"Power and the Politics of Sustainability", By the **Block 1912 Collective**

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For generations, Canadians have depended on the export of natural resources—a seemingly limitless supply of fish, fur, gas, minerals, oil, timber, water, and wheat—for economic prosperity. Debate over the control and benefit of those exports has shaped Canadian politics. Yet over the last thirty years, as exploitation outpaced natural regeneration or depleted non-renewable resources, new political questions about the future and social and ecological sustainability emerged. Today, sectors of Canadian society disagree over the meaning of sustainable development, that is, the level of resource exploitation that is sustainable, and the extent to which Canadians should restrict economic growth. Sustainable development, popularized in *Our Common Future*—the 1987 Report of the World Commission on Environment and Develo

pment (WCED)—is widely defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (1987: 8). Recognizing a planet in distress from environmental decay and economic injustice, the report's authors called for "limits to material growth" and moral concern by resource rich countries to share their wealth with poor countries. The document's impact was limited, however, by equally powerful and contradictory messages equating sustainable development with "more rapid economic growth" to alleviate "the strains on the rural environment of developing countries," increase "productivity and consumption standards" and diversify export dependent economies (Rees, 1990: 1; Richardson, Sherman and Gismondi 1993: 49).

In 1992 at the United Nations Earth Summit in Rio, representatives of industrialized and developing countries, non-governmental organizations and social movements debated comparative and normative reasons to restrict economic growth, protect biodiversity and redistribute economic wealth and environmental capital. They explored practising the precautionary principle, establishing rights for other species, and protecting and regulating the use of common properties such as oceans and the atmosphere. Ironically, while government and business embraced sustainable development in the early 1990s, many in the environmental movement rejected the term, fearing its meaning had been co-opted. "The goal of sustainable development" one critic argued "is viewed by some economists and business groups as being merely to preserve the environment to the extent that it is necessary for the maintenance of the economic system" (Beder 1993b). Since Rio, an all-out contest to influence the meaning and use of sustainability has taken place among corporations, social movements, planners, scientists and citizen activists. In 2002, the year of the UN Earth Summit on Sustainability in Johannesburg, and a decade after Rio, differences between corporate visions of sustainability and those of environmental organizations, social movements and poor countries of the south have become sharper.

While many employ the concept of sustainable development *to change* the way the economy works, others use the

concept *to explain* current economic ways. Yet sustainability is about both meaning and consequence. As the following Canadian stories show, current growth patterns cannot be sustained—collapsed fisheries, excessive toxins in bloodstreams, the emergence of genetically modified organisms in our food, over consumption, and large-scale disturbance of forest ecosystems by logging and oil, gas, mining and hydro-electric projects, have radically changed ways of life, production and ecosystems. Environmental historian J. R. McNeill argues in *Something New Under the Sun* that the twentieth century "is the first time in human history that we have altered ecosystems with such intensity, on such scale and with such speed" (2000: 3). Knocking ecosystems apart to extract single elements for production or consumption, introducing labour displacing technologies, and taxing the ability of local and global ecosystems to absorb and breakdown pollution and waste products is weakening the regenerative capacity of the planet. Struggles for livelihood and sustainability—whether in fishing or logging communities on the east and west coasts, or one-industry towns and native communities in northern Canada, or in congested urban centres—affect populations in an uneven, unjust, gendered, and spatial manner and reveal an underlying crisis of the biosphere.

However, dramatic consequences and crises rarely bring closure to unsustainable practices. Instead, the right to define sustainability—the contest for meaning—resurfaces. Claims by the victims—the unemployed fisher, the resident living near toxic dumps, the family farmer, the urban consumer, the concerned citizen—directly confront industry and government counterclaims that dis-empower or explain away victim views, insisting instead that their specialists know best, and that sustainability can only be achieved through economic growth. Both industry and consumers appear even less sympathetic to requests from ecologists and ecocentric thinkers to preserve nature for its intrinsic worth, that is, to put nature ahead of human interests and human uses.

Canadian Theories

Concerns regarding the sustainability of development in Canada predate the publication of *Our Common Future* by several decades. Historically Canada's wealth was defined by its frontier economies—the crops, energy, fish, minerals and timber extracted from prairie provinces, rural segments of the Atlantic provinces, and the north. Resource-dependent towns in Canada followed boom and bust cycles as commodity prices fluctuated, mines were exhausted, forests depleted and frontiers shifted (Elliott 1981). Social analysts focused not solely on mining and timber towns, but also on Canada's agrarian struggles that spurred some of the most significant twentieth century protest movements (Brym 1978; Skogstad 1980). Less documented were other contradictions of development such as regulatory apathy, industrial pollution, and racism that destroyed the social fabric of native communities (Shkilnyk 1985). Contemporary research examines the contribution of informal economies to rural survival (Felt and Sinclair 1992) and whether tourism and service-based industry offer sustainable alternatives to global agro-industry (Epp and Whitson 2001).

In the mid-1970s, the Berger Commission into the

ecological and social impacts of gas exploitation in the Beaufort Sea and the proposed Mackenzie Valley Pipeline heard concerns about justice and aboriginal rights similar to those expressed in *Our Common Future*. Justice Berger went into native communities, holding informal discussions using translators, and integrated indigenous perspectives into the Commission's call for a moratorium on development. Berger particularly emphasized the distinctiveness between white and native societies, and indigenous peoples' dependence on the land for identity, food and the future. Weighing social and cultural impacts alongside biophysical impacts, t~~, t~~he Berger Commission be~~has also come to~~ came a democratic prototype for public involvement against which subsequent Canadian public inquiries would be compared (Berger 1988). A generation later, approval of the James Bay hydroelectric projects and diamond mining in the Arctic have undermined Berger's legacy of aboriginal justice, democratic public participation, and concern for ecological sustainability (CEAA 1996; Wismer 1996; McCutcheon 1991).

Over the years, the concept of sustainability has wandered ambiguously between two theoretical paradigms about the society-nature relationship. Literature on Canadian natural resource economies and the politics of sustainability reflects this chronology of paradigms, from limits to growth arguments by staples theorists and political economists who had suggested that human communities are defined by their natural environments, to social constructionist accounts of how nature is imagined as resource or ecosystem and how political actors frame environmental conflicts. These two paradigms take different emphases when interpreting sustainability.

Harold Innis, in his classic descriptions of the Canadian fur trade (1930) and cod industry (1940), asserted that the geographic and biophysical characteristics of particular staple products shaped settlement, employment, transportation, communication and political systems in Canada. Staples theorists also noted a persistent flow of surplus from resource-rich hinterlands to urban centres and found that these national and foreign centres held market and state power over the hinterlands (Dunk 1991). Describing a society-nature relationship that directly countered Frederick Jackson Turner's romantic images of the American frontier, staples theory is influential and, perhaps, the most criticized theory of civilization's relationship to the natural environment. Today, despite Canada's relative prosperity and power in the world economy, Ciccantel (2001) argues that its resource provider role continues, in particular provision of raw materials to U.S corporations. Some fear that fresh water will be Canada's next staple export (Barlow and Clarke 2002).

Nearly a half-century since Innis's death, elements of staples theory inform studies of Canadian farm labour policy (Shields 1992) and forest development (Pratt and Urquhart 1994: Marchak 1983, 1995). Innis's work also influences environmental sociology and a political ecology, which attribute environmental crisis to the expansionist tendencies of capitalism (Schnaiberg and Gould 1994; O'Connor 1994). The propensity of capitalism to expand and speed up manufacturing has been called "the treadmill of production" (Gould, Schnaiberg and Weinberg 1996). Ownership of production not only concentrates in fewer hands—breaking apart old economic and social relations, and increasingly deskilling labour and displacing workers with machines—but with each increase in crop yield, wood pulp or fish

catch, nature's ability to regenerate renewable resources, absorb industrial pollution and mitigate ecological disturbances lessens.

Social constructionism, on the other hand, examines discourses about nature, environmental problems and risks associated with economic development. Social constructionism analyses definitions of the situation shaped by powerful groups and interests in society and the ability of each—corporations, scientists, the media, interest groups and politicians—to define reality in ways that are accepted as true (Birmingham 1998). Social constructivists ask how claims are presented to persuade audiences of a problem; what claims-making style is used—legal, scientific, moral, etc.; what is the identity of the claims maker; and how power and authority are used to legitimate and "construct environmental problems" (Hannigan 1995: 34-5).

Sandlos (1997), in his study of purple loosestrife, showed how *a plant* becomes socially constructed as *a weed* and labelled an environmental problem by scientists; Wall's (1999) study of the CBC program, *Nature of Things,* found that between 1960 and 1994 ideas of nature shifted from something to be known and controlled through science to nature as innocent victim, and this affected popular perceptions of environmental issues; Hanson (2001) studied myths of settler individualism and rancher antipathy to government regulations in Canada's west to explain the apathetic attitudes towards loss of agricultural land to rural subdivisions and acreages; and, Ali's (2002) study of the Hamilton, Ontario plastics fire contrasts the claims by government officials, technological experts, environmentalists and lay people to show how technical experts control public debate about environmental risk.

Both theoretical approaches are useful. In resource-dependent towns across Canada, the lives of citizens continue to be defined by the economics and politics of resource extraction and debates over sustainability continue to be characterized by longstanding conflicts over control of land, resources, wealth and issues of livelihood. In urban spaces across Canada emergent issues of global warming, pollution risks, urban congestion, green consumerism and genetically modified foods have entered public discourses, bringing new questions of sustainability into debate and instigating new terrains for confrontation between citizens, governments and corporations. Although initiated through the participation of urban residents in an international political community, in nearly every instance, such global issues inevitably become local democratic issues, as they describe the production, consumption and lifestyles of Canadian citizens. Combining the macroanalysis of states, ecosystems, corporations and social classes with the microanalysis of language, meaning and authority promises an effective approach to examining power, resistance and the politics of sustainability.

Ecological Exhaustion and Social Crisis: The Collapse of the Atlantic Fisheries

The fishing boat, nets bursting with catch, symbolizes an almost patriotic confidence in Canadian nature as abundant and never ending. Such impressions of plenty have shaped Canadian attitudes, values and uses of natural resources over the last two centuries. The closure of the Northern Cod fishery in Newfoundland in 1992 – 93 challenged forever the idea of nature as cornucopia. Nevertheless, most Canadians have ignored the lessons.

In Newfoundland, Northern Cod migrate from "their winter breeding ground about 100 miles offshore under the ice" to feed on the capelen, which spawn on the beaches from mid-June to mid-July. “Easy to catch with very simple and economical technology,” the Northern Cod sustained a local inshore fishery of small boats crewed by local men. Combined with labour by women and children, who salted and dried fish, and local merchants, who took fish in exchange for basic necessities, the traditional Newfoundland outport community managed the inshore fisheries for centuries. As one Newfoundland fisher explained, people “built their whole culture on fishing” (Martin 1994: 29).

A common property resource, owned by no one, the fisheries began to change in the 1960s as large national and foreign trawlers, factory freezer ships and dragger ships took large amounts of cod—estimated at some 8 million tonnes between 1960 and 1975—from deepwater breeding grounds of the Grand Banks, which altered the capacity of the fish population to reproduce, and the ecosystem’s ability to recover. In this open-access context, Spanish and Portuguese factory fishing fleets were principal overfishing culprits. To control them, the federal government in 1977 extended Canadian territorial waters from 12 miles to 200 miles across the Grand Banks. Nevertheless, overfishing continued and the commons dilemma was caused now by Canadian inshore fishers who increased catch by using larger trap and longliner boats and adopting new technologies such as fish finders, although many blamed the falling off of fisheries on the proliferation of seals, protected by the sealing ban, consuming too much fish (Harris 1999). When fish catch and fish stocks declined further, the government declared a moratorium in 1992—which threw 30 to 40,000 men and women of the inshore fisheries communities into unemployment and increasing despair. “To say you can’t go on the water is like telling farmers in Idaho that in the spring they can’t plant. Your whole society is geared to the cycle” (Martin 1994: 29 and 32). As sociologists Palmer and Sinclair explain, the resulting “ecological crisis has produced a social crisis” (1997: 1).

The titles of books analysing the collapse of the Atlantic fisheries—*The Oceans Are Emptying; When the Fish Are Gone; Strip Mining the Sea*—capture the intensity, scale and speed of destruction by an economic activity operating within ecological processes. Taking a political economy perspective, these authors attribute the collapse to optimism of governments about fish stock growth and regulatory models, and the treadmill of production that exerted market pressures on fishers who, encouraged by government to purchase larger vessels, new nets and new technologies, became highly indebted and sought ways around government quotas and regulations in order to increase catch and

make payments on boats and gear (Craig and Sinclair 1997; Rogers 1995). Rees explains the ecological consequences, “the trophic relationship of industrial economies to their host environments remains that of parasite to host—the former gains vitality at the expense of the vitality and regenerative capacity of the latter" (1999: 26).

Taking an analogy from banking, ecologists maintain this approach means drawing down the principal instead of living off the annual interest (depleting natural capital stocks instead of consuming only a percentage of the annual growth). In fisheries, forestry and agriculture, analysts use concepts such as quotas, annual allowable cut and sustainable yield to make claims about sustainable use of resource stocks—that is, they make claims about how much exploitation of nature can occur without upsetting ecological balance. But, the natural capital metaphor, while useful, is limited because it depends on the authority of scientists to establish quotas or annual allowable cuts, to identify the amount of principal and the interest rate and to predict how much exploitation is sustainable. There are, however, many competing social pressures upon scientists.

In the Atlantic fisheries case, federal and local politicians, industrial fishing firms, consultant scientists, small fishers, field scientists and managers within the Department of Fisheries and Oceans (DFO) often disagreed on the scientific facts, and did not share values for conservation and community. Local fishers, small-scale inshore fishers in particular, argued that scientists over-calculated the fish stocks. Miscalculations allowed for increased quotas and resulted in excessive fishing, which threw the ecosystem into imbalance. In *Fishing for Truth*, Finlayson cautions that it was not a simple case of scientific error that led to the collapse. Developing a social construction analysis of Northern Cod stock assessment science, he questions the "epistemological authority of science," scientists allegiance to objective, neutral empirical methods and scientists claims to be above politics. Finlayson argues "social processes had significant input into the creation of scientific knowledge claims" and resulted in "interpretive flexibility" of data (1994: 70, 81 and 150). Exposing not only pressure from politicians, but factions, personalities and battles among DFO scientists, he found that scientists put personal interests ahead of the public good, practised a kind of tribal warfare, privatized and did not share data, accepted evidence provided by large fisheries corporations and rejected counter-evidence provided by inshore fishers.

Knowledge and power can shape data, facts, policies and scientific models. For Finlayson, the selection of models to depict nature is highly susceptible to social influence. As an example, the decision to use weight of fish or biomass "to express stock strength" and make management decisions—instead of fish population, a model encouraged by some DFO researchers and local fishers—adopted a commercial industry standard. Finlayson explains "the choice to treat the stock as a biomass can result in a high degree of uncertainty as to the actual numbers and reproductive potential of

the stock. Two hundred thousand 10 kilogram fish have the same biomass as one million two kilogram fish but the two populations have very different implications for resource management" (1994:70). Finlayson's study concludes that the effects of using the industry model, and rejecting the ecological knowledge and models suggested by some DFO researchers and local fishers, biased the science and eventually destroyed the fisheries.

In other Canadian resource disputes, local knowledge of ecosystems—including ethno-ecological and traditional knowledge of aboriginal and local users—has acted as a check on the biases of expert knowledge, providing for alternative resource management models, which draw on community values of reciprocity between human and non-human life, a sense of scale and conservation of resources (Neis and Felt 2000; Walter 1994). Controversy over the use of traditional ecological knowledge in ecosystem management confirms its democratic promise, and the threat it poses to industrial and professional environmental knowledge brokers (Robinson and Kassam 1998; Goldman 1998; Barsh 2000). But, keep in mind that local knowledge can sometimes serve local self-interests, not necessarily ecological interests. Recent fisheries studies suggest using a mix of science, local knowledge, ecocentric values and ethics as part of a management approach to more just fisheries that protect ecosystems and human communities (Coward, Ommers and Pitcher 2000).

Biotechnology, Food and the Environment

Corporate influence over the science of food biotechnology is also raising issues of democracy and sustainability. “Biotechnology” is broadly defined as the use of biological processes of microbes, and of plants or animal cells, for the benefit of humans (ERS 2001). Biotechnology is expected to develop into one of the key technologies in the twenty-first century (Halal et al. 2000) and will have an impact on human health, livestock, fisheries, crops, foods, forestry, environmental engineering and energy (Coates et al. 1997). Genetically modified organisms (GMOs) are the product of genetic engineering, in which genes of a living cell are altered or moved. Advocates of genetic engineering emphasize its potential benefits; critics warn of negative impacts on human health, biological diversity and ecological balance.

As of 2002, the U.S. Department of Agriculture had approved fifty-three genetically modified foods, including corn, rice, canola, cantaloupe, sugar beet, soybean, tomato, flax, potato, cotton, radicchio, squash, papaya, and oilseed rape (OFAS 2002). These foods are genetically altered to make crops resistant to certain pests and herbicides, delay food decay and create sterility. Inserting a gene segment of an insect, for example, is believed to generate a protein in the food that creates resistance to pests. Similarly, herbicide resistance allows spraying to kill unwanted competitor plants without damaging the crop. Genetic modification can also add desired nutrients to food crops. Golden rice, a new type of rice with beta-carotene, is intended to save many people in developing countries from blindness caused by vitamin

A deficiency (Nash 2001). Monsanto, a leader in genetic engineering, claims biotechnology holds promise for consumers seeking quality, safety and taste in their food choices; for farmers seeking new methods to improve their productivity and profitability; and for governments and non-governmental public advocates seeking to alleviate poverty, assure environmental quality, preserve biodiversity and promote health and food safety (http://www.biotechknowledge.monsanto.com/). Biotechnology is also promoted as being critical in preventing world hunger, protecting agricultural land from soil erosion and slowing water depletion (FAO 2000).

The corporations that develop and apply GMOs are the primary promoters of biotechnology, with support from the U. S. government and the World Trade Organization, both of which protect corporate monopolies rather than indigenous plants and genetic information. On its website, Monsanto presents the following statement by Dan Glickman, U.S. Secretary of Agriculture:

> Biotechnology's been around almost since the beginning of time. It's cavemen saving seeds of a high-yielding plant. It's Gregor Mendel, the father of genetics, cross-pollinating his garden peas. It's a diabetic's insulin, and the enzymes in your yogurt ... Without exception, the biotech products on our shelves have proven safe. (http://www.monsanto.com/monsanto/biotechnology/default.htm)

Monsanto claims that biotechnology research continues the human quest to improve plants and animals. Other support for GMOs and GM foods include academics and scientists as well as institutions created by the biotechnology industry (Carlson 2001). One study by the U.S. Food and Drug Administration (ERS 2000) compared yield and pesticide usage for GM crops and concluded that GM crops are cost effective, yet it did not calculate for possible long-term negative effects on human health or the environment. According to the editors of *The Ecologist*, Monsanto “has been quick to stifle any debate that might threaten” its interests, including delaying a special issue of *The Ecologist* devoted to examining Monsanto’s practices (1998: 251). Other critics question Monsanto’s claims to be serving the public good, “The push for patents on genes is not about encouraging scientific endeavour and pushing the frontiers of medical knowledge. It is about ring-fencing knowledge. It is about privatizing the very basis of life" (Simpson, Hildyard and Sexton 1997: 12).

GMOs and GM foods are not without other problems: potentially they could reduce genetic diversity worldwide; transfer genetic changes to plant relatives to create super weeds; possibly develop strains of pests resistant to genetically engineered protections, and unintentional damage could occur to beneficial insects or there could be possible allergic reactions (Altieri 2000; Bocking 2000). GM canola is a major crop on the Canadian prairies. Recently, through cross-pollination, non-GM canola acquired herbicide resistance and has spread across fields, making

it difficult to control in fields not intended for canola. Control will likely require more potent herbicides. One canola producer says, "I'm not anti-technology. But ... science is working against us... It may be necessary to use a lot more potentially more harmful chemicals to kill this monster ... And I will never be able to grow an organic crop... for the future, I will never be able to effectively use Roundup for my weed control" (*Globe and Mail* July 15, 2000). Monsanto's Roundup is the herbicide most commonly used by farmers. The spread of herbicide resistant canola through natural cross-pollination is making prairie fields unfit for organic farming, even where GM seeds were not planted (*Globe and Mail* July 15, 2000).

The social construction, presentation and framing of GMOs by political and corporate proponents tend to silence public opinion (Anderson 2001) but an anti-GMO movement is on the rise (Reisner 2001). A recent poll showed U.S. citizens becoming aware of uncertainties and problems (Shanahan et al. 2001). Critics point to the inadequacy of state regulation (Gaivoronskaia and Solem 1999) and the deeper problem of capitalist organization of food production and distribution (Magdoff et al. 2000). Greenpeace Canada has developed a green list of non-GMO foods and a red list of foods potentially contaminated with GMOs. The red list identifies products containing soy, corn, canola, potatoes and their derivatives from manufacturers that do not guarantee non-GMO ingredients and have not ensured the products are made with non-GMO ingredients. [1] The most vocal critics of GMOs are from the European Union, Japan, Australia and New Zealand. Resistance against biotechnology companies is less strong among those countries dependent on the U.S.-controlled system of trade and investment under the IMF/World Bank Structural Adjustment Programs. The Canadian offshoot of the UK anti-GMO group "Women Say No to GMOs" (http://www.gmno.org) argues "We have nothing to lose and everything to gain by being cautious about GMOs." Brewster Kneen echoes this sentiment "The fact that we do not really know what the long-term consequences of genetic engineering will be, and are not prepared to move slowly and take the time to find out, means that a grand experiment is taking place, and the outcome is anyone's guess" (1999: 8).

Canadian Forests and the Canadian Forestry Industry

Logs, lumber, pulp and paper have been Canadian staple exports and sources of jobs and national wealth for centuries. Forestry is now Canada's largest export sector. In Canada, 416.7 million hectares are classified as Forest Land (Canadian Council of Forest Ministers 2001). Ninety-four percent of this forest land (71 percent provincial and 23 percent federal) is crown land, that is, publicly owned (Natural Resource Canada 2001) and much of it managed by foreign and national corporations on long-term leases. The forestry industry employs over seven hundred and fifty thousand Canadians. The emergence of an environmental movement in the 1960s started what Wilson (2000) calls the

war in the woods between a pro-development coalition of logging companies and governments, and critics concerned about the exhaustion of timber and the damage to complex forest ecosystems. The economic benefits of logging have, until recently, overridden most concerns about the negative impacts of clearcut logging or pulp mill pollution. Yet, as forest companies accelerate cutting trees from the complex whole of forests for economic gain, the question has become whether forest ecosystems might collapse like the Atlantic fisheries (May 1998). Can forestry companies use science to reform and adapt their logging to sustainable forestry practices? Or, are the claims of forest industry scientists no more reliable than the science of the Northern Cod fisheries? And what is the role of the public in these issues?

According to 1991 census data, more than 300 hundred heavily timber-dependent communities and 1,200 moderately dependent ones exist in Canada (Parkins 1999). Thus, there are a multitude of voices and visions about Canadian forests and decision makers must consider a variety of conflicting views. The range of local voices reflects different definitions of development, preferred scales of use, and temporal visions. Each complicates planning and decision making. In recent years, as the importance of Canadian forests to global ecosystems has become clearer (forests act as carbon sinks that absorb greenhouse gas and decrease global warming; as sources of water-retention and groundwater preservation, as oxygen lungs, as homes for other species, and as complex ecosystems valuable in themselves) public concern has mounted. Canadians outside remote forest communities and logging areas claim the right to express concern about the uses of publicly owned forests, complicating an already complex sociological picture.

Definitions of forest sustainability vary. The corporate vision has been limited to economic sustainability and timber yield, although corporations claim that their abilities to practise sustainable forestry have been restricted by government's interest in investment and jobs. As pressure mounts from citizens and groups critical of industrial forestry with its clear-cutting, use of biocides, and introduction of fast growing tree species, habitat loss and turning complex ecosystems into monocultures, many forest companies now claim in their forest management plans to be mimicking nature in their forest management plans. Yet critics see the new ecosystem-based forestry as inconsequential, because the forest industries continue to increase production and expand into previously untouched forest regions—a process Wilson (1998) characterized as "talk and log." Montaigne's (2002) recent study of the boreal forest argues that logging rates in the boreal forest of Canada are unsustainable and confirms for many that hopes of sustainability in the forest are too late, especially as industry continues to control, and counter, all moves by conservationists and environmentalists (Dubois 1995; Urquhart 2001).

Nevertheless, many Canadians continue their call for ecological sustainability, socio-cultural sustainability or

economic sustainability. Hart (1999) integrates these aspects into a concept of community sustainability but the question of what values to sustain remains unresolved—forest, timber or other forest uses? Conflicts reflect differently held values of the nature of limits, and attitudes towards growth and conservation. The job versus the environment debate represents one example of conflict arising between corporate and ecological world views—neo-liberal expansionism versus ecological sustainability. (Richardson, Sherman and Gismondi 1993). Another conflict arises with the use of traditional ecological knowledge in forest management, where scientists or ecosystem managers and native people may disagree on issues of trust and respect between two knowledge systems (Reid, Teamey and Dillon 2002). Still other conflicts occur between notions of sustainability based on anthropocentric world views, which put human needs first, and deep ecology and left-biocentrism perspectives, which put nature first (http://home.ca.inter.net/~greenweb/lbprimer.htm).

Sometimes tensions exist between levels of government—the federal responsibility for First Nations reserves, national parks, and interprovincial issues conflicts with rights of provinces and corporations to exploit lands and forests. Thus, one level of government is pitted against another, allowing courts to overturn provincial approvals. Since the 1990s, however, pressure from industry to "harmonize" regulations among levels of government has created a chilly climate for democracy—often leaving responsibility for public review of the sustainability of a project to industry itself.

Whose voice counts when community views are many and varied? Competing interests must be addressed. Recent stakeholder approaches to decision making, promoted by the forest industry, appear to be inclusive, yet studies show that these processes tend to be narrowly defined, according to management frames of responsibility (Cragg and Greenbaum 2002). Those with the power to define the issues can frame the discussions. Within stakeholder processes, the dominant voices and visions of industry and government most often overpower other voices and alternative visions. Does this leave spaces of contention for the multiple voices of resistance (Gismondi 1997; Tilly 2000)?

Beckley's (1999) work on public participation processes in forest management provides criteria for evaluating the effectiveness of public participation. He found that to be effective public participation would require a mix of approaches, rather than focusing on public hearings. However, Orton argues from experience that often public involvement, whether stakeholder or public hearings, is not democratic (http://home.ca.inter.net/~greenweb/GW62Sable.html). Likewise, individuals having local knowledge or traditional ecological knowledge of the forest often doubt the integrity of government and forest industry scientists, and question technocratic forest management models.

Alternative participation models are emerging. Communities such as Revelstoke, B.C., are attempting to define their

own visions of sustainable forestry. In Robson Valley, B.C., citizens are identifying community sustainability indicators to help monitor their progress, and in Saskatchewan, the Meadow Lake Tribal Council moved from "stakeholders" to "shareholders" in an attempt to alter the power balance. The federal model forest initiative builds partnerships among natives, industry, local communities, non-governmental organizations and all levels of government. In ten regions of the country, model forests are generating innovative, sustainable methods of logging and managing forest use. Whether the model forest method is significant remains controversial; whether this model partnership actually redistributes power and enables democratic decision making is open to question (Natural Resources Canada 1998; Sinclair and Smith 1999; Parkins, Varghese and Stedman 2001).

Resistance to forestry practice has taken many forms including blockades, boycotts and public hearings. Community forests, model forests and sustainable woodlot movements each strive to alter the dominant milieu through institutional reform. Furthermore, on an individual level, some Canadians have turned to purchasing land and using legal conventions such as conservation easements to prevent destructive agricultural, industrial or urban use and conserve ecological integrity (Southern Alberta Land Trust 2002). Forest certification is another approach, which uses market pressure and public demand to encourage good forest management practices. To be approved under the Canadian Forest Certification program, a company must prove that its forest practices "meet a high standard for environmental protection, recognition of Indigenous Peoples and treaty rights, and social responsibility" (http://www.fsccanada.org/certify/index.shtml). Certification has been an attempt by the forest industry to meet consumer preferences, especially in the European Union. Suspicious of certification and forest industry motives, the Taiga Rescue Network, a global coalition of groups and individuals across the boreal forest, poses the question "sustainability for whom?" and proposes a combination of community defined certification and community forest models (Meek 2001). Reading past the rhetoric and propaganda in the debate about Canada's forests, issues of political power become clearer, as does the indispensability of forest ecosystems.

Environmental Justice

Historically, Canada has absorbed wastes from agricultural, mining, industrial and urban activities beyond the purview of most citizens. However, the abundance of wide-open space that once allowed Canadians to locate wastes, for example, out of sight and mind, has reached its limit. Who lives with the consequences of unsustainability caused by waste disposal is a question of power. In American sociological and epidemiological studies, researchers found that contaminating industries are often located in proximity to minority and low-income communities, exposing local residents to dangerous levels of toxic chemicals in air, water or soil (Mohai 1990; Bullard and Johnson 2000).

In Sydney, Nova Scotia, twenty-six thousand residents live near 700,000 tonnes of contaminated sludge from Sydney Steel and 60 hectares of polycyclic aromatic hydrocarbon (PAH) contaminate from its coke ovens. Many live within 1.5 km of these tar ponds (Environment Canada 1998). The *Halifax Herald* reported that when the Sydney coke ovens were in operation prior to 1988, “a mixture of arsenic, lead and benzene was cooked with coal to make coke, a high burning fuel that powered the provincially owned Sydney Steel plant. In one month in 1970, more than 500 tonnes of coal dust and other particles fell on every square mile of Sydney” (20 July 2001). Those working on top of coke ovens were exposed to PAHs equivalent to smoking 35 packages of cigarettes a day, and as early as the 1970s tests revealed community children had developed lung problems. Other toxins, arsenic, lead, manganese, total petroleum hydrocarbons and PAH, measured well above the Council of Ministers of the Environment safe-soil guidelines. The situation continued for years.

A recent study in the vicinity of Sydney Steel identified “35 toxins in the Whitney Pier neighbourhood, including arsenic on Frederick Street, which is very close to the coke ovens, at 70 times the acceptable levels” (*Halifax Herald* Oct 26, 2001). Nova Scotia Premier John Hamm argues, “the best scientific information available suggests there is no health risk to those living near the tar ponds.” Sydney residents, however, have elevated levels of arsenic in blood and urine, and the area is known for high cancer rates, birth defects and shorter lifespans. Many of these residents feel trapped, as if spectators, with limited power to change a situation described by some as Canada’s Love Canal (Barlow and May, 2001).

The Sydney tar ponds saga is one of many events that draws people to the Environmental Justice Movement, which began in predominantly Black communities of the southern United States, and was further popularized with the successful activism of the residents of Love Canal in New York in the late 1970s (Gibbs 1998). The Environmental Justice Movement has since grown in size and effectiveness, offering dispossessed individuals a means to fight the health impacts of pollution. Environmental justice promotes a fundamental belief that “no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences” (EPA cited in Bullard and Johnson 2000). Environmental justice and environmental racism characterize “disparities in environmental and health risks related to race and socioeconomic status” (Wigley and Shrader-Frechette 1996). Feminist studies also identify the over-representation of poor women in ecologically fragile and polluted areas (Dwivedi et al. 2001: 241).

Toxic dump cleanup, the time it takes to initiate investigations, disparities in the fines levied on companies and disparities in compensation provided affected residents (by race, class, gender, age) vary between low-income residents

—such as young parents, single-parent families or seniors—and wealthier, often white families who face declining land values and health hazards (Pastor et al. 2001). Labelling disparities as white privilege, Laura Pulido (2000) argues that the State of California, for example, manages the social system in favour of privileged classes and races, and redistributes risk away from those who have power.

Sydney had been a one-industry town for most of the last century and steelmaking provided jobs and pay cheques. As in other Canadian one-industry towns, workers and their families accepted polluted working conditions and health risks as the price to pay for a steady job. Few people spoke out against sulphurous emissions, smoke, cinders and iron dust, in part, from ignorance and, in part, from fear of job loss. Thousands of invisible hazards often went unnoticed (Haley, 2001). Even when the Sydney public did complain, Sydney Steel owners retorted “no smoke, no baloney” (*Toronto Sun* June 11, 2001). Families who for generations have been employed by Sydney Steel now feel trapped, unable to leave, yet unable to afford, emotionally or physically, to stay. High unemployment across Canada offers them little choice but to adapt to their living conditions. Federal and provincial governments now claim the Sydney community is safe to live in, despite data suggesting otherwise and secrecy surrounding results from soil samples. It is not known whether the site will be cleaned up or who shall pay for it. [2]

Recognizing the invisibility of many hazards and the volatility of corporate ownership, Adam (1999) sees the need to connect space, time and ecological justice when assessing risks created by toxic waste. She hopes to make it possible, using regulatory frameworks based on a timescape over multiple generations, to identify those responsible for pollution cleanup costs years after the fact. Her work comes too late for the people of Sydney. Across Canada, however, the need to expand waste sites has become critical for urban regions and raises similar questions of justice and democracy. Toronto’s recent proposals to transport municipal garbage to distant disposal sites and Alberta's proposal to import hazardous wastes from the U.S. for incineration in Swan Hills suggest that, for some politicians, Canada’s increasingly limited hinterland space appears to be another natural resource commodity Canada can sell.

Consumption, the Environment and Social Justice

The power and politics of sustainable development are nowhere more obvious than in consumption. “Shopping is good,” according to a Hudson’s Bay Company slogan. In the United States, after the events of September 11, President George W. Bush urged Americans to go shopping in order to get back to living a normal life. Given that two-thirds of the Gross National Product (GNP) of industrialized countries depends on consumer spending (Buchholz and Rosenthal 1998: 226), economic growth requires ever-increasing consumption of material goods and services. Proponents of economic growth claim that even environmental problems can be solved by consumerism because

affluence increases public pressure for environmental protection and makes capital available for development of environmentally benign technologies.

Yet high consumption models of economic growth threaten the environment. In the past fifty years, more resources have been consumed than in all previous years combined (Buchholz and Rosenthal 1998: 226). This increase in resource consumption is distributed unevenly—the richest 20 percent of the world's population accounting for 86 percent of global consumption, and the poorest 20 percent accounting for only 1.3 percent (United Nations 1998). *of consumptiontheconsume too much andtheir appetitesWaiting for the world to become rich enough to take care of the environment and the poor is not an option. The argument is that we have already crossed the ecological threshold and action must be taken now. Agenda 21*, the program of action adopted at the 1992 United Nations Earth Summit, found that "the excessive demands and unsustainable lifestyles among the richer segments" placed immense stress on the environment, at the same time that basic needs of much of humanity were not being met (United Nations 1992).

Whether, and to what extent, economic growth should be encouraged or restricted to attain sustainable and equitable development is linked to the way the notion of progress is socially constructed and defined. Economic progress, its growth or decline, is measured in Gross National Product (GNP). GNP is the value of all goods and services produced by citizens and corporations in a country over one year. GNP measures all monetary activity—whether positive or destructive—like a calculator that can only add and not subtract (Cobb 1993). Thus, when the Exxon Valdez oil spill occurred, for example, clean-up expenditures increased GNP, but there was no mechanism to deduct the destruction of wildlife and ecosystems.

Furthermore, increased income, which increases the ability to consume, does not necessarily increase the level of human well-being. Life expectancy, infant survival and literacy rates rise rapidly with per capita income up to approximately U.S.$8,000, but at higher income levels remain unchanged (World Bank 1993: Figure 1.9; Woollard and Ostry 2000: 22). Beyond the economic focus on GNP, the United Nations "Human Development Index" measures longevity, knowledge and a decent standard of living, three dimensions of human development. According to the U.N. *Human Development Report*,

> Consumption clearly contributes to human development when it enlarges the capabilities and enriches the lives of people without adversely affecting the well-being of others and when it is as fair to future generations as it is to the present ones and when it encourages lively, creative individuals and communities. But the links are often broken and when they are, consumption patterns and trends are inimical to human development. Today's consumption is undermining the environmental resource base. It is exacerbating inequalities. And the dynamics of the consumption-poverty-inequality-environment nexus are accelerating…For more than a billion of the world's poor people increased consumption is a vital necessity and a basic right. (1998: iii)

Is increased consumption possible within ecological limits? If everyone consumed natural resources and emitted carbon dioxide at the same rate as the average American, Canadian, German or French citizen, the world population would need at least two other planets like earth. In the mid-1970s, the total environmental impact of consumption on planetary resources began to exceed the earth's capacity for regeneration; by 1990, consumption surpassed capacity by 30 percent (Wackernagel and Rees 1996; Rees 2000). Wackernagel and Rees developed the concept of the ecological footprint to calculate the land and water area (usually expressed in hectares per person) necessary to sustain current levels of resource consumption and to assimilate wastes discharged by a population (1996: 5). Thus, if the ecologically productive land were distributed equally among the world's population today, each person would get 1.5 hectares. This does not take into account the space needed by other species. Yet by the mid-1990s the ecological footprint of an average Canadian was nearly 4.3 hectares. Canadians (and populations in northern industrialized countries)

[3]

appropriate three times their fair share of available productive space.

Between 1970 and 1997, the global ecological footprint increased by 50 percent, a rise of about 1.5 percent per year (WWF 2000), which means that resource consumption in industrialized countries would have to decline by a factor of ten within the next fifty years to reach a sustainable level (Sachs, Loske, Linz et al. 1998: x). A child born in the United States or Canada will consume, on average, ten times the resources and produce ten times the waste and pollution as would a child born in Bangladesh or Bolivia (Stern et al. 1997: vii). Such first world privilege makes calls for population control in the third world appear racist and contrary to ecological justice and sustainability. Certainly, technological efficiency will reduce some resource consumption; however, the World Resources Institute has found that "resource efficiency gains brought about by the rise of e-commerce and the shift from heavy industries toward knowledge and service based industries have been more than offset by the tremendous scale of economic growth and consumer choices that favour energy and material intensive lifestyles" (World Resources Institute 2000).

Faith in technology, innovation and the possibility of substitution marks the first world approach to overcoming environmental impacts from consumption. Ecological modernization theory, a leading perspective in environmental management, is increasingly being adopted by government administrations and industry. Central to this theory is the belief that production processes and consumption can be restructured towards ecological goals by replacing environmentally damaging technologies and developing clean production processes; by supporting microelectronic and gene technologies; and by socially constructing nature as simply part of the market (and letting the market price the un-costed services and resources of nature used in production and waste assimilation) in order to make alternative ecologically benign technologies competitive and feasible (Spaargaren 1999; Spaargaren and Mol 1992). Criticized as

technologically deterministic, ecological modernization proponents look to technologies, processes and materials that have yet to be developed or invented as solutions, and downplay the possibility of problems created by untested technologies. Advocates of ecological modernization are silent on the role of government regulation, timelags in environmental risks and problems and the possible irreversibility of environmental degradation and pollution. Nor does ecological modernization consider the ethics of off-loading environmental damage on the countries that produce exports. In an age of global production, consumers of these exports may not generate the necessary market or political signals to change the conditions of production in another country.

For affluent countries, the organizational behaviour of corporations and governments cause the bulk of environmentally significant consumption of energy and materials, and water and air pollution (Stern et al. 1997). In Alberta, for example, lack of regulatory control of water use results in industry and agriculture consuming 78 percent of all water used in the province. In most industrialized countries, municipal waste accounts for less than 5 percent of daily waste totals—a small fraction of the waste produced by industrial processes, marketing, distribution, infrastructure and public provisioning (Stern et al.1997).

Power and politics control decisions about what is produced, how and for whom. Consumer demands for products that are long lasting, easily repaired or recycled are easily ignored by governments and industry. In the first world most materials are used once and then disposed (Gardner and Sampat 1998: 146); production facilities are designed for new, not recycled, materials. There is little economic incentive for industry to reduce consumption. In Canada, for example, the manufacturers' tax rates for products made with recycled materials averages 27 percent compared to 24 percent for those made with new materials, resulting in a $367 million disadvantage to the recycling industry (Gardner and Sampat 1998: 31). Although blame for over-consumption and pollution often falls on the individual consumer, an examination of power structures reveals how the organization of a society, government and industry can foster inequitable and unsustainable development.

Conclusion

How are Canadians to respond? Not by shifting from one depleted resource to the next. Not by turning to the technological promise of biotechnology. Not by drilling holes in the north to deposit urban garbage. Canadians must instead face ecological reality and change the definition of sustainability, fight to restructure the economy and way of life, and repay the ecological debt to nature, to poorer countries and to future generations. Both paths might be defined as sustainability but only the latter requires humans to recognize their place as cohabitants of the earth, and to tackle ecological problems personally through lifestyle changes, locally by organizing politically to demand a sustainable

economy, nationally through democratic control of the state, and internationally by fair trade and by controlling the transnational corporations.

Keywords

human development index - 24

ecological modernization - 26

sustainable development - 1

precautionary principle - 2

biodiversity - 12

staples - 4-5

social constructionism - 6

ecological exhaustion - 7

common property - 8

natural capital - 9

expert knowledge – 11

traditional ecological knowledge - 11

environmental/ecological justice - 21, 25

environmental racism - 21

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timescape - 22

space - 22, 25

GNP and environment - 23

treadmill of production - 5

ecological risk - 6

ecosystem - 11

genetic engineering - 11

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Glossary Terms

political ecology - critically assesses the ecological consequences of political and economic actions; examines power and the distribution of positive and negative economic and ecological impacts; and, considers the interests of future generations, other species, and the function of non-marketed (unpaid for) environmental services in economies.

ecological footprint - a measure of the “load” imposed by a given population on nature. It represents the land area necessary to sustain current levels of resource consumption, including the amount of nature required to assimilate wastes discharged because of consumption processes by that population.

ecological modernization - a theory proposing that incremental reforms to existing industrial and political systems can bring about ecological sustainability. Considered a technocentric ideology by its critics, it assumes ecological problems can be resolved by technological ingenuity and natural limits overcome without threatening current ways of economic life.

environmental risk - a level of uncertainty about consequences to the health of the environment because of a social, political, or technological decision. Who makes decisions in the face of uncertainty is an issue of power and democracy. Originally focused on health risks to humans from pollution and environmental degradation, contemporary risk debate includes other values such as risks to heritage, way of life, biodiversity, and ecosystem integrity, that is, risks created by the human manipulation of nature in which the outcome is uncertain.

staples theory - explains how the geographic and biophysical qualities of different staple goods shaped settlement, employment, transportation, communication and political systems in Canada.

ecocentrism - critical of anthropocentric or human first perspectives it draws on values that do not emanate from human beings but from ecosystems and argues that decisions should be based not human priviledge, but by taking the well-being of the ecosystem as a whole as point of reference.

social constructionism - argues that we can't observe the natural world outside of social constructs, which become the lense that people use to consider environmental issues and problems. How issues are framed, that is, how certain facts and understandings become emphasized (while others are silenced) requires analysis of power and resistance.

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Useful Web Sites on Environment

Boreal Forest Network http://www.borealnet.org/main.html

Canada’s Ecological Gifts Program http://www.ec.gc.ca/press/001004-2_b_e.htm

Canadian Environmental Organizations http://www.alternativesjournal.ca/linkcan.htm

Canadian Forest Service: http://www.nrcan.gc.ca/cfs-scf

Cornerhouse http://cornerhouse.icaap.org/articles.html

David Suzuki http://www.davidsuzuki.org/

Friends of the Earth http://www.foe.co.uk/

Gene Watch U.K. http://www.genewatch.org

Genetically Modified Food U.K. and World News www.connectotel.com/gmfood

Government of Canada http://www.ec.gc.ca/envhome.html

Greenpeace Canada http://www.greenpeace.ca

National Forestry Database Program: Canadian Council of Forest Ministers (CCFM) http://nfdp.ccfm.org/

Redefining Progress http://www.rprogress.org/projects/gpi/

Sierra Club http://www.sierraclub.org/

The Genetic Engineering Network http://www.dmac.co.uk/gen.html

Woman's Environmental Network (WEN) http://www.gn.apc.org/wen

World Watch http://www.worldwatch.org/

Block 1912 Collective

A group of sociologists, the Block 1912 Collective meets twice a month to read and discuss issues of environment and society. Each member contributed to this chapter.

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[1]

In Canada, GM and non-GMO crops are not required to be segregated; therefore, unless a manufacturer guarantees a non-GMO source, it may likely contain GMOs. Visit the "Shoppers Guide to GMO-Free Food," available at http://www.greenpeace.ca/e/campaign/gmo/gmoguide/html/guide.html.

[2]

"Feds Won't Reveal Soil Tests Officials Won't Say How Many Homes Exceed Federal Limits for Toxins." *Halifax Herald*, July 20, 2001; "Coke Ovens Report From '85 News to Hamm." *Halifax Herald*, June 9, 2001; "Toxic Cleanup Will Cost Taxpayers $10m." *Halifax Herald*, December 5, 2001; "Pier Soil Tests Results Delayed." *Halifax Herald*, October 26, 2001; "'Safe' Soil Report Called a 'Whitewash" Residents Won't Be Relocated from Toxic Hot Spot." *The Toronto Star;* "Sydney Soil Tests Find Most Home Safe." *Halifax Herald*, March 7, 2002.

[3]

You can calculate your personal ecological footprint, available at http://www.lead.org/leadnet/footprint/intro.htm.