

Boosting the discovery of new mineral deposits by attracting investments: The Canadian experience

by
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(The paper will be presented by Gerald Harper.)

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Abstract

The last three to four decades of the twentieth century have been a period of dramatic growth and change for the Canadian mining industry. A country known as a major producer of base metals, nickel and iron evolved rapidly into a world leader in coal, copper, diamonds, molybdenum, potash and uranium while maintaining its production of the traditional mineral suite. With the new mines came new technological approaches, either for Canada or for the world.

In parallel with the growth of the mining industry and driving it, was the growth of a distinct exploration industry. This industry has a structure and life of its own, fostered in part by supportive regulatory and philosophical climates but driven primarily by a highly competitive, entrepreneurial group of individuals for whom the reward of a discovery is more than just an academic success but firstly financial survival and secondly financial success.

Success breeds success and as the domestic industry growth in Canada was noticed by others around the world, the international industry moved in to participate in the discovery and mine development cycle.

No one single element caused this industry growth surge but a combination of factors working together effectively. They included:

- Rich and diverse geology that was being mapped aggressively by Geological Survey teams with an effective method for rapid delivery of results to the public and to industry.
- An exploration industry uniquely structured with self employed prospectors and risk capital dependent junior companies competing directly with major corporation, structured, teams.
- A broadly similar system for exploration mineral rights acquisition across the country that did not discriminate against any one type of explorer and was perceived to provide a seamless course to a right to mine any discovery.
- A competitive environment among Provinces, willing to attract investment through supportive measures such as Prospector training courses and grants for access assistance.
- A stock market system conditioned to raising risk finance and not constrained by excessive regulatory barriers and hurdles.
- An information dissemination system that encourages openness in contrast with the conventional image of large mining companies with their desire for secrecy about their exploration.
- A tax system supportive of new mine development and a Federal Government prepared to use the tax system to attract investment in exploration and mine development.
- An efficient and timely regulatory system.
- The stimulus of a continuing stream of major, world-class discoveries.

These are all positive factors that have contributed to a highly competitive investment climate for exploration and mining in Canada up until the last decade.

Commencing in the 1980s a number of other influences have emerged which have created challenges to the investment climate, including environmental and social issues, access to land, native land claims and a general decrease in regulatory efficiency. By the early 1990s these negative influences on the investment climate in Canada coincided with a major geopolitical shift in the world creating improved investment conditions in many other countries with high economic mineral potential and inventories of explored mineral deposits requiring development only. Canadian entrepreneurs were among the first to recognize the opportunities outside of Canada and married that foreign geological potential with Canadian financing and technical support.

Most recently the negative influences have included the Bre-X incident, the ensuing Ontario Securities Commission/Toronto Stock Exchange tightening of securities regulations and the emergence of the dot.com sector as a serious contender for risk capital.

Although much of the focus of these new emerging influences has been in countries like Canada, many of them are of a global nature and, in time, will affect all mining jurisdictions. It will be intriguing to see how mining jurisdictions including Canada, adjust to these new realities and use their creativity to compete for investment capital.

The Authors

Dr. Tony Andrews

Tony is the Executive Director of the Prospectors and Developers Association of Canada and has overseen its growth from a small regional organization to a national body with international influence and an annual convention that attracts the largest group of exploration personnel in the world to Toronto. He graduated with a Ph.D. from University of Western Ontario and followed this with a Postdoctoral Fellowship at the Scripps Institute of Oceanography. Prior to joining PDAC he was employed by the Ontario Geological Survey in applied mineral deposits research.

Dr. Gerald Harper

Gerald is the Immediate Past President of the Prospectors and Developers Association of Canada and President of the consulting group Gamah International Limited. He is the Chair of the Kingsway Chapter of professional Engineers of Ontario. He has led the drive to collect more extensive and meaningful statistics about the minerals industry, particularly the exploration sector, to picture its activities in a global context; thus reflecting a unique characteristic of the industry: that it has always been truly international; searching for, finding, developing and operating mines in many countries for consumption all around the world at globally established prices.

He graduated from the University of London with a B.Sc Honours in Geology and Chemistry and subsequently completed his doctorate degree on research undertaken on the geochemistry and structural controls of a Central African suite of rocks of Zambian Copperbelt affinity.

Main Text

Slide 1 - title

The last three to four decades of the twentieth century have been a period of dramatic growth and change for the Canadian mining industry. A country known as a major producer of base metals, nickel and iron, mostly from underground mines evolved rapidly into a world leader in coal, copper, diamonds, molybdenum, potash and uranium while maintaining its production of the traditional mineral suite. With the new mines, many of which were open pit, came new technological approaches, either for Canada or for the world. When the Commonwealth Mining Conference was held in Canada in 1957 the Canadian Institute of Mining published a series of special volumes to commemorate the event and to document the nature and scale of the industry. They depicted an industry that was ruggedly independent, operating mines in remote areas with communications links limited to seasonal routes and relying on the professional capabilities of the team on the site.

Slide 2 – Canada's leading minerals: world production rank over time

Few would have anticipated the events of the next thirty years. In the west, determined entrepreneurs were attempting to raise finance for a large low grade open pit porphyry copper mining operation through a junior company called Bethlehem Copper. Within ten years a whole new industry had developed based on a type of deposit, well known elsewhere in the cordillera but not hitherto believed to exist or be exploitable in British Columbia. Open pit mining of copper and molybdenum porphyry deposits, then coal deposits, uranium deposits, polymetallic deposits, gold deposits and finally tar sands was the trend in Canada in the third quarter of the twentieth century. These open pits pushed the technology barriers of cold temperature operation. In the last quarter of the century diamonds were added to the list of commodities being searched for and found. Underground mines grasped new technology with a resurgence of gold mining, a whole new Prairie potash mining industry established and the rise to world dominance of the uranium mining industry, now employing some of the most innovative, remote controlled, automated, mining methods anywhere.

In parallel with the growth of the mining industry and driving it, was the growth of a distinct exploration industry. This industry has a structure and life of its own, fostered in part by supportive regulatory and philosophical climates but driven primarily by a highly competitive, entrepreneurial group of individuals. Many of them did not work for mining companies but were self employed or operated through a corporate vehicle known as a junior company. For them the reward of a discovery is more than just an academic success but firstly financial survival and secondly financial success.

In the western cordillera, geologists and geochemists joined forces to use the latter technology where conventional wisdom said it wouldn't work, in areas of glacially transported overburden. Porphyry copper and molybdenum deposits were discovered, then coal deposits, epigenetic gold deposits and lead-zinc deposits.

In the east geologists and geophysicists were more likely to be sharing their skills with the development of geophysical systems to look deeper and more discriminatingly through both overburden and bedrock. Not only were airborne systems developed to a very sophisticated degree but systems for use down drill holes also evolved from simple to sophisticated. Volcanogenic massive sulphide systems were explored in three dimensions and many deposits were found in proximity to each other, thus ensuring the long life of several of the older mining camps.

The explosion of exploration in the western cordillera provided the justification for the Vancouver Stock Exchange to grow into the hub of junior company exploration equity financing. Senior and junior companies alike took up the challenge to find copper porphyry deposits and then molybdenum deposits followed by zinc, uranium, polymetallic massive sulphide and gold deposits, as the economic parameters demanded. The stories of the penny stock that soared to tens or hundreds of dollars a share on the basis of their dramatic discovery are many and have fueled the stock selling industry and stimulated the gambler and penny stock player. For each of those rare but highly publicized discoveries by junior

companies there are tens or hundreds of other junior companies that failed completely and their investors lost any share value. The lottery style nature of investing in the junior stock market was clearly understood and many of the ardent speculators were employed within the exploration industry. Even when a less than honest junior company promoter was revealed to have been falsifying results to stimulate his stock, the market players did not desert the whole market sector but blacklisted the promoter. The junior mining (and oil and gas) sector provided a unique opportunity to participate in a capital appreciation of many times the initial value. Capital gains tax in Canada was not onerous and the junior market was one that any Canadian (and many foreigners) could participate in, and did.

Success breeds success and as the domestic industry growth in Canada was noticed by others around the world, the international industry moved in to participate in the discovery and mine development cycle.

No one single element caused this industry growth surge but a combination of factors working together effectively. They included:

Slides 3 to 11 – Positive factors influencing industry growth in Canada, 1960s – 1970s

- Rich and diverse geology that was being mapped aggressively by Geological Survey teams with an effective method for rapid delivery of results to the public and to industry.
- An exploration industry uniquely structured with self employed prospectors and risk capital dependent junior companies competing directly with major corporation, structured, teams.
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These are all positive factors that have contributed to a highly competitive investment climate for exploration and mining in Canada up until the last decade or two.

Slide 12 – Total exploration expenditures in Canada 1969 – 2000 (in constant dollars)

Lest anyone assumes that this was an uninterrupted boom of exploration and success in finding and developing mines in Canada from the sixties to the eighties I must disillusion you. The Canadian and international industry experienced some of its greatest cyclical peaks and troughs in commodity prices, coinciding with world recessions; and with them the wholesale slashing of exploration budgets. Molybdenum in the 1970s, uranium in the 70s, gold in the 80s have all seen new highs in prices that brought euphoria and consequent collapses. Throughout the seventies senior company exploration budgets accounted for at least 80% of all exploration spending worldwide so they determined the health of that industry.

The recessions centred on 1972, 1984, 1993 and 1999/2000 are to be noted particularly. The 1972 recession was so deep that the exploration industry was only able to manage a weak recovery during the course of the next business cycle to its low in 1976. It took a second business cycle (1976 – 1983) with exceptionally strong prices for some commodities for the Canadian exploration industry to recover to its needed norm of \$500 – 600 million per annum, in constant dollars, to maintain a steady, industry self sustaining discovery rate.

Aware of industry difficulty in recovery from the recession of 1972, therefore in response to the downturn in the exploration industry in 1983 the Federal Government introduced the most effective tax stimulus measure in the history of the industry, the concept of flow through shares with accelerated flow through depletion allowance.

Slide 13 – CEE with 133% premium MEDA

This program was highly successful both in increasing the quantity of exploration in Canada and also in increasing the proportion undertaken by the junior sector.

Slide 14 – Total exploration expenditures in Canada 1969 – 2000 (seniors and juniors distinguished) in dollars of the day

When the 133% deduction of MEDA from flow through shares was eliminated by the Federal Government on the Federal portion of taxes in 1989, the industry could look back on the strongest cycle of exploration ever in the history of Canada. This boom brought with it discoveries and developments of gold, uranium and polymetallic deposits. It also caused the fundamental exploration that resulted, subsequently, in the diamond mining industry being established in the North West Territories. But most importantly it brought about the growth of the junior sector.

Commencing in the 1980s a number of other influences have emerged which have created challenges to the investment climate. These include environmental and social issues, access to land, native land claims and a general decrease in regulatory efficiency coinciding with a massive increase in complexity and multiplicity of same. Tax reform was accelerated and many of the well-liked elements of the 1970s system were modified or reversed in the interests of differing tax philosophies for the new times. Such included elimination of the super depletion allowance for flow through investments in all jurisdictions except by the Province of Quebec, where the Provincial part of the tax assistance remained. The net result was one of the deepest, if not the deepest recession in exploration the Canadian industry has experienced from 1990 to 1992/3. Total national exploration spending plummeted and the junior equity market dried up. Many long time workers in the industry left for more stable careers in other business sectors. When the inevitable upturn in the business cycle came with attendant bullish market for speculative risk capital raising and improved profits for the senior companies to allow increased exploration budgets, the industry had a hard time getting started. The people to do it had disappeared and the regulatory, social and environmental hurdles to developing any discovery in Canada were perceived to tip the risk – reward ratio too negatively.

These early 1990s negative influences on the investment climate in Canada coincided with a major geopolitical shift in the world, creating improved investment conditions in many other countries. A considerable number of these countries had high economic mineral potential and inventories of explored mineral deposits requiring only development. Canadian entrepreneurs were among the first to recognize the opportunities outside of Canada and married that foreign geological potential with Canadian financing and technical support.

Slide 15 – World exploration expenditures 1970 - 1998

The business cycle of the decade of the nineties saw the world exploration and mining industry expend unprecedented amounts of money and effort on discovering, defining and developing new deposits. The intense exploration effort in newly available geologic terrain resulted not only in delineation and development of previously known deposits but of new discoveries as a result of the quantity of effort, with modern techniques, expended in areas of newly available, high potential. This huge surge of exploration spending internationally involved senior and junior companies with head offices in many countries.

Slide 16 – Exploration budgets (>\$4 million) 150 – 200 worldwide senior companies, 1992 – 1997

Slide 17 – Canada's top senior companies worldwide exploration expenditures 1992 – 2000

Slide 18 – Canadian junior company spending by region 1991 - 1999

The region of the world that became the focus of the largest portion of all the exploration and development spending was Latin America.

This period also saw the senior companies begin the transition from explorers to developers. Acquisition of exploration prospects from juniors was seen as an effective way of reducing exploration costs and risks. The junior share of exploration expenditures rose, fueled not only by a bullish stock market but also from equity invested by the senior companies.

Slide 19 – Percentage of diamond projects of juniors

Exploration and mine development in Canada languished throughout this cycle. Even the diamond deposits discoveries and plans for development in the North West Territories could not stimulate any additional exploration effort on the part of the junior sector. The initial exploration for these discoveries had been undertaken in the nineteen eighties and their development only in the late nineties was partly a function of the slow process of permitting. This slow permitting was seen as a specific example of the fears investors had perceived related to changing values in Canada.

Slide 20 – Debt and equity financings on Canadian markets 1990 - 1999

While the exploration activity in Canada experienced a moderate recovery, the supporting activities related to the industry overseas were booming. As exploration was occurring at a growing rate elsewhere around the world the money raising and financial and public relations support was becoming more centred in Canada, at the expense of regional financial markets such as Australia.

Slide 21 Total equity financing worldwide - source markets, 1997

Slide 22 Total equity financing worldwide - source markets, 1998

Slide 23 Total equity financing worldwide - source markets, 1999

The 1996 boom brought the inevitable excesses and the revelation of the Bre-X incident in 1997 was enough, coinciding as it did with the Asian economic collapse, to bring an abrupt end to the bull market for junior exploration stocks in Canada. The ensuing Ontario Securities Commission/Toronto Stock Exchange reviews and rewriting of securities regulations and the emergence of the dot.com sector as a serious contender for risk capital removed any subsequent appetite by speculative investors for the mining industry.

The junior sector of the mining industry experienced, **and is still experiencing**, its own personal recession that has extended continuously from 1997. During that period from 1997 till now stock markets generally rode the euphoric wave of the high technology stocks boom for a brief but heady cycle.

Slide 24 – Junior company financings: Canadian markets 1991 - 2000

Leaders of the industry in Canada have recognized for some time now that the trends of the recent business cycle have some alarming consequences for both Canada and the industry. While a mining company can operate extremely effectively with its mines located in a variety of countries around the world, it relies on the skill sets and support of a small number of the major mining countries to provide the professional expertise, the equipment, the research and development and the capital, financial and marketing acumen. The internationalisation of the Canadian companies was depleting this pool of home grown capability. Senior politicians responsible for resource development in the Canadian Federal and regional governments realised that the downward trend in new mine developments was exacting a cost on the economy.

Six years ago the industry and government leaders determined to make their annual meeting more effective in focusing on the issues that were reducing the competitiveness of Canada in the exploration and mining fields. This provided the first insight that the policy makers were all sufficiently concerned to overcome traditional differences stemming from regional rivalry and develop a common position. The Prospectors and Developers Association of Canada had spoken out at these meetings about the fundamental problems facing Canada, that it was no longer competitive in the international world. Declining budgets over a period of ten years for geoscience research, basic geological mapping, geophysical and geochemical surveys had finally caught up with the country. The basic information from which to plan any exploration and the flow of ideas to stimulate exploration for commodities in new (and old) environments had slowed to the point where new discoveries and mine developments were not replacing existing mines; the industry was shrinking.

When the events of the stock markets overtook the industry and the ability to raise risk equity for exploration declined precipitously in 1997 and thereafter, PDAC realized that its responsibility to its members required it to put its maximum effort into restoration of the equity lifeblood of the junior exploration sector. Without exploration and discoveries, all the other problems related to permitting, construction and operation of mines were of no importance.

PDAC started a dialogue with all the regional governments across Canada to emphasize the crisis and review the options for re-establishing the industry. A remarkable degree of consensus was achieved and support gained. Several Provincial governments established their own local improved fiscal climate for exploration but the nature of the Canadian tax system is such that it is difficult for one regional government to have significant influence for the country as a whole.

PDAC's financial and taxation experts had been working to come up with an innovative way to stimulate the junior financing climate. They concluded that nothing was so successful as the previous program from the 1980s when the Federal and provincial Governments provided accelerated write-off of exploration expenditures by investors. PDAC launched an education and lobbying campaign to convince the governments and specifically Finance Ministers that such a scheme was required. Two years of intense effort by PDAC, the regional industry associations and the regional governments Resources Ministers all combined to result in the introduction in October 2000 by the Federal Minister of Finance of a program of encouragement. Investors in exploration will be offered a special tax credit for such investment to supplement their normal flow through deductions.

Slide 25 - Concept of EITC Operation

PDAC has launched a major education and information campaign to make financial advisors and investors aware of the advantages of this new program.

Each month we examine the financing statistics carefully in hopes that the upturn in funding for exploration will strengthen. With a newly invigorated exploration community we are confident that new discoveries will be made in Canada. With those discoveries will come a re-assurance to financial markets that high risk but large reward resource investment opportunity is alive again in Canada. Meantime to avoid the excesses that became apparent with time in the previous tax assisted financing period, the present scheme envisages only a three year period of effect.

It is our belief that this action by the Federal Government and the investor initiatives planned and underway by PDAC and regional governments and associations in Canada will result in the desired stimulus to the industry. Not only will the improved fiscal climate of Canada encourage investment but the climate for investment and exploration elsewhere is no longer as competitive.

Slides 26 – 29 Changing Trends – increasing impediments elsewhere in the world

- The previously known, undeveloped or partially explored resources in many countries that were available in 1990 have been developed and the exploration effort required for the new, blind deposit will be similar in any country.

- The hurdles to develop mines in many countries that welcomed exploration and mining ten years ago are increasing, with social and environmental pressures being much more closely examined.
- Legal title issues have arisen in several jurisdictions, turning away potential investors.

Slides 30 – 33 Changing Trends – increasing enablers in Canada

- The evolving demand for commodities in most need of supplementary production requires access to very large diverse geologic terranes to ensure the highest likelihood of discovery. Canada, with its huge land mass and diverse geology has a fundamental advantage.
- Geoscience surveying in Canada has turned the corner and is on the increase.
- When stock markets are not carried away with excessive exuberance, investors and their advisors have a desire to pay closer attention to their investment. For the junior company, exploring in Canada brings with it an ease of communication and information dissemination not easily rivaled on the international scene.
- The new CEE tax credit.

Canada may also benefit in the next exploration positive cycle by virtue of the existence of its junior sector which must be encouraged to remain as a potentially strong force in the industry. When one looks at the recent trends among the senior mining companies of the world it is apparent that they are rapidly consolidating into a small handful of mega-miners.

Slide 34 – The Mega-Miners

Review of their commitment to exploration expenditure over time indicates that the merged entity inevitably spends less than the sum of the budgets of the prior companies. There is also a tendency, fitting for companies primarily interested in developing mines, to purchase discoveries made by others and cut back internal exploration budgets even further. Shrinking senior company budgets, without compensating increased junior company spending will ultimately lead to a shortage of high quality new discoveries.

Therefore for the next decade we see it as vitally important to ensure the survival of the junior exploration company sector and the financial markets that feed them. A stimulus for the industry in Canada will not lead to a wholesale retreat of junior companies back to Canada but will provide a strengthening of financial capacity for all those juniors able to demonstrate good exploration opportunities anywhere in the world.