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REFLECTIONS on the MINERALS INDUSTRY

**by
Arvi Parbo**

There is not much one can say in favour of getting older, unless it is the ability to look back on what has happened in one's lifetime. I would like to use this opportunity to briefly reflect on my time in the minerals industry.

I worked my first shift underground sixty one years ago, in the middle of last century, while a mining engineering student in Germany. This was after the time when miners worked by candlelight but before electric cap lamps; we had carbide lamps. We had to buy the carbide, but the water to go with it was free! Working later in a coal mine, horses were still used to haul wagons underground. The pick and the shovel were everyday tools. I often think that I belong to the last generation of miners who actually got a sweat up working underground.

Later again I had the good fortune to spend forty three years of my working life as a mining engineer and mining executive in Australia, with an involvement also in the United States, Canada, Brazil, and to a lesser extent in some other countries. I enjoyed every minute of these forty three years, not because it was easy – it wasn't – but because I was fortunate to work with people I trusted, respected and admired for their personal and professional standards and their attitude to life. For us, work was always much more than just a job to earn a living. Having retired ten years ago, I am now just an interested (and sometimes concerned and sometimes amused) observer.

An American mining engineer, FC Kruger, summed up his experiences in the gold mines in Colorado as follows:

"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, happily, somewhat better than Mr. Kruger's but in my time, also, mines did not always pay.

I started my professional working life in 1956 in gold mines in Western Australia, just after the Korean war had caused costs in Australia to escalate rapidly while the price of gold was fixed. It was a really tough time for gold miners and great experience for a young engineer to learn at first hand how to face adversity and survive. This came in very useful later in the many ups and downs in my time in the industry.

Towards the end of the 1950s and in 1960s post-war reconstruction in Europe and the industrialisation of Japan caused a major upturn in the demand for minerals. Australia, as we all know, was very much involved in meeting a part of this demand from large discoveries of bauxite, iron ore, coal, nickel, mineral sands and so on. There was minimal red, green or black tape and major new industries were established in unbelievably short time. Australia took a quantum leap forward, both in prosperity and in importance as a supplier of minerals to the world. During the ten years of particularly rapid economic growth in Japan from 1963 onwards prices of most metals doubled.

This boom ended quickly and unpredictably. A fivefold increase in the price of oil in 1973-74 brought about the deepest world recession since the 1930s and a great oversupply of minerals. A beginning recovery in the second half of the 1970s was reversed by further massive oil price increases. Metal miners were really suffering: in the early 1980s much of the Canadian nickel industry, the dominant world supplier, was shut down for the best part of a year. The exception was gold mining which was now booming; the record oil price brought with it a record gold price of US\$850 per ounce in January 1980, by far the highest in real terms so far, equivalent to more than US\$2,000 per ounce in today's dollars.

The world gradually adjusted itself to higher cost energy, assisted by the oil price retreating, and things settled down. Towards the end of the 1980s there was again a period of good demand and prices for metals and minerals. But the good times did not last long; they were terminated, again unexpectedly, by the break-up of the Soviet Union in 1991. This resulted in the flooding of western markets with metals now surplus to the Soviet military, such as aluminium, copper and nickel.

Metal prices collapsed. A story making the rounds at the time was that a petroleum geologist, reporting to his boss the bad news that the drilling had not found oil, softened the blow by adding: "But the good news is that we did not find copper, either!" The governments of the major aluminium producing countries took the unprecedented step of sanctioning the producers to reduce output by agreement until the crisis passed.

A slow recovery beginning in 1994 was ended by another unforeseen event - the Asian financial crisis in 1997-98, which had repercussions around the world. Late in 1998 metal prices in real terms were at historically low levels.

Looking back at the end of the century, the periods of high demand and prices for metals and minerals in the 1900s had been shorter than the intervening periods of oversupply and low prices. Overall during the 1900s the real prices of metals declined while the average grade of ore mined decreased and, beginning in the 1970s, substantial additional costs and restrictions were imposed on the industry from the outside. Producers countered this by increased scale of operations, high capital investment in larger and 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 meant very unsatisfactory financial returns for much of the second half of the 1900s. During the dot-com boom in the late 1990s the minerals industry was derided as a sunset industry without a future, a part of the "old economy".

Conditions started to improve as soon as I retired in 1999 - in fact, an upturn in mining shares began next morning. Over the next few years the burgeoning demand for minerals by China caused prices to skyrocket. Many companies were doing extremely well. Forecasters predicted more of the same ahead; '*stronger for longer*' was the general view. Far from being out of date, the minerals industry became once again the backbone of the Australian economy; governments were revelling in a high inflow of taxes and royalties. Then came the global financial crisis.

The textbook explanation of the end of booms is that high prices encourage more supplies to come on the market, resulting in oversupply. This may have been so in earlier times, but on the last three occasions the end of minerals booms came because major world events suddenly depressed demand. All were unexpected. Neither the oil price increases, nor the breakdown of the Soviet Union, nor the Asian or global financial crises were predicted by the expert forecasters. The oil price increases were initially thought to be an aberration that could not last. The collapse of the Soviet Union is said to have taken the CIA by complete surprise. This is perhaps not unreasonable because it also took President Gorbachev by surprise. The global financial system was thought to be much better run and more secure than ever before, with sophisticated products designed and risks assessed by experts using supercomputers. We now know better.

The market for minerals was not the only thing that changed during my involvement in the industry. There were also big changes in the attitude of governments and the public.

Ever since the gold-rush days, for well over a hundred years, there had been wholehearted government and community support and encouragement. This long standing stable and favourable environment changed in the early 1970s to one of opposition and even hostility. This seems a paradox following the great minerals developments in the 1960s which lifted Australia to a new level of prosperity and world significance, but perhaps it is not. What happened in Australia was a part of a worldwide trend in the prosperous developed countries of opposition to economic development under the pretext of concern about the environment. It would have been unusual if it had not also happened here. The prominence of the minerals industry in Australia, its visible effect on the environment – you must make a hole in the ground to have a mine - and the remoteness of its operations from the large population centres made it a prominent and convenient target.

Behind the questioning of economic development there were some genuine concerns, but quite early the movement was hijacked and the concerns grossly exaggerated by extremists and political activists to build their power bases. I remember asking some of our antagonists in off-the record conversations exactly what it was that they wanted us to do. “Can’t tell you” was the answer, “because then you will go and do it and where does that leave us?”.

A part of this was the anti-uranium campaign, again a worldwide phenomenon. Clothed as an environmental concern, it was largely a political issue. The Australian Labor Party, for a long time strongly in favour of uranium mining and wanting to establish an enrichment industry in Australia, suddenly turned 180 degrees. While in opposition in the 1980s, Labor in South Australia strenuously opposed uranium mining. After the company I was with succeeded in bringing the Olympic Dam copper-uranium mine into production and provided employment for many thousands of voters, the meanwhile elected Labor State government became a great supporter!

Today there is evidence of an improvement in the public attitude because of the overwhelming economic importance of the industry. We would be a very poor country without our minerals exports. But, meanwhile, there have been introduced mountains of paperwork and long delays through complicated processes for the approval of new projects, the main purpose of at least some of which appears to be to delay, if not prevent, decision-making, and the business environment generally has become much more legalistic and litigious. This keeps a lot of people employed, but it is also a serious discouragement to starting anything new. There must be rules and we must observe satisfactory standards, but we seem to have gone well beyond this. One could be excused for concluding that the process, rather than the outcome, has become important.

This is not limited to the minerals industry; I am presently involved with a retirement village and aged care centre in a country township in New South Wales, 100 kilometres from Sydney. There is

a need to expand, the State Government, the local Shire, and the local community are all in favour, and the finance is available. There is vacant land for the expansion right next door to the present facility and the owner is happy to sell. The land, however, is zoned 'rural' and has to be re-zoned 'residential'. We are advised that, with everybody in favour and the process expedited as much as possible, the re-zoning will take two years!

The author and newspaper commentator Paul Kelly has described Australia as a young country with geriatric arteries. I regret to say that I think he is right.

What has happened in the past is clear enough, but what about the future? Our track record in predicting the future, not only in the minerals industry but generally, is very poor indeed. The views of many experts and eminent people who were careless enough to go on record in the past make extremely amusing reading today.

A lifetime of painful experience has taught me to view any projections, predictions and forecasts with a great deal of caution. There will be influences we cannot foresee which can alter the outcome, often to a very significant extent. We must plan ahead, but it is essential to keep remembering that the further we try to look into the future the less likely we are to be right. I would be very sceptical of any numerical projections, especially when generated by computer models - these seem to mainly produce the results the modellers would like to see.

There are, however, good fundamental reasons to be optimistic about the demand for minerals picking up again. It seems most likely that the past pattern of upturns alternating with downturns will continue, but the demand trend will be upwards. China and India, making up some 40% of the world's present population, will continue improving the living standards of their people, and in addition the world population is expected to grow by about a third in the next 50 years before reaching a plateau. The likely decline in the world population after that will create a new situation, the consequences of which will become clearer as the time approaches. The good news is that this will not affect any of us in this room!

Will Australia be able to participate in supplying this growing demand?

The major minerals discoveries in the 1960s were so large that production has been subsequently increased and can be increased further, still leaving the operations with long lives. The prominence of Australia as a supplier is not threatened in the short term. It is, however, worrying that while the known ore-bodies have been extended through further exploration and a number of small to medium size discoveries have been made, there have been no major minerals discoveries in Australia since the Olympic Dam copper-uranium deposit in South Australia in 1975.

Large minerals developments today have very long lead times from discovery, let alone the beginning of exploration, to production. Australia should be now discovering the ore-bodies which could come in 20 to 30 years from now to meet growing demand. This has not happened. The consolidation of a part of the industry into larger units has not helped because, with the exception of oil and gas, large companies, generally speaking, do not have a good record for greenfields discoveries. As companies grow they tend to become more risk-averse, very good at producing and at extending known deposits but less so doing something where the DCF¹ calculations cannot be made in advance. As further discoveries are likely to be at increasing depth below the surface, the cost of exploration is increasing.

¹ Discounted Cash Flow: A discounted cash flow analysis works by estimating the likely cash flows in each successive year from the project, up to about 10 years out, and discounts each one by a factor that reflects the time value of money plus a further adjustment to reflect the inherent risk of the project. (Peter Temple 31/01/06 in *How to Value Mines on interactive investor* http://www.iii.co.uk/articles/articledisplay.jsp?article_id=2133733&special_id=2071252)

The smaller exploration minded companies have the right attitude, but do not always have the financial ability for sustaining a long term high cost exploration effort.

Until further major discoveries are made, there has to be doubt about Australia's ability to retain in the long term its present importance as a supplier of minerals to the world.

There will be in any case growing competition to Australia.

The centre of gravity of the world minerals industry has been for some time moving from the developed to developing countries and this will continue in terms of both demand and supply. Thus, quite apart from success in discovering and developing new ore sources, there are forces in play which are likely to work against Australia in the future. Because of globalisation, the Australian minerals industry today is a geographical concept. Most companies headquartered in Australia operate in other countries, quite a few have headquarters elsewhere, and the shareholders and management come from all over the world. Australia is just one location for them and decisions to explore or invest are made on the basis of comparing the prospectivity, working conditions, and likelihood of adequate financial returns in the various areas.

The removal of unnecessary obstacles in the way of minerals exploration and development and making it attractive for companies to work in Australia is therefore vital. So far there is no evidence of this happening; if anything, we are still going the other way.

Actions taken or not taken today will determine what happens in the minerals industry decades later. The challenge to the present generation, as it has been to every generation, is to make good use of what was bequeathed to them and to leave their successors a legacy of which they can be proud. This challenge is certainly with the Australian minerals industry today.