in the new paradigm differ from those of the old paradigm. The new paradigm has words such as respect, equity, sustainable jobs, a stable-state economy, prevention, interconnections, justice, accountability and responsibility. The new paradigm proclaims the importance of intrinsic values such as self-acceptance, relationships with family and friends, community involvement, and connections with nature. In economics and business adherence to certain principles will be required in the new paradigm. These principles will include the precautionary principle, stewardship of the land, and the principle that the polluter pays.

The tar sands projects in northern Alberta are horrendous in scope. Ecocide is an accurate term to describe the destruction of the boreal forest, the production of acid rain, the poisoning of the world’s third largest watershed, and the production of massive quantities of greenhouse gases with their resultant effects on global warming. Too many people have died as a result of these projects through the poisoning of water and food sources (for example, in Fort Chipewyan) or in road accidents (for example, on Route 63 on the way to and from Fort McMurray). Humans are part of the ecosystem. Ecocide includes homicide. Canada’s legislation needs to include laws against ecocide. UK lawyer, Polly Higgins published a book in 2010 titled *Eradicating Ecocide: Laws and governance to prevent the destruction of our planet*. Higgins proposes the following definition for ecocide for the purpose of international law:

*(Ecocide is) the extensive destruction, damage to or loss of ecosystem(s) of a given territory, whether by human agency or by other causes, to such an extent that peaceful enjoyment by the inhabitants of that territory has been severely diminished.*<sup>38</sup>

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<sup>3838</sup> Higgins, Polly. *Eradicating Ecocide*. London, UK. Shephard-Walwyn Publishers, 2010. p. 63.

As examples of ecocide, Higgins lists the deforestation of the Amazonian rainforest, and the Athabasca Oil Sands in north-eastern Alberta, Canada. Writing about Higgins's book, Bianca Jagger, the human rights advocate, states: *It is vital that we set global standards of accountability for corporations, in order to put an end to the culture of impunity and double standards that pervade the international legal system.*

When humans start wars, holocausts, or ecocidal projects, these activities gain a momentum that initially appears to be unstoppable by those actively engaged in such destruction. The process is like a run-away train without breaks. This is especially so when such activities are supported and given "legitimacy" by governments. Only when sufficient numbers of people, more distant and detached from these activities, become aware of their horrendous nature and appalled by their scope, may the run-away train be brought to a halt.

The industrial revolution was based on the availability of fossil energy in the form of coal and oil. Humans, at least in the western world, became addicted to the immediate availability of energy at the click of a button or the turn of a key. But this era of history is now coming to an end either because supplies of fossil fuels are running out, or because the emissions resulting from the excessive use of these sources have reached such toxic levels that life on this planet is now threatened. Nuclear fission is not an acceptable form of alternative energy. It is neither safe nor sustainable. The effects of waste from the nuclear industry on future generations cannot be ignored by responsible societies. In 2011, we are once more reminded (we forget so easily!) of the risks associated with nuclear accidents. As Japan struggles to contain radiation, we are also reminded of the horrendous acts of bombing with nuclear weapons produced by people who claim to be responsible citizens. Hydro-electric power has served well in many countries. Yet, major dam projects, or an uncontrolled number of so-called micro-hydro projects, are also damaging to the environment. All energy-producing projects need to be made accountable to the public they serve for safety and care of the environment. Other alternative energy sources such as solar, wind, wave and tidal, or geothermal will not be cheap, so communities and individuals will need support from their governments to introduce these. Governments, in turn, need help to shift their focus away from fossil and nuclear sources of energy towards more sustainable forms of energy. Above all, each and all of us will need to reduce our energy usage by lifestyle changes.

One of my earliest childhood memories was of a day when a visitor arrived unannounced at our home. My mother made a quick decision to bake a sponge cake for afternoon tea. In support of this project I was dispatched to the end of the garden to fetch some eggs from the henhouse. I achieved the first part of this mission successfully. However, on my way back to the kitchen, I tripped on the edge of a paving stone and fell down. The eggs crashed to the ground and were destroyed. I scraped my knee. I was not paying attention to where I stepped. Perhaps my thoughts were too much on my piece of the sponge cake which always had a thick layer of cream in the middle. I was *unaware* of the *edge* of the paving stone. The egg retrieval project had

not been planned with sufficient foresight and I came crashing down along with the eggs. My mother had to change her plans and, as I recall, made scones instead. My mother had not put all her eggs in one basket! Having a diversity of recipes helped facilitate this change of plan. It is easy to get excited about a project and to focus on the product. In my case the product was sponge cake with cream. In the tar sands projects the product is oil. Industry, governments and societies need to diversify their sources of energy and be ready to change plans before destruction of the planet occurs.

The resolution of the issues surrounding the tar sands will require a long-term, multifaceted approach. This approach will include creating an awareness of the horrendous nature of these projects, exposing denials and cover-ups on the part of industry and government. Justice is required. Appeasement of those responsible for these abhorrent projects is not acceptable. Responsibility must be accepted by those involved in the “development” of the tar sands projects. Open forums and Native justice circles may form part of this process. However, for the long-term, legislation at the United Nations and national government levels will be required to prevent future ecocide. Such legislation will require many years, perhaps generations to put in place. The comparison that comes to mind is the process involved in the abolition of slavery. This process, started by William Wilberforce and others in the 1700s, still continues!

But, one day a new story will be told. The era of the Sustainability Revolution will take hold. The new paradigm will declare that life is good without all the “stuff” collected during the Industrial Revolution. As George Monbiot writes, we humans must become part of this change:

*People with strong intrinsic values must cease to be embarrassed by them. We should argue for the policies we want, not on the grounds of expediency but on the grounds that they are empathetic and kind; and against others, on the grounds that they are selfish and cruel. In asserting our values we can then become the change we want to see.<sup>39</sup>*

Until only a few hundred years ago, humans used either intrinsic sources of energy or genuine horse-power (camel-power in some countries) to achieve the daily tasks involved in living. Then the industrial revolution introduced extrinsic sources of energy to human activities. For a time this brought many benefits and creative achievements. Then increasing numbers of humans became addicted to these extrinsic sources of energy with their accompanying destructive, suicidal behaviours and effects. The industrial revolution focused human attention on machines and “stuff” which, in turn, led to a fascination with extrinsic values. Is it any wonder that we have become addicted to many of the products of this revolution? The capitalist system and the stock market feed such addictions. We have an intravenous drip to feed our addiction!

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<sup>39</sup> Monbiot, George. *Transcending Self-interest*. In: *Resurgence*. Issue 265, March/April, 2011. pp. 10–11.

Yet, there are signs of change. Perhaps small, but each represents important first steps. For example: (1) The new constitution in Ecuador recognizes the rights of nature; (2) At least 100 municipalities in the United States have ordinances permitting citizens to file lawsuits on behalf of natural resources and ecosystems; (3) A Declaration of Rights for Cetaceans (whales, dolphins, and porpoises) was prepared by a group of scientists and philosophers meeting in Helsinki, Finland in 2010.<sup>40</sup> (4) The proposal by Polly Higgins (referred to above) to introduce legislation at the United Nations to prevent ecocide. (5) In 2011, Bolivia passed “The Law of Mother Earth.”

Like the small humming bird, they may generate actions resulting from their own intrinsic energy. The humming bird, with seemingly enormous energy for its size, hovers in one spot and flirts with us. It makes us aware of its presence, a symbol of the creativeness and beauty of nature. Then there is the butterfly, also seemingly so small and insignificant. Yet, it has attracted the attention of physical scientists across the world, many of whom now recognize the significance of *the butterfly effect* in bringing about change. Let us hover and stir our environment, wherever we are. Together, we just might create a mighty wind of change!

Tom Martin,  
Victoria, BC. Canada.  
July, 2011.

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<sup>40</sup> Trimarco, James. *Saving our Wild Things: What's so Special About Humans?* In: *Yes! Magazine*. Issue 57. Spring, 2011. pp. 45-47.

## References for Part II<sup>41</sup>

- Edwards, Andres R. *The Sustainability Revolution: Portrait of a Paradigm Shift*. Gabriola Island, BC. New Society Publishers, 2009.
- Higgins, Polly. *Eradicating Ecocide: Laws and governance to prevent the destruction of our planet*. London, UK. Shephard-Walwyn Publishers, 2010.
- Mindell, Arnold. *River's Way: The Process Science of the Dreambody*. London, UK. Arkana, (1985) 1989.
- Mindell, Arnold. *Sitting in the Fire: Large Group Transformation Using Conflict and Diversity*. Portland, OR. Lao Tse Press, 1995.
- Mindell, Arnold. *The Deep Democracy of Open Forums*. Charlottesville, VA. Hampton Roads Publishing, 2002.
- Nikiforuk, Andrew. *Tar Sands: Dirty Oil and the Future of a Continent*. Vancouver, BC. GreyStone Books, 2008.
- Wilkinson, Richard and Pickett, Kate. *The Spirit Level: Why Equality is Better for Everyone*. London, UK. Penguin, 2010.

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<sup>41</sup> For additional references, see the end of Part I.