

ADDRESS TO SENTIENT GROUP
ISSUES OF THE MINERALS INDUSTRY

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by

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Introduction

My brief tonight is to reflect on issues facing the minerals industry, particularly from the point of view of investors in this industry. I am conscious that present here are people with wide experience and expertise in this industry and in investing, and that at least some of you may well know more about any particular issue than I. It is a little like the situation of the father who told his son it was time to have a talk about the facts of life. "Sure, father", said the son, "what would you like to know?" While I am happy to open the discussion as it were, I also hope to learn from you.

Most of my working life was in the metalliferous minerals sector and my comments mostly refer to that part of the industry, particularly from the Australian point of view. I am less familiar with the non-metallic minerals and petroleum sectors and will not attempt to cover matters specific to these areas.

I understand that your interest begins at the stage where an orebody has been found. Not having to discuss the challenges and problems of minerals exploration greatly simplifies my task, but I would like to take a minute to distinguish between two fundamentally different kinds of exploration because this is relevant to later discussion.

Minerals Exploration

What is known as "greenfields" exploration is looking for orebodies in areas where there have been no previous discoveries. The odds against success in this kind of exploration are very long and the financial risk is therefore very high. On the other hand, if a major discovery is made, the rewards also can be very high. Several major greenfields discoveries transformed the company I mostly worked for during my time in the industry, Western Mining Corporation, or WMC as it is now known, within a short time from a small gold mining company into a diversified world scale minerals producer.

The second kind of exploration is looking for extensions of a known orebody, or finding additional ore in close proximity to it. Most orebodies do not have sharp boundaries and ore mined can be at least replaced by exploration year after year for extended periods. Highly mineralised areas rarely contain just one ore occurrence and the chances of finding others nearby are good. The risks in this kind of "mine area" exploration are much lower than in greenfields exploration and the work can be financed from current cash flow. The cost is lower because overheads and services costs are incremental and drillholes can be often better sited from the mine workings than from the surface. The best known example of this kind of exploration success in the WMC stable was Central Norseman Gold Corporation (now sold) which has been in continuous production since 1935 – for sixty seven years – without having more than five years' proven ore reserve at any time. Central Norseman will without doubt continue for many more years, with only a few years' ore in sight.

The rewards in this second kind of exploration are gradual and therefore much less visible than in the case of a major discovery, but can be nevertheless very considerable by extending the life of the mine and often enabling an increase in the production rate at an incremental capital cost, known as "brownfields" expansion.

We will come back to this later. Let us now consider the various factors affecting the outcome of investments in the minerals industry.

A Risky Industry

While preparing for tonight, I came across a comment by American mining engineer F.C. Kruger, who is on record as saying:

'I have come to the conclusion that in spite of all previous theories, the mines in Colorado belong to the following classes:

1. Those that always did pay and always will.
2. Those that didn't once and do now.
3. Those that did once but don't now.
4. Those that don't now but will.
5. Those that never did and never will.

Of the first class, I regret to say that neither history nor experience gives an example. Of the four remaining classes the last is the only one upon which I can speak with certainty.'

My own experience has been somewhat better than Mr. Kruger's, but it is true that the minerals industry is wrought with many risks, some as old as the industry itself and others added more recently. The main problem is that the demand and supply of minerals is in reasonable balance only for about half of the time. For much of the remaining time there is oversupply, with consequent uneconomic prices and inadequate financial returns or even losses.

Added to this in the last thirty years or so has been the imposition of considerable additional costs and long delays in decision-making, partly because of higher community standards which are legitimate, partly because of society becoming more litigious which is regrettable, but also because of the proliferation of activist groups pursuing largely ideological issues. The ultimate aim of some of these groups is banning the production and use of certain mineral products, but meanwhile they endeavour to make life as difficult as possible.

On top of this the structure of the world minerals industry is likely to change in the years ahead, complicating matters further. Let us now look at some of these issues in more detail.

Demand and Supply Balance

Taking as an example the WMC experience during 34 years as a nickel producer, there has been a world shortage of nickel for 6 years and oversupply during 14 years; for only 14 years, or 40% of the time has the market been in reasonable balance. The other main non-ferrous metals have followed a similar pattern.

While the nickel price has skyrocketed during shortages, it has been close to or below production cost for most producers during times of oversupply. Despite production cutbacks and sometimes suspension of whole operations, producers have incurred substantial losses in these periods. For example, from 1981 to 1986 the published losses by the world nickel industry were US\$3 billion, equivalent to more than US\$5 billion in today's money. Again, this is a familiar pattern for metals for which the price is determined daily in the terminal markets of the London Metal Exchange and Comex

in New York.

Textbooks tell us that in a free market uneconomic prices cause high cost producers to cease production, thus correcting the problem. This does not happen in the real world. There are good reasons why companies are very reluctant to shut mines down, one being that the cost of doing so is often greater than the cost of incurring losses until the markets turn up again. Producers may curtail production to hasten the market upturn, but they usually keep going.

Declining Prices

Prices for large long term contracts of bulk minerals such as iron ore, coal, and liquefied natural gas are, in contrast to metals, negotiated from time to time between the buyer and the seller. The price may move up or down but not by the large amounts typical of the terminal markets, and it then remains stable for a period, usually a year. Producers of such minerals may have periods of lower profitability, but do not operate at a loss. On the other hand, the prices do not reach high peaks in times of shortages. The producer price system, which existed for aluminium and nickel until it broke down in the late 1970s because a significant number of new producers had entered the market, had a similar stabilising effect.

The result of the markets being not only amply supplied but in oversupply for prolonged periods is that the real prices of metals have declined for at least the last 100 years. In the 38 years from 1960 to 1998 the real price of copper decreased at the rate of 1.8% per annum, of aluminium at 1.6% and of nickel at 0.5% per annum. Other metals have followed a similar path. The decline in prices has taken place while the average grade of ore mined has decreased and additional costs have been imposed on the industry. The industry has countered this by cost reductions through increased scale of operations, high capital investment in more efficient equipment and in automation, continual improvement in mining and processing technology, and better management practices. For a large part of the industry, however, it has also meant unsatisfactory financial returns.

Following the Club of Rome report *Limits to Growth* in 1972 there was a widespread perception during the remainder of that decade that the world was about to run out of all kinds of resources, including minerals. I have been looking forward to this for the last 30 years because it would have solved the problems of oversupply and inadequate prices. Regrettably, it does not even look like happening.

Profitability

Unless the world supply comes into better balance with demand, the challenge for the industry is to make enough higher than normal profits in periods of shortages to make up for the unsatisfactory profits and losses in periods of oversupply, thus producing satisfactory returns over time. This is difficult because the periods of shortage are much shorter than the periods of oversupply.

For producers with costs in other than US dollars, the profitability is also affected by the exchange rate of their currency because world prices are set in US dollar terms. This can be either helpful or unhelpful.

In Australia, the exchange rate, which reached A\$1.00:US\$1.49 in 1974, has declined to about A\$1.00:US\$0.55 today. Even at this increasingly favourable exchange rate Minerals Council of Australia studies show a net profit return of only 11.5% on average shareholders' funds for the Australian minerals industry in the ten years to 1996-97. In the five years since then the returns have been:

1996-97	2.9%
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1997-98	1.8%
1998-99	3.7%
1999-00	4.0%
2000-01	13.9%

It would not have taken a much higher exchange rate to make the results even more dismal. The year 2000-01 was the only year of strong markets and good prices during the five year period. The downturn since then suggests that the return in the financial year just ended will be back to low single figures. One is forced to the conclusion that there is no future in being average in the minerals industry.

Can Demand and Supply be Better Balanced?

Is it possible to at least reduce, if not eliminate the long periods of oversupply?

There are intergovernmental agreements designed to prevent wide fluctuations in prices of commodities such as for cocoa, coffee, olive oil, rubber, sultanas, and so on, which do not appear to have been particularly successful. In the minerals area the best known example is the OPEC cartel of oil producing countries and I leave it to the experts present to assess its performance. In diamonds De Beers for many years bought up excess supply and regulated the market. I do not know to what extent this still occurs.

In metals, the Central Banks of major countries hold between them 35,000 tonnes of gold, equivalent to approximately ten years' present world demand. World production has been about 1,000 tonnes a year less than demand, and the banks therefore in effect control the price of gold by how much they sell from their holdings into the market. Other examples are the International Tin Agreement between governments of the main tin producing countries which for 30 years operated a buffer stock to buy excess production and sell back into the market in times of shortage. The agreement terminated because the participants were unwilling to finance the massive purchases which would have been necessary in 1985. In aluminium, there was a short term agreement between the governments of the six main producing countries in the early 1990s to encourage cut-backs to production until the excess supplies of metal flooding the market after the breakdown of the Soviet Union had been absorbed. With these exceptions, however, I do not know of any mechanisms for balancing the supply of minerals with demand.

As in the case of the producer price, the practicability of establishing better market discipline depends on a small number of producers supplying a large percentage of the world demand for a particular product. This situation exists in minerals such as iron ore, coking coal, and liquefied natural gas and helps to explain their greater price stability. The recent trend for mergers in the industry may, if continued, assist in not only cutting back minerals production more significantly during periods of oversupply but, even more importantly, in not bringing in major new projects a long time ahead of demand. Such new projects are increasingly likely to be controlled by large companies because of the high capital costs and greatly increased lead times.

In the late 1950s and early 1960s it took four years from the commencement by WMC of proving the bauxite in the Darling Range to beginning the construction of the first refinery, smelter, and fabricating plant. In the late 1960s it took WMC 17 months from the first drillhole intersection of nickel ore at Kambalda to the despatch of the first shipload of concentrate to a customer in Canada.

These times are now gone for ever for new grassroots developments. In the new world full of legislation and regulation and inhabited by a proliferation of government departments and non-government organisations busying themselves with the minerals industry, it took 13 years from the first drillhole intersection of economic copper-uranium mineralisation at Olympic Dam in 1975 to the production of the first pound of copper.

The long lead times, together with the short term vision of large investment funds, mean that smaller companies will find it very difficult, if not impossible, to finance projects which may take ten to fifteen years to produce substantial returns. Should such companies make a major discovery, they will most likely have to do a deal with a large company with substantial free cash flows, therefore not fully dependent on outside finance and able to take a longer term view.

The significant worldwide reduction in greenfields exploration and the fall-off in discovery rate in recent times, while worrying in the longer term, may help bring about a better supply-demand balance in the medium term. Additional demand can be met from brownfields expansion at incremental cost, reducing risk, eliminating the expensive and time consuming approval processes for greenfields projects and improving profitability. Such opportunities will be, of course, increasingly used up as time goes on and eventually new projects will be needed.

On balance, while there is now widespread understanding of the oversupply problem, at least by the larger producers, establishment of better market discipline is likely to be very difficult in practice because anti-trust legislation prevents the companies from acting together, there is strong competition between them, and there are powerful interests who benefit from oversupply. Also, ahead of the world minerals industry there is likely to be a significant shift in its structure which will introduce further complications.

The Changing World Industry

The demand for virtually all minerals and metals continues to grow. An increasing part of this demand is met from recycled materials and in some cases, such as lead, mine output has been decreasing since the early 1970s. In most minerals, however, there is also an increasing demand for new production.

There will be, however, substantial regional differences in future demand growth. While the world population is increasing, although not at the alarmist rates predicted even a few years ago, the population of many developed countries (and of Russia) is decreasing. The population of Africa is held on a plateau due to mortality from AIDS. The main population growth will be in Asia (excluding Japan), and South America. Together with increasing incomes and living standards, this will result in strong demand growth for minerals and energy in these two regions, while the demand growth in the developed world is likely to be modest.

The two areas of very strong demand growth after World War II, Europe and Japan, were both poor in indigenous mineral resources. By contrast, the strong demand growth over the next fifty years will be in areas with substantial existing production of minerals and excellent potential for producing more. These areas are already large exporters of some minerals and metals.

The structure of the world industry is therefore likely to change. For a time there will be a growing net demand for a number of minerals by countries such as China, while she is already the world's largest exporter of others such as zinc and magnesium and has just become an exporter of aluminium. As China's domestic minerals industry develops, minerals producers elsewhere will increasingly need to think in terms of China being a competitor rather than a market for their products.

Russia is another country with a great untapped minerals endowment. As the population of Russia is predicted to shrink from some 150 million today to close to 100 million by 2050, minerals exports from Russia to the rest of the world are certain to grow.

Participation by foreign producers in minerals projects in China is now welcomed. The new Mineral Resources Law introduced in 1997, modelled on Western Australian mining law, reads well. Just how

it will be applied in practice remains to be seen. There are numerous foreign companies involved in minerals exploration in China today, but I am not aware of any major projects with foreign participation which have been brought on stream. In Russia also there are so far no shining examples of successful foreign participation in major minerals projects. In terms of market discipline, Russia in the early 1990s and China at present in zinc and magnesium have not behaved well.

In Africa there are known partially developed great resources of copper in Zambia and Angola which are producing little today, mainly because of the incompetence of the governments. There are no signs of an immediate change; Anglo American has just withdrawn from both countries, but it is unlikely that these great resources will be left unproductive forever.

The movement of the centre of gravity of the world minerals industry from the developed to developing countries in terms of both demand and supply would be given a strong push if the Kyoto Protocol restricting carbon dioxide emissions in developed countries came into force. Developing countries, including China, would not face such restrictions.

The Protocol

The Kyoto Protocol, largely pursued by activists in Europe, is a very good example of the ideological endeavours I mentioned earlier. Climate scientists tell me that many of the conclusions which can be validly drawn from scientific studies regarding future changes in climate are misrepresented to the public. Carefully worded conclusions which have taken many hours to agree upon are rephrased. Unsubstantiated assertions are made in exaggerated and alarmist language. Scenarios and projections based on various assumptions become predictions. This has been possible because of the remarkable silence of most of the scientists in the face of these misrepresentations and because of the support of lawyers, consultants, traders, entrepreneurs of various kinds, public servants, scientists, politicians, and so on, and even some companies in the minerals industry, who are not concerned with the validity of the arguments but see business or career opportunities. One suspects that the prospect of Europe being able to exert considerable influence over the United States is not an insignificant consideration.

The Kyoto Protocol, if implemented, would make almost no contribution towards its ostensible aim of stabilising the concentration of carbon dioxide in the atmosphere. I am told that to achieve this, the present worldwide emissions (not just the emissions in developed countries) would have to be reduced by close to 80% and maintained at this level, which is clearly not possible. Because the public has been misled to believe that the Kyoto Protocol would solve everything, the adoption of it would be in effect a confidence trick and damaging to efforts to control the emissions in a sensible manner. Certainly, the transfer of minerals processing from developed to developing countries would not reduce the amount of carbon dioxide emitted at all.

You might say that this just does not make sense and therefore cannot happen. Regrettably, there is no such thing in politics as rejecting what does not make sense. Great empires have been founded on false ideas. Given enough media publicity and pressure by skilful activist groups, what does not make sense has an excellent chance of becoming public policy. A good deal of it has, in recent times.

Many Other Issues

There are numerous other issues I won't have time to mention. For some reason many of these of environmental nature appear to originate in Europe, particularly in Scandinavia, such as the moves to ban so-called "ecotoxic" heavy metals and the allied "The Natural Step" campaign. In all these there is an underlying real issue. The problem is that extremist activists take over and twist the real issues to suit their own purposes. Truth becomes an early casualty and the end is seen to justify any means. Governments - and that means you and I as taxpayers - are partly financing many such groups by way

of direct grants or through tax deductibility of contributions to them.

A number of people once associated with these groups, including the co-founder of Greenpeace, Patrick Moore, have published detailed criticisms of what they see as the hijacking of noble causes by unprincipled activists. The publications are available on the Internet and I advise you to read these if you have not already done so.

In addition to environmental issues, various activists in other areas are asserting the right to become involved in industry activities and imposing costs. The increasing litigiousness of our society has a similar effect. The same pattern emerges: the problem is not the real issues, but the extremists.

Since I retired, the major companies in the world minerals industry have undertaken what is known as the Global Mining Initiative and come together in the International Council on Mining and Metals to deal with a multiplicity of issues collected under the heading of sustainable development. An environmental activist and previously loud critic of the minerals industry, Dr. Jay D. Hair, has been appointed Secretary General of the Council. I have not been involved in these events and therefore cannot offer any views on how successful this will be and whether the members of the Council will have enough intestinal fortitude to prevent this endeavour from being hijacked like a number of others. Some of you may be better informed.

Investing in the Minerals Industry

May I offer some concluding thoughts, recognising that I am not likely to be telling you anything new.

The essential characteristic of both managers and investors in this industry is a large dose of humility, particularly as regards the ability to see into the future. Equally important is to be realistic and not get carried away by wishful thinking or to be influenced by market fashions and booms. This is easier said than done because there is something in human nature which tends to make us want to go with the herd.

The demand for minerals continues to increase, but the challenge is to ensure a satisfactory return on the investment. The most successful companies achieve this, but there is clearly no future in being average in the minerals industry. It is vital to be in the low cost end of the industry, but this in itself does not guarantee satisfactory financial returns. It is a delusion to think that cost increases will be made up for by price increases. The long term trend is for prices to continue to decrease and community imposts to increase. To make up for this requires real cost reductions of between 1% and 2% per annum, year after year, which is a major challenge to managements. Investment decisions should be made with full understanding of this.

The increasingly important role of the developing world in the industry's activities both as a market and a supplier, how producers in the developed countries will fit into this, and how to arrive at a manageable and sustainable relationship with the general community remain unquantifiable questions at this time. Only time will provide the answers.

The markets for the products are worldwide and the competition is worldwide. The success or otherwise of an investment in, say, Australia, is likely to be influenced greatly by the actions of a competitor in, say, north-west China or eastern Siberia. Ours is in this sense a truly global industry.