# Shifting Foundations in a Mature Staples Industry: a Political Economic History of Canadian Mineral Policy[1]

*- Mary Louise McAllister (Waterloo)*[1]

In the past few decades, the Canadian mineral policy arena has seen some significant changes. Mining, long a staple of the Canadian political economy, pillar of national policy, and a leading producer and exporter of minerals in the world, has been encountering new challenges. Political players have multiplied, economies diversified, and policy issues have grown in complexity. These developments are of seismic proportions to members of the mineral industry worried about an increasingly uncertain and unpredictable investment and operating environment. New competitors in an increasingly open world market, such as those in Latin America, presented a serious challenge; they offered rich, readily accessible deposits, an inexpensive labour force, and welcoming governments anxious for the investment dollar to build their developing economies. In the closing years of the 20th century, the industry was increasingly alert to the dangers of being labelled a "sunset industry". The tertiary sector had begun to elbow its way onto government agendas, capturing attention and offering intriguing new possibilities associated with a transition to a post-staples economy.

These changes are significant and affect all aspects of the mining and minerals industry. Mineworkers, the backbone of the Canadian mineral industry, have become increasingly concerned about the growing use of automation and robotics which has been replacing jobs or requiring workers with new skill sets in applied science and computer operations. Labour organizations have had to develop strategies for dealing with a new phenomenon referred to as long-distance commuting (LDC) where workers are flown into remote mine operations for weekly or bimonthly work shifts. Meanwhile, non-governmental organizations, worried about the continuing and cumulative impact of mining, have had very different preoccupations. They dismiss the industry's competitive concerns, observing that if the mineral wealth is there, exploration dollars and investment will follow. Canada's new diamond mines offered such evidence. Environmental and social organizations have argued that the primary industry continues to be supported by governments, so much so that public commitments to sustainable development and local, democratic decision-making in mines and mineral policies and activities are often not realized in practice and represent very little in the way of meaningful change from older habits and routines.

Yet change is happening. A historical review of the Canadian mineral economy, and the policy environment that has supported it, reveals that notable adaptive strategies have taken place in governing institutional regimes and industrial relations in recent decades. References to corporate social responsibility, community partnerships, total cost assessment, and sustainable ecosystems are now part of the popular lexicon in industry and government documents. As Russell has observed, advocates of post-Fordist, 'new work relations', emphasize what they see as trends towards worker empowerment and democratization (Russell, 1999: 167). Skeptics, however, while acknowledging that significant global changes are happening, argue the results are anything but empowering for worker and communities. Moreover, they note that despite mitigative and remedial measures put in place in various mines, such initiatives have done little to lessen the overall adverse and cumulative, global impact of mining on the environment. Global and

[1] Mary Louise McAllister Kattides, PhD Associate Professor, Environment and Resource Studies, ES2, University of Waterloo, 200 University Ave. W. Waterloo, Ontario Canada N2L 3G1, 519-8884567 x35614 mlmcalli@fesmail.uwaterloo.ca

domestic economic and political imperatives continue to overshadow ecological, community and other social considerations in this sector, as in many others.

Unquestionably, the Canadian mineral industry is finding itself operating within, and reacting to, an environment consistent with that of a mature, advanced staples economy as discussed by Brownsey and Howlett, and Wellstead in the first articles of this special issue. Such an economy has been defined as one that is still primary resource- dependent, but more diffused and diversified than in the past (Howlett, 2003: 47). Nevertheless, the mineral industry remains an important element of Canadian economic activity with all the associated social, industrial, environmental and political implications.

**Promising Prospects: Staples and the nascent mineral industry**

*"And they built the mines, the mills and the factories for the good of us all. For they looked in the future and what did they see. They saw an iron road runnin' from sea to the sea" Gordon Lightfoot, Canadian Railway Trilogy"*

From the Eastern cod fisheries, to the forestry and fur trade, through to the prairies' agricultural wheat basket extending to the western gold mining rushes, Canada's economy, society and technological development have been firmly rooted in the staples producing industries, as famously noted by political historian, Harold A. Innis. As Gordon Lightfoot's *Canadian Railway Trilogy* illustrates, the public interest has long been associated with resource development. The early developers and decision-makers saw the building of railways, industries, and the extraction of resources as an important part of the Canadian national policy and the key to nation building.

Mining is one of the world's oldest professions and will likely continue to take place in some form as long as people need minerals—that is, indefinitely. Before European contact, Amerindians had a sophisticated economy with trade taking place throughout the extreme reaches of the North American continent. Minerals played an important role in trade extending back many thousand years B.C. Obsidian, copper, flint and other minerals were used for tools or weapons (Dickason, 1992: 78). After the Europeans arrived, early settlers used various minerals for building materials. Mineral exports are reported to have begun in 1643 when New Brunswick first shipped coal to England (Udd, 2000:1).

The mining of iron ore and gypsum came soon after. Gold was discovered in Quebec in the early 1800s. Numerous major discoveries occurred between the mid-1880s and the turn of the century including that of gold, which caused prospecting rushes British Columbia, and Yukon, asbestos in the Eastern Townships of Quebec, and, the huge copper-nickel deposits discovered in the Sudbury Basin during the building of the CPR Railway (Cranstone, 2002: 10-11). After silver was discovered in Cobalt Ontario, the area soon became one of the world's largest producers. Angus and Griffin note that, "By 1910 the money that had come out of Cobalt had dwarfed any other silver operation in North American history and had surpassed the money made in the Klondike rush…The infant steps of Canada's powerful mining industry were made in the narrow shafts of cobalt" (Angus and Griffen, 1996: 20). The Canadian mineral industry was well launched.

Industry did not achieve this alone. It relied on the development of other primary industries and new technologies, supportive governments, and the labour of prospectors and mine workers. As Harold Innis once noted, railways built to open up agricultural areas led to the expansion of metal mining in Northern Ontario (Innis, 1936: 321) and later, on the prairies and in British Columbia. With the construction of the railways

linking communities together (an important component of the First National policy), mining companies were able to ship their ore more efficiently to market (Udd, 2000: 7).

In his well-known staples thesis, Harold Innis used the forces of production such as capital, markets and technology to explain the evolution of Canadian resource development. Wallace Clement added a class analysis in his specific application of this model to mining, suggesting that while the staples thesis emphasised the importance of the technology (in this case railways) used to get the raw resource to market, it is "equally important…. to recognize that the ensuing 'technical division of labour' is infused with relations resulting from the 'social division of labour" (Clement, 1981: 19). Clement argued that in the mining sector as in many others, capital dominates labour using technology and the ways in which it organizes work. In the early years of Canadian mining history, the future pattern of mining and industrial relations took root. A dynamic tension between industry and workers continues to be played out in today's post-staples economy. Technology is still a pivotal tool with which mining development and productivity is achieved although its form has lead to different impacts on industrial relations.

At the turn of the 20th century, the rapid growth of the mineral industry generated a huge demand for labour leading to the formation of labour unions in attempts to gain better wages - which at the time amounted to a little over $2 a day with board for the best paid workers.

Companies were very powerful both in terms of establishing mining camps and determining wages and living conditions, and in organizing the social and political life of mines and mining communities. This latter activity extended to the organization of labour relations where, as Innis has noted, mining companies were vehemently anti-union: "In 1906, the Nipissing Company discharged a miner from Montana for attempting to organize a union and leading mine operators decided not to employ union men…" (Innis, 1936: 323). A major mine strike in 1907 was largely unsuccessful which , to Innis, indicated the growing importance of capital and a concomitant decrease in the influence of labour (Innis, 1936: 323). Government legislation, however, did play a role in improving labour conditions. In February 1914, government legislation instituted the 8 hour work day and a Workmen's Compensation Act came into effect in 1915.

Governments were heavily invested in the promotion of the mineral industry . A major early step in this direction was the setting up the Geological Survey of Canada (GSC) in 1842 in order to provide geological information to support the minerals exploration industry. The goal of undertaking a geological survey was closely associated with nation-building "based on the realization that the development of an industrial economy in Canada -- an economy that could compete with those in Europe and the United States -- would depend to a considerable extent on a viable mining industry (Vodden, 1992). As primary resource ownership was originally assigned to the provinces under the Canadian constitution (with some exceptions) provincial governments have also actively promoted mineral development.2 In Ontario, early government initiatives were primarily directed toward promoting the legal rights of prospectors and miners and offering exploration incentives. The first Bureau of Mines was established in 1891. The 1906 Mines Act was directed towards establishing a stable, standardized legal environment that would encourage the establishment of mining. This act governed Ontario through much of the 20th century. As H.V. Nelles has observed, "Promotion, embracing the improvement of access to resources, the extension of financial assistance wherever necessary, and the provision of information and technical education, was the public contribution to resource development." (Nelles, 1974: 110).

Scientific management, business, and liberalism heavily influenced the political culture of public and private organizations in the early 20th century. The mineral

industry was no exception and prospered in this environment, garnering the attention of decision-makers and economic leaders alike and setting political agendas. The era was characterized by the discovery of numerous, rich ore deposits. Sudbury's huge deposits, for example, ultimately led to the 1916 incorporation of the International Nickel Co. (INCO), which would shortly become the world's primary producer of nickel. In Toronto, the establishment of the head offices of mining companies led to the institution of the city as a leading international financial centre in mining.

**Embedded Interests: Establishing the Staples Economy**

The first 100 years of the government's approach to mining (from about 1880-1980) might be characterized as a "conventional" effort to promote mineral development as a classic staples industry. (Clausen and McAllister, 2001) Industrial policy was very much tied to building Canada's natural resources industries. In the first half of the 20th century, the federal government, actively involved in restructuring the economy, supported the growth of the mineral and other primary industries in numerous ways. Early mining departments were charged with the responsibility of promoting mining to serve the public interest (Government of Canada, 2004). During the mid-20th century, Canada's 'boom and bust' economy, subject to the vagaries of the international market place and uncertain prices, motivated the federal government to support its export-oriented industries and resource regions through various policy and economic measures. Canadian industrial strategies were heavily linked to building up the resource industries. One notable promotional effort of the era was John Deifenbaker's "Road to Resources" initiative. Prime Minister from 1957-1963, Deifenbaker adopted a platform of opening up the north and northern resources for development, signaling a government actively involved in "staples-led" growth. (Leslie, 1987: 7).3

Canada became a world leader in the production of many minerals during the first half of the 20th century. By the early 1980s, Canada was selling almost 80 percent of its mineral products to 100 countries. (Wojciechowski and McAllister, 1985: 21) The industry was firmly embedded in the Canadian economy and society. The public interest was interpreted fairly narrowly based on principles associated with liberal democracy, economic development and private property rights. Decision-making might be best characterized as a top-down approach where industry and government were considered the key players in the mineral arena.

Under this regime, throughout the century labour unions struggled to achieve legitimacy. Part of the difficulty was its own fragmentation where unionized workers were affiliated with different unions such as the United Steelworkers and Automobile Workers, Canadian Union of Public Employees and the Public Service Alliance. In addition, Clement notes that unions have historically been trapped between two competing ends, "They are at one and the same time the most systematic and organized expression of [worker's] resistance and through the commitments they make to companies when they enter into collective agreements, a containment of many forms of workers' resistance" (Clement, 1981: 301).

For their part, government mining departments were expected to perform the dual role of promoting industrial development while regulating the activities of enterprises. Federal and provincial government promotion of the industry included direct investment or equity participation in many mining corporations. Governments also provided millions of dollars in direct grants that funded geoscience, technology, marketing or feasibility studies. Other assistance included infrastructure development, promotion of minerals in international trade meetings, and tax concessions. Although they played the role of promoters of resource development, governments also imposed corporate, income

and mining taxes and regulated the industry through various pieces of legislation and regulations governing land access and tenure, transportation, mineral investment, health and safety, and increasingly, environmentally-related concerns (McAllister and Schneider, 1992). Federal and provincial mining departments saw their primary responsibility as one that would foster a stable investment environment while serving the public interest. In the late 1980s, the federal *Mineral and Metals Policy of the Government of Canada*, laid out a number of objectives that were geared toward assisting the industry including regional economic development policies and improving access to international markets. (Energy, Mines and Resources Canada, 1987: 4)

A decade later, however, government approaches to resource development began to change; in mining a new policy was introduced with a distinctly different tone and objectives. The government was now recognizing that the policies that had carried the mineral industry and Canada through more than a century of staple-led growth was out of step with the societal and political changes that had been taking place in Canadian political culture and economy. Most notably, the government had to respond to widely-held concerns about environmental degradation and the demands of a diverse mineral policy community. Introducing the new policy, the Minister of Natural Resources Canada signaled a shift in the traditional position stating, "Turning the concept of sustainable development into practice will require stakeholders to question their old assumptions, and to examine minerals- and metals-related issues in light of the integration of economic, environmental and social objectives." (Natural Resources Canada, Minerals and Metals Sector, 1996, Forward)

**Shifting Ground: Competing Interests**

In the closing years of the 20th century, the mineral industry found itself facing a number of pressures that it saw as threatening its position as a valued component of the Canadian economy and society. These were not threats peculiar to the mineral industry; Canada's staples-based economy, used as the foundation for nation-building, was now being questioned both in terms of its continuing economic contributions and its environmental impacts.

As noted by Hutton (1994), a new or post-staples political economy might be characterized as one that includes severe pressures on the resource sectors, public concerns about adverse ecological impacts of industrial activity, rapid shifts in the economy specifically toward the tertiary sector with industrial regional growth, and a decline of smaller resource communities. Significant international changes would also be present, including the economic integration of markets, networks and services.(adapted after Hutton, 1994: 1-2).

In the past quarter century, such characteristics certainly applied to Canada's mineral industry. The industry reacted in various ways to fluctuating economic cycles, new competition, uncertainty in land access for exploration, and the indifference of a primarily urban public frequently more concerned with the industry's environmental impacts than economic contributions. A decline in the size and number of mining-dependent communities and lower levels of direct employment in mining operations contributed to the industry's decreasing influence on public agendas. This raises the question about whether we are now experiencing a diversification of the Canadian economy accompanied by a diminishing mineral sector—a reflection of the emergence of a post-staples economy or simply a declining mature resource staple industry.

**Competitive Pressures on the Resource Industry:**

Industry representatives state that the "object of any mining enterprise is to produce a product that someone wants to buy, at a price that can satisfy all the stakeholders. A modern mine in Canada often requires an investment of $200 million or more (large mines might cost $1 billion) before producing any income"(Canadian Institute of Mining Metallurgy and Petroleum et al, 2004). These companies have a responsibility to their investors, lenders, and shareholders to make a reasonable rate of return. Before that can happen, a company must make a number of expenditures including paying wages for labour, suppliers for goods and services (which constitutes about one-half of a mine income), and taxes for government services. Money is also required for new exploration and development to ensure continued supply of mineral reserves (Canadian Institute of Mining Metalllurgy and Petroleum et al, 2004). A number of pieces of government legislation and regulations are in place to regulate the industry including governing access to land, health and safety guidelines, and environmental requirements all of which affect the cost structure of mining operations.

Determining the economic viability of a mineral deposit is a complex process where each step must be factored into the estimated costs of bringing a mine into production. Uncertainties include the reality that world prices are determined by international conditions of supply and demand, the changing investment and regulatory climate in the host jurisdiction, and, increasingly, the local reception of the community to mining activities. To survive unpredictable events, an industry must adapt to survive. Such an occurrence hit the mineral industry when a recession in the early 1980s was followed by a subsequent recession in the early 1990s. The mineral industry responded with technological improvements to increase efficiency in the production of minerals. Most recently, the industry received a boost with recent major developments in domestic mining such as the rich nickel, copper cobalt deposit in Voisey's Bay, Labrador and the new diamond industry in northern Canada. Nevertheless, the overall rate of new discoveries has continued to decline, particularly "top-tier" discoveries (i.e. large, mineral-rich, accessible, economic deposits) and reserves are becoming depleted. This situation has continued to stimulate offshore exploration activities and raise questions about domestic exploration potential (Gouveia and Gingerich, 2003: 9). Some argue that Canada is still one of the top targets for exploration dollars as long as world prices are strong and there are continuous discoveries to maintain mineral reserves. There are, however, those who doubt this will continue to be the case (Cranstone, 2003: 3).

**Access to Land Issues**

Mineral exploration in Canada, which peaked in 1987 at more than one billion dollars, fell by more than half by 1990. This could be attributed to many factors including the growth of offshore competition. Industry representatives, however, suggested that it was also a result of unfavourable government policies and public perceptions. (Peeling, 1998)

In the previous decade, environmental non-government organizations were raising an alarm about the impact of resource development on wilderness areas and governments were responding. Moreover, First Nations groups were gaining increasing legal recognition in the use, management and ownership over lands claimed as traditional territories. The designation of protected areas following the recommendations of the United Nations Brundtland Commission as well as the launching of a number of multi-stakeholder land use processes and commissions signaled that governments were prepared to listen to a diversity of voices including labour, environmental non-

government organizations and First Nations peoples, and not just the mineral industry and affected communities as had been primarily the case in past years.

The 1991 British Columbia Commission on Resources and the Environment (CORE) was perhaps the most extensive of a number of large-scale public and stakeholder consultation exercises begun at that time. The CORE processes were initiated under the governing provincial New Democratic Party and led to the development of land use planning strategies that assisted in the determination about where resource development could take place and under what conditions. In the protected areas, no exploration or development could take place. One particular event during this era turned into a flashpoint for the Canadian mineral industry. It became known as the "Windy Craggy" affair. The mineral industry wanted to develop an enormous copper deposit (which included some cobalt, gold and silver) in northwestern British Columbia. The problem was that the proposed mine was to be built at the confluence of the Tatshenshini and Alsek Rivers, an area highly rated for its wilderness values. The environmental perspective prevailed and the region became a World Heritage site protecting it from development. Although it could be argued that the Windy Craggy situation was unique, many in the industry believed that it signaled that Canada was no longer open to mining.

Many unresolved land claims also contributed to the air of uncertainty for the mineral industry. It takes many years to bring a mine into production and investors are reluctant to put their resources into a project if there are unresolved questions about ownership and the legal requirements governing the potential mine site. Once the land claims are settled, the industry must be able to negotiate effectively with First Nations peoples. Yet, the industry's history of effective negotiation is spotty at best. As Jerry Asp discusses (see below), the industry has a track record that would not always inspire trust in First Nations Communities.

**Adverse Environmental and Social Impacts of Mining**

Access to land and new investments in exploration require both government and public support. As noted earlier, at one time the industry could count on both. Just as it was challenged on the international competitive front, however, the industry has also found itself facing barriers on the home front. As was the case with the Windy Craggy deposit, non-governmental environmental organizations and others were drawing public attention to the impact resource development was having on the biophysical environment, important watersheds and valued wilderness areas.

Economies and societies rely on natural resources (sometimes referred to as natural capital) for water, energy, primary materials and habitable environments. The biophysical environment needs to be protected; of that point there is little debate. How that should happen, however, is a different question. Many members of industry, for example, have applied technological approaches to solve environmental concerns believing that sustainability can be readily achieved within a global liberal-capitalist economy. Modernizing operating practices through environmental management systems, continual self-improvement, retrofitting, maximizing the ore body, minimizing waste and taking life-cycle approaches have been adopted to various degrees throughout the Canadian mineral industry. As discussed in the following sections, however, others argue that technological fixes are not enough; they call instead for major institutional, industrial, and social restructuring that recognize the socio-ecological limits of the planet.

For its part, the mineral industry has continued to attempt to solve its problems in the traditional fashion through the application of technological improvements to increase its efficiency and deal with its environmental effects. The sector, however, has been less sophisticated at dealing with the political and social challenges that affect its long-term

viability. Scientific advances in such areas as geophysics, robotics, or pollution abatement initiatives can only take the industry so far. As noted above, companies need access to land and a supportive regulatory and investment environment to undertake exploration activities and to mine deposits. This will not occur without government support. As Anthony Hodge, an environmental consultant notes, the "continued defensive posture that has characterized the industry for most of the second half of the 20th century will drive the industry into perfect storm conditions." (Hodge, 2003: 14)

Critics watching the mineral industry are ready to offer numerous examples of how the industry has failed to comprehend and respond to the changing public agenda; examples range from the poor handling of international mining disasters, failure to live up to national commitments, inept negotiations with local communities or indigenous peoples, and poorly handled industrial relations, to bad public relationships with local property owners. (Mining Watch Canada, 2003; Russell, 1999)

With advances in the Internet and the increasing globalization of communications, non-government organizations at the local and national levels have developed connections throughout the world spawning new organizations. The resources of the well-funded organizations have helped support the causes of smaller associations. In Canada, the establishment of the Environmental Mining Council of British Columbia, formed in 1992 to promote environmentally sound mining policy and practices, was a watershed event (Young, 1998), followed in 1999 by the national organization Mining Watch Canada. Mining Watch Canada focuses on the promotion of ecologically sound mineral practices and sustainable communities. The organization suggests that the mineral industry has acquired an unsustainable legacy in environmental costs in Canada and abroad:

> The very real legacy of mining includes an estimated twenty-seven thousand abandoned mines across Canada, billions of dollars of remediation liability for acid mine drainage contamination, extensive disruption of critical habitat areas, profound social impacts in many mining communities, and the boom and bust upheaval of local economies. The cost of Canadian mining operations in other parts of the world has been no less dramatic. (MiningWatch Canada, 2003)

Although their figures may differ, governments acknowledge that these problems exist and must be addressed. For example, Natural Resources Canada notes that 10,000 abandoned mine sites have been identified (not to mention those that have not been uncovered) throughout Canada with liabilities associated with health, safety and environmental concerns. One of the most serious of these is the concern that old tailings ponds that contain mining wastes will fail, resulting in the poisoning of watersheds. Today, modern mining operations, governed by numerous environmental regulations and operations, are much improved. That said, the environmental and public safety concerns posed by contemporary mineral activities—in addition to the cumulative historical problems—leaves the industry open to public criticism. Mining Watch Canada is affiliated with numerous other organizations including the Canadian Environmental Network, the Canadian Environmental Law Centre, as well as international organizations. Their ability to pool resources, ideas, and initiatives makes these groups an influential alternative voice to the mineral industry when setting public agendas.

Canada's Aboriginal peoples have also become very influential members of the mineral policy community. This influence comes from the legal recognition of indigenous peoples' rights in variety of ways including outright ownership in many mineral-rich regions of the country. This influence is both national and international as indigenous organizations around the world develop strategies to protect their interests.

One member of the Canadian Aboriginal Minerals Association, (CAMA), Jerry Asp, raises some important issues related the future of industry-Aboriginal peoples relations. If corporations wish to negotiate with First Nations people, he suggests, they would do well to handle their interactions differently. For example, Asp observes that abandoned mines have left an environmentally damaging legacy that continues to affect public perceptions of the mining industry today. Asp suggests that the industry is paying insufficient attention to this problem and needs to claim responsibility collectively.

Asp also reinforces Hodge's observation about the mining industry's defensive approach when he notes the historic tendency of the industry to proclaim that it has a relatively small impact on the land given that it does not occupy a large territory. Asp suggests that the industry should acknowledge its actual environmental impact. For example, it is quite common to hear members of the industry proclaim that a mine only takes up a small "footprint" when it is in operation. This undermines the credibility of the industry and erodes any trust that it might have gained in public consultations and discussions. Asp, speaking from the perspective of First Nations peoples, notes that when the industry claims it only takes a few acres of land to mine:

> It reminds me of the story of the railroad crossing the Great Plains of America. They told the First Nations that it was only two tracks and a whistle. They forgot to tell them about the people that the train will carry. You are forgetting to tell us about the related infrastructure that goes with your project. The road, the power transmission lines, etc. This opens up our country to anyone who owns a snow machine, or a four-wheeler. This is a real disruption to us. It has a major impact on our life….then all trust is gone…. The mining company will have an uphill battle to get First Nations approval for their project. (Asp, 2004: 3)

Given the well-documented adverse cumulative impacts of resource development activities on First Nations peoples, trust will be very difficult to achieve, particularly if the industry continues to attempt to minimize the very real, potential disruption of their activities.

On a local level, the activities of exploration companies can also erode public faith in the industry. For example, old mining laws, devised at a time when mining exploration took place a long way from human settlement, continue to govern at a time when small property owners can be adversely affected by such pieces of legislation that continue to support the concept of "free entry" for exploration (even on privately owned property).

**The Decline of the Resource Community**

As Hutton (1994) has noted, the decline of the resource communities is another hallmark of a post-staples economy. The problems facing the mining industry also affect rural Canada and vice-versa. At the end of the 20th century, a number of Canada's 150 mining communities in Canada found themselves facing difficult economic times. No new mining communities had been built for almost twenty years. Improvements in technology has led to automation of mine operations, a decline in employment, and the development of 'fly-in' mining where companies build housing for their workers rather than permanent communities. Fly-in mining has its advantages, from both an ecological and economic point of view. Flying workers into a mine site eliminates all of the social, economic and environmental costs associated with establishing isolated mining communities. It also weakens the abilities of labour to form unions. A decline in the fortunes of resource-based towns and in levels of employment means that the mineral

industry diminishes in importance on government agendas. Urban demands and employment concerns lead decision-makers away from the staples-producers in search of answers to other pressing problems. Rural Canada and its industries are no longer able to command the large share of government attention that they once did.

Moreover, critics are increasingly questioning whether or not it is in the long-term interests of an economy and society to continue to support investment in a staples-based economy, particularly when it is considered from a community perspective. The life of a mine is finite so communities have to think about what they will do when the ore reserves are depleted. Attempts to diversify the economy into such areas as tourism (hunting and fishing lodges), other types of resource production, or even retirement centres can be undermined by harsh weather conditions, isolated locations and the residual effects of the mining activity: "Often, other resource-based economic activities such as farming, fishing and logging are damaged by the pollution from the mine and smelters, and these remote communities become dependent on power grids, chain shores and imported goods and services to supply their needs" (Kuyek and Coumans 2003: 13). Moreover, residents of the mining communities are accustomed to the high wages associated with mining and any economic activity that existed before the mine development has been replaced or is insufficient to replace the needs of a resource-dependent economy (Kuyek and Coumans 2003: 13).

With the exception of a few regions that have successfully diversified, Sudbury being the most notable case, sustaining a mining town over the long term requires the fortuitous confluence of many supportive variables. Unless significant government support and private investment is directed towards clusters of regions that have demonstrated a potential for diversification and are located along major transportation routes, many isolated mining towns face economic decline or closure as soon as a mine shuts down.

By the end of the 1990s, the mineral industry was entering into increasingly unfamiliar territory as it was confronted with a complex array of new challenges ranging in scope from the global to the local. As with other mature staples industries caught in a 'post-staples' transition, issues ranged from international competition to concerns about land access, the reality of a diversifying economy that competed with the traditional resource sector for government attention and resources, widespread public concerns about the environmental impact of mining, new influential actors questioning the role of the mineral industry in setting government agendas, and a decline in ore reserves and mining communities.

Dealing with complex systems requires new policy approaches to understanding and managing human interactions with biophysical systems. In the mining sector, resource managers, labour representatives, government decision-makers and community leaders are now trying to develop strategies to deal with the inevitable complexity and uncertainty that accompanies contemporary resource and environmental policy-making (McCarthy, 2003). Institutional techniques for bringing together groups, interests and concerns to address resource complexity include multi-stakeholder consultations, co-management, integrated resource management, and institutional interplay at vertical or cross-scale linkages (Berkes, 2003). These new systems perspectives have been influencing the mining industry policy environment in a number of ways and to varying degrees. Public and private decision-makers in the mineral sector have had many different responses.

**Rising to the Challenge? Responses to Change**

The mineral industry and public officials in government departments of mines have been traditionally educated in such fields as geology, engineering and finance. None of these disciplines adequately equip the personnel with the tools required to operate within a complex systems paradigm as described above. Industry has, however, once again responded to competitive challenges in the ways it knows best, primarily through technical innovation. For many years, industry has been investing heavily in research to mitigate their adverse environmental impacts such as acid rock drainage considered to be mining's most devastating environmental impact, develop recycling programs to recover metals, and adopt integrated environmental management systems.

The industry has also become aware that it needs to work more effectively with other groups affected by mineral activities. To that end, with varying degrees of commitment from companies and mining associations, from the 1990s onward, the industry initiated a number of multi-stakeholder approaches to mining development. One of the most notable of these was the national Whitehorse Mining Initiative (WMI), an extensive attempt by industry and government to foster a broader consensus about how mining should proceed in the future: "The Accord adopt[ed] a strategic vision for a healthy mining industry in the context of maintaining a healthy and diverse ecosystems in Canada, and for sharing opportunities with Aboriginal peoples." (Mining Association of Canada, 1994; McAllister and Alexander, 1997)

More recently, consultative efforts have extended to international efforts including a three-year Global Mining Initiative (GSI), created by international mining companies (including Canadian corporations) in preparation for the World Summit on Sustainable Development in Johannesburg in 2002. The GSI provided funding for the Mining Minerals and Sustainable Development (MMSD) project, which was billed as an "independent two-year process … with the objective of understanding how to maximize the contribution of the mining and minerals sector to sustainable development at the global, national, regional and local levels" (International Institute for Environment and Development, 2004). 4

Nevertheless, efforts such as the WMI and the MMSD do indicate a recognition on the part of governments and industry that they need to develop effective consultation processes, distribute the economic benefits from mining more widely, and mitigate the environmental impacts. The question remains; do these changes indicate a significant shift toward a new approach to staples development?

*Seismic Shifts or Minor Tremors in the Status Quo?*

The past few decades has raised questions about whether the mineral industry could be classified as a sunset industry with Canada moving into a post-staples, knowledge based economy. As the Sudbury example would suggest, it is possible for an economy to diversify based on its resource-based strengths. The mineral industry, much like other enterprises in Canada has adapted to competitive challenges with many technological innovations contributing to a so-called knowledge economy. An examination of its production values suggests that they remain very strong and Canada continues to be a world leader in mineral exports and exploration. (Natural Resources Canada, Minerals and Metals Sector, 2001). Canada exports 80% of its mineral production which account for 13% of the country's total export earnings. Canada is the base for more mining companies than any other country in the world with its largest city,

Toronto, touted as the mine-financing capital of the world. (Ontario Ministry of Northern Development and Mines, 2004).

Michael Howlett suggests that Canada has diversified by experiencing a growth in the tertiary sector, industrial expansion in regional centres, significant growth of metropolitan regions and a decline in resource-based communities (Howlett, 2003: 58).

Howlett poses two possibilities. The first is that Canada will remain "stuck in a mature staples" trap and will continue "to reinforce existing economic policy measures promoting increased resource extraction" (Howlett, 2003: 59). The second would see the diversification of the economy based on the traditional staples industries with value-added products including environmentally-related services moving toward a post-staples economy (Howlett, 2003: 59). With respect to the mineral industry, we are seeing elements of both trends developing.

Many examples can be found of government policies that continue to subsidize industry and support policies that continue promote primary resource extraction. For example, the Canadian mineral exploration sector led the world in exploration expenditures in 2002 and 2003. One singularly important reason for this is that the industry received the benefits of national a flow-through share program, also referred to as "super flow-through". These tax incentives have been enhanced by provincial tax incentives in British Columbia, Saskatchewan, Manitoba, Ontario and Quebec. In total over $525 million of these shares were raised for mineral exploration in one year (Natural Resources Canada. Minerals and Metals Sector, 2004).

These kinds of incentives signal that governments are continuing to actively promote policy measures in order to reinforce the economic position of extractive, industries. This reality runs counter to a post-staples, ecosystems-based argument that suggests that post-industrial economies often have a competitive advantage over staples-dependent economies. These 'new' economies are competitive, it is argued, because government uses taxation incentives and regulatory measures to develop goods and services that do not rely as much on the costly production of raw materials and substantial energy inputs (Dale, 2001). Clearly, the current Canadian taxation and regulatory environment continues to promote staples-based development.

In Canada, we are also seeing signs of the emergence of a new, staples economy. These developments reflect Howlett's second more optimistic alternative suggested above; that is, the Canadian economy will continue to diversify supported by its traditional resource industries. Recent Natural Resources Canada documents identifying diversification and shifts in the industry suggest that it is undergoing "profound structural change." Economic diversification of the minerals industry has been growing in terms of downstream, value-added processes. Employment in mining itself has declined, in part because of the substitution of labour through technological developments, but it is growing in other areas such as materials handling, specifically recycling which is becoming an important source of metals in many regions (Natural Resources Canada. Minerals and Metals Sector, 2001: 9).

Canadians are large investors in exploration (accounting for 30% of all projects throughout the world) and mining projects overseas (approximately 6000). (Natural Resources Canada. Minerals and Metals Sector, 2001: 17) International investment, in turn, generates a demand for Canadian mining, equipments, services and expertise—all of which contribute to the secondary and tertiary economic sectors. Canadian innovations in the mineral industry, its global leadership in the production of minerals, research and development and environmental technologies, mean that there are promising trends in its ability to diversify. The most notable example of these developments can be found in the example of Sudbury which has diversified its economy based on mining-related spin-off businesses associated with equipment, robotics and technology.

The shift to a knowledge economy has not directed attention away from the mineral industry. It, along with other economic enterprises, has been using information technology to foster productivity and creating value-added goods and services. The federal government has been encouraging this direction suggesting that investment in such things as fuel cells, batteries, sensors, lightweight and structural materials which rely on mineral production will provide new opportunities for the industry. (Natural Resources Canada. Minerals and Metals Sector, 2001: 16). Continuing public concerns about the ongoing adverse biophysical and socio-economic impacts of Canadian mining operations in Canada and around the world are fuelled by reports of failure of tailings dams contaminating watersheds, displaced communities and workers. or unwanted resource development. One commentator has this to say about the new, post-Fordist environment:

> About the empowerment of workers, households, and communities, it is not. About the creation of more participative, skilled labour processes, it is, at best, tangential. Rather, the emerging economy is, first and foremost, about doing more with less and for less….Thus, despite local variations, downsizing, the expansion of work areas, and the addition of new tasks to old jobs were the real trademarks of the changes that were besetting the mining industries. (Russell, 1999: 199).

That said, in Canada, we are seeing some pockets of change in the way traditional resource activities are carried out. In some areas, institutional and individual learning is taking place in new consultative forums as people bring a diverse suite of resource values to the negotiating table. In such forums, positions must be justified on the bases of their contribution to the broader public interests that now includes ecological and community sustainability. One analyst, Robert Gibson, suggests that one can find evidence that changes may be taking place in the mineral development process—changes that distribute wealth and proceed in a more economically and ecologically sustainable manner. The example that Gibson offers is that of the Voisey's Bay mine development, a huge nickel-copper-cobalt deposit in Labrador owned by a subsidiary of nickel giant INCO Ltd. In June 2002, the Aboriginal peoples in the area, the Innu and the Inuit, agreed to the ratification of an agreement to open the mine following an environmental assessment process and negotiations with the major stakeholders, which in this case included affected communities, governments and industry. Gibson suggests that the agreements were remarkable given the vast difference in cultures, priorities and interests involved and the fact that the agreement was able to encompass and integrate biophysical and socio-economic considerations.(Gibson, 2002). He notes that the reasons for success, at least up until this point of the development, can be attributed to the substantial power given to the indigenous people in the decision-making processes, the fact that all the main players had an important level of influence, and that the planning and assessment processes called for an integrated, lifecycle, approach to ecological, socio-cultural and economic aspects of the project. Notably, the agreements emphasized long-term benefits, and requirements that the evaluative and decision-making process be continuing and adaptive through the life of the project. Although this was a single case, decision-making processes are frequently built on previous experiences and lessons learned. The Voisey's Bay case sets some standards for a new approach to mineral development that others might follow.

**Conclusions: New Frontiers**

Processes and agreements of the kind undertaken in the Voisey's Bay case indicates that mining can continue to take place in a new political arena—one that recognizes a diversity of interests. The status quo need not prevail and, in fact, it is unlikely to do so given the new sets of players now participating in the decision-making arenas. A new generation of policy-makers have grown up with environmental considerations as part of their educational curriculum. The comparatively recently recognized rights of Aboriginal peoples to make decisions with respect to their territories have also altered the dynamics of the game. Government departments now temper their promotional mineral-related activities by acknowledging the need to ensure adequate environmental protection measures are in place and that attention is paid to the socio-economic health of affected communities (Natural Resource Canada, Minerals and Metals Sector, 2004).

All that said, a precautionary note is needed, for the prevailing drive for mineral development is based on the same profit motive that has always driven capitalist development. Moreover, the predominant method for dealing with competitive and other challenges has remained technological, rather than social or environmental innovation. While numerous changes may take place on a variety of levels, at this most fundamental level, industrial relations and community relations and new managerial paradigms will all be informed by the choices made by industry to develop a mine, introduce a measure of 'workplace democracy' or adopt other voluntary initiatives. As Russell has noted, in the case of industrial relations and work reorganization, "changes would be at the margins to jobs that had been essentially predesigned to meet corporate requirements" (Russell, 1999: 166).

Howlett's analysis that Canada is experiencing uneven economic development (Howlett 2003) certainly appears to be supported by an examination of the mineral industry. Given concerns about depleting ore reserves, changing public values about resource development, and growing global competitiveness, Canada's long term economic and ecological health will depend on its ability to diversify into other value-added enterprises. While Canada remains a world leader in the production and export of minerals, there are signs that the economy is beginning to diversify into other areas, albeit using the primary sector as the basis for the production of new goods and serves.

On a final note or perhaps as a caveat to the above statement, although the Canadian mineral industry is an old one, there always appears to be new frontiers for staples production. This seems to be the case despite pressures from various groups to move towards a post-staples economy. Today, in addition to the more typical exploration targets, engineers are now discussing the possibilities of using new technologies to pursue deep mining techniques extending the life of existing ore bodies, or even to mine deep sea deposits or asteroids (Scoble et al, 2001). The development of the nascent diamond industry in the Canadian North has continued to fuel exploration interest. In 1998, the first diamond mine, the Ekati mine, began production in the Northwest Territories. For the northern economy relatively recently opened up to diamond mining, "post-staples" would seem to be an odd characterization. Nevertheless, the old approach to staples-led economic development will no longer suffice in the complex policy environment of the 21st century.

**References**


Angus, Charlie and Brit Griffin. *We Lived a Life and Then Some*. Toronto: Between the Lines, 1996.

Berkes, Fikret. "Can Cross-Scale Linkages Increase the Resilience of Social-Ecological Systems?" Paper presented at the RCSD International Conference, Politics of the Commons,, Chiang Mai, July 2003.

British Columbia, Government of. Ministry of Energy and Mines. *Investing Opportunities* October 15, 2003 [cited May 5 2004]. Available from http://www.em.gov.bc.ca/Mining/ExploringtheFuture/Default.htm.

Canada, Government of. *About Parliament: History of Departments: 1867 to Date* [Government Webpage]. February 19, 2004 [cited April 21, 2004. Available from http://www.parl.gc.ca/information/about/related/Federal/DepHist.asp?lang=E&Dept=C&SubDept=All&Key=46.

Canada, The Mining Association of. *The Whitehorse Mining Initiative* [cited April 19 2004]. Available from http://www.mining.ca/english/initiatives/whitehor.html.

Canadian Institute of Mining, Metallurgy and Petroleum, Mining Association of Canada, Prospectors & Developers Association of Canada, The Northern Miner. *The Canadian Mining Industry* The Canadian Mining Hall of Fame, [cited April 27 2004]. Available from http://www.halloffame.mining.ca/halloffame/english/industry.html.

Clement, Wallace. *Hardrock Mining: Industrial Relations and Technological Changes at Inco*. Toronto: McClelland and Stewart, 1981.

Clausen, Scott and Mary Louise McAllister. "An Integrated Approach to Mineral Policy." *Journal of Environmental Planning and Management* 44, no. 2 (2001): 227-44.

Cranstone, Donald A. *A History of Mining and Mineral Exploration in Canada and Outlook for the Future*. Ottawa: Natural Resources Canada, Public Works and Government Services Canada, 2002.

Dale, Ann. *At the Edge: Sustainable Development in the 21st Century*. Vancouver: UBC Press, 2001.

Dickason, Olive Patricia. *Canada's First Nations: A History of Founding Peoples from Earliest Times*. Toronto: McClelland and Stewart Inc., 1992.

Gibson, Robert. "Power, Sustainability and Adaptation: Environmental Conflict Resolution Leading to the Agreements to Proceed with the Voisey's Bay Nickel Mine." Paper presented at the Case study paper presented at conference Towards Adaptive Conflict Resolution: Lessons for Canada and Chile, Liu Centre for the Study of Global Issues,, University of British Columbia, Vancouver, September 25 2002.

Howlett, Michael. "Canadian Environmental Policy and the Natural Resource Sector: Paradoxical Aspects of the Transition to a Post-Staples Political Economy." In *The Integrity Gap*, edited by Eugene Lee and Anthony Perl, 42-67. Vancouver: UBC Press, 2003.

Innis, Harold. *Settlement and the Mining Frontier,* Toronto: Macmillan, 1936.

International Institute for Environment and Development. *The Mining, Minerals and Sustainable Development (MMSD) Project* May 31 2002 [cited May 3 2004]. Available from http://www.iied.org/mmsd/what_is_mmsd.html.

Kay, James J., Michelle Boyle, Henry A. Regier, George Francis,. "An Ecosystem Approach to Sustainability: Addressing the Challenge of Complexity." *Futures* 31, no. 7 (1999): 721-42.

Kuyek, Joan and Catherine Coumans. "No Rock Unturned: Revitalizing the Economies of Mining Dependent Communities.". Ottawa: MiningWatch Canada, 2003.

Leslie, Peter. *Federal State, National Economy*. Toronto: University of Toronto Press, 1987.

McAllister, Mary Louise. *Prospects for the Mineral Industry: Exploring Public Perceptions and Developing Political Agendas*. Kingston: Centre for Resource Studies, Queen's University, 1992.

McAllister, Mary Louise and Cynthia Jacqueline Alexander. *A Stake in the Future: Redefining the Canadian Mineral Industry*. Vancouver: UBC Press, 1997.

McAllister, Mary Louise and Tom F. Schneider. *Mineral Policy Update 1985-89*. Kingston: Centre for Resource Studies, Queen's University, 1992.

McCarthy, Daniel D.P. "Post-Normal Governance: An Emerging Counter-Proposal." *Environments* 31, no. 1 (2003).

Mining Watch Canada. "Latin American, Canadian Activists Set Challenges for Governments, Mining Industry on Eve of Industry Conference." *News Release*, May 12 2002.

Mining Watch Canada and the Pembina Institute. *Looking beneath the Surface: An Assessment of the Value of Public Support for the Metal Mining Industry in Canada: Report Summary* 2002 [cited May 5 2004]. Available from http://www.miningwatch.ca/documents/belowsummary-eng.pdf.

MiningWatch Canada. *Home Page* 2003 [cited 2004 April 27]. Available from http://www.miningwatch.ca/MWC_profile_short.html.

Natural Resources Canada. Minerals and Metals Sector. *About the Sector: Home Page* April 14 2004 [cited 2004]. Available from http://www.nrcan.gc.ca/mms/au_e.htm.

———. *Focus 2006: Vision for 2001-2006*. Ottawa: Minister of Public Works and Government Services Canada, 2001.

———. "Minerals and Metals Policy of the Government of Canada: Partnerships for Sustainable Development.". Ottawa: Minister of Public Works and Government Services Canada, 1996.

———. "Minerals and Metals Sector Update." *Home Page* 2004.

Nelles, H.V. *Forests, Mines and Hydro-Electric Power in Ontario, 1849-1941*. Toronto: MacMillan, 1974.

Ontario, Government of. Ministry of Northern Development and Mines. *Ontario, the Future of Mining Explore the Opportunities* Queen's Printer for Ontario, 2004 [cited May 2004]. Available from http://www.mndm.gov.on.ca/mndm/mines/ims/investment/publications/profile/profile.pdf.

Peeling, Gordon R. "Canada and the Challenge of Attracting Investment, a Speech Presented in London, England.". Ottawa: Mining Association of Canada, 1998.

Prospectors and Developers Association of Canada. *Land Use and Protected Areas Strategies: British Columbia* 2003 2004 [cited April 28 2004]. Available from http://www.pdac.ca/pdac/land-use/pa-bc.html#Brief_history.

Ritter, Archibald R.M. "From Fly-in, Fly out to Mining Metropolis." In *Large Mines and the Community: Socio-Economic and Environmental Effects in Latin America, Canada and Spain*, edited by Gary and Felix Remy McMahon, 223-61. Washington: The World Bank 2001, 2001.

Russell, B., *More With Less. Work Reorganization in the Canadian Mineral Industry*, Toronto: University of Toronto Press, 1999.

Scoble, M., Archibald, J., Hassani, F., Frimpong, S., Hadjigeoriou, J., Singh, P., Yemenidjian, N., Corthesy, R., Bawden, W. and Stevens, R.;. "The Canadian Mining Education Council: An Initiative to Network Canada's Mining Schools." Paper presented at the presented at the Canadian Conference on Engineering Education,, University of Victoria, Victoria, B.C., 2001.

Smiley, Donald. *The Federal Condition in Canada*. Toronto: McGraw-Hill Ryerson, 1987.

Udd, John. *A Century of Achievement: The Development of Canada's Mineral Industry*. Edited by Appendix. Vol. Special Volume 52: Reproduced on the Natural Resources Canada Website, 2000.

Vodden, Christy. *No Stone Unturned: The First 150 Years of the Geological Survey of Canada* Natural Resources Canada. Geological Survey of Canada., 1992 [cited April 27 2004]. Available from http://www.nrcan.gc.ca/gsc/history_e.html.

Wojciechowski, M.J. and M.L. McAllister. *Mineral Policy Update 1984*. Kingston: Centre for Resource Studies, Queen's University, 1985.

Young, Alan. *Observations on Risk Assessment from a Public Perspective* Environmental Mining Council of B.C., December 1998 [cited April 19 2004]. Available from http://emcbc.miningwatch.org/emcbc/publications/risk_assessment.htm

**ENDNOTES**

[1] The author would like to thank Patricia Fitzpatrick for her intelligent and helpful observations during drafts of this article and providing very useful sources. Thanks also to Michael Howlett and Keith Brownsey for facilitating this article and project.

2 Exceptions include the Canadian northern territories, where authority over mining has been devolving from the federal government to the territorial and First Nations governments and other areas of Canada where some comprehensive agreements have been settled with First Nations. (See chapter 12).

3 Although the initiative has been criticized as being somewhat ineffective, (Leslie, 1987:7) it highlights governmental preoccupation with the importance of the resource sector to Canada during that era.

4 One representative from a Peruvian non-governmental organization, however, observed that "The MMSD, however much good work has gone into it, is still an attempt to set an agenda from the top down, to limit the debate, and to define who the legitimate actors or stakeholders are. The role of NGOs is to support processes that are built from below, to construct a new social agenda, and to support communities' struggles to recuperate their economic, social, and cultural rights" (International Institute for Environment and Development, 2004).