The quest for competitive edge*

by Arvi Parbo†

I would like to use the occasion to reflect on how the world environment for the minerals industry is undergoing substantial change, and how this change may affect the industry. I have given my talk the title 'The Quest For Competitive Edge', because the net effect of the changes taking place is that competition is increasing.

To set the scene, let us look back at the situation which has existed in our industry in the past.

THE PAST

There has always been strong competition in mineral exploitation, particularly in securing prospective exploration ground ahead of others.

Once rights to the ground are obtained, there is also a competitive element in its evaluation. While most exploration technology is well known and widely available, companies sometimes develop particular refinements in its application and skills in the interpretation of the results, which may be closely guarded.

When an orebody has been discovered, developing it for production and the techniques of extracting the ore are largely non-competitive. Information about various mining methods as applied to particular orebodies is generally freely available. Mining equipment is largely developed by equipment manufacturers for general use, although occasionally it may be designed or modified for a particular application. As a general statement, there is no secrecy in mining the ore.

This also applies generally to oredressing, where information is freely available and standard equipment can be ordered or bought across the counter. To the extent that a fee is payable to developers of particular equipment, this is included in the purchase price. The assumption appears to be that every ore represents a different problem and that there is no direct competition between individual operations in the solving of these problems.

There has been more competition in hydrometallurgy and in smelting and refining, where various patented processes have been developed. Equipment is sometimes engineered by the process developers specially for the purpose.

Some thirty years ago, such technology was usually closely guarded and not made available to anyone else. When I visited my first aluminium smelter in 1961, there were guards with six-guns at the gate, and the procedure for screening visitors and conducting them around the plant would have done the KGB proud.

More recently, there has been a recognition that many people are now working on and solving similar problems, and that any advantage gained is temporary. Most alumi-nium technology, and smelting and refining technology generally, are therefore available for purchase by com-petitors.

There is competition in marketing, but mostly in a commercial sense.

Refined metals are commodities, traded in accordance with specifications with little to distinguish metals of one origin from another. Apart from price, the competitive elements within a given specification are assurance of quality, dependability of delivery, and attention to a customer's particular requirements. Large consumers generally diversify their sources of supply between different countries and different producers. Provided other requirements are met, a substantial and reliable producer is reasonably assured of a market share.

Technology becomes an important competitive element only when the product goes beyond refined metal—to a special alloy, a flat product of unusual width, a pipe of unusually large diameter, or a manufactured item with distinguishing characteristics.

The view has been gaining ground that, to gain a competitive edge, metal producers will have to become involved in producing and supplying not just quantities of metal but product components or sub-assemblies for large customers, sometimes developing and applying new technology.

This past scene is now being affected by a large number of new influences. The effect of some of these is difficult to assess, but they will all have a bearing on the industry in the future.

THE CHANGING ENVIRONMENT

The Broad World Scene

Various changes in the world scene in recent years are transforming the broad business environment for the mineral industry and, indeed, for other industries.

One clearly discernible trend is what is known as the globalization of business.

Globalization is happening. An increasing number of enterprises around the world are now active in many countries, while regarding the whole world as their area of operations and market-place. Changes in competitiveness and in government rules and regulations in various countries are met by adjusting the activities to produce the optimum overall result. Nothing is inflexible; everything can be changed. Producers are developing joint ventures and strategic alliances with suppliers, and even with competitors, to make the best use of available skills, to reduce risks, to share the enormous costs of research and development, and to position themselves advantageously in the market.

We traditionally think of American multi-nationals and the great Japanese trading companies as being the leaders in inter-national activity, but it is actually the Europeans who have led in globalization. A couple of years ago, the sales of five great European companies, Nestle, Sandoz, SKF,

* This address was presented at the XVIII International Mineral Processing Congress Banquet, which was held in Sydney, Australia, on 27th May, 1993. More than 500 delegates and guests attended the function, including representatives of 32 countries. This occasion was during the centenary celebrations of The Australasian Institute of Mining and Metallurgy.

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Hoffman-LaRoche and Philips, averaged ninety-six per cent outside their own home country. With one exception, their assets held outside the home country ranged from eighty-five to ninety-five per cent.

The very nature of the mineral industry makes it more difficult to respond to changes in country conditions as quickly as in some other industries, but the principle applies and mineral-producing companies are now amongst those operating on a global basis.

Concurrently with globalization, which has the effect of breaking down barriers between countries, there are being pursued the apparently never-ending GATT negotiations of the Uruguay Round, designed to reduce barriers to free trade further. A number of countries, including Australia, are fervently hoping that these negotiations will be successful.

But while this is happening, there is paradoxically a concurrent trend towards forming regional groupings of countries.

The best example of this is the European Community, which started as a grouping of six countries, was expanded to nine, and then twelve. It now looks like growing further.

In North America there is the North American Free Trade Association (NAFTA), including the USA, Canada and, it is proposed, Mexico. In Central and South America, there are several regional arrangements. These could all ultimately combine into a Free Trade Area covering both Americas, stretching from Alaska to Tierra del Fuego.

Bringing up the rear in this trend to regionalization is the Asian area, with so far only ASEAN (including Brunei, Indonesia, Malaysia, Philiphines, Singapore, and Thailand), as a comparable grouping. Following an Australian initiative in 1989, there is also the Asia–Pacific Economic Co-operation (APEC) group, which now has 15 member countries, including the United States and the 'three Chinas'.

APEC was initiated as a body for regional exchange of views and co-operation, but lately there have been suggestions that it may develop into a trading group similar to those in other regions.

Apart from groupings, there are substantial differences in the social and legal philosophies in various parts of the world.

The United States believes in a pluralist market economy, with aggressive financial markets, emphasis on consumption, short-term focus, and historically adversarial relationships between the public and private sectors.

The European Community is practising a social market economy. The government is a partner with the general public and the market system in defining social good.

The Japanese apply a corporatist market philosophy that is production-oriented, exceptionally long in view, and places great emphasis on a strategic blend of both co-operation and competition. It stresses the close interface between the State and business.

These differences complicate the endeavours to establish freer world trade.

Other recent major changes on the world scene have been the impressive economic development taking place in the People's Republic of China, and the dissolution of the Soviet Union.

China

There is now little doubt that China will become a major economic power within the next fifty years. In fact, a recent International Monetary Fund assessment, using purchasing power rather than currency exchange rates as the basis, suggests that China is already the third largest economy in the world, after the United States and Japan.

The Chinese aim of building a 'market economy in a socialist system' appears to mean adopting a more or less free-market philosophy whilst retaining a one-party political system. We may deplore the lack of democratic freedoms and the restrictions on human rights in such an environment, but there is little doubt that such a system is conducive to rapid economic development, as shown by the example of Singapore. It may not be a co-incidence that the main speaker and guest of honour at an international economic seminar in Beijing last September was the architect of the success of Singapore, Lee Kuan Yew.

The relevance to us in the minerals industry of China's transformation to a modern economy is that China undoubtedly has vast mineral resources and potential. The 'open door policy' towards foreign enterprises in China is now just beginning to be applied also to mineral exploration and production. Offshore petroleum exploration has already been reasonably open to foreign interests for some time.

In the short term, China represents a market for Western mineral products for its economic development and infrastructure needs, as well as for consumer goods. At some future time, China will become a large mineral producer. The question is whether such production will then be largely consumed in the internal economy, or whether China will become a competitor in minerals on world markets.

Russia

Supplies reaching Western markets from the former Soviet Union are the main reason for the present downturn in the world mineral industry, with many metal prices the lowest ever in real terms. For decades we in the West talked about the world market as if the countries beyond the Iron Curtain were a part of another world. They have now very clearly joined our world, are an important influence on us now, and will be so in the future.

Russia and most of the other members of the Commonwealth of Independent States also have great mineral resources. Participation by foreigners in the development of these resources is not only permitted but encouraged. Many Western companies are doing their homework, although the state of the economy and the mineral markets and the uncertainties of the legal and political system have so far prevented any major new developments. Undoubtedly these will happen at some future time. The question then will be the same as in China: will Russia's great internal needs for infrastructure, rebuilding of its industries, and improving the living standards of its people absorb most of the production, or will Russia continue to be a significant influence in world markets?

Africa

Africa is another part of the world rich in mineral resources. The development of these has been held back in recent times because of social and political complications. If and when these problems are resolved, Africa will assume a renewed significance in the world mineral industry. The timing of this appears to be at some distance in the future.

Other Changes

There are many other world-wide changes taking place. There is the gradual shift the mineral industry from developed to developing countries. There is the slowing down of growth rates in the developed world. There is the impact of environmental concerns, which affect the use of some of our products, the way in which we operate, and our costs. There is the less intensive use of metals per unit of economic activity, partly caused by the increasing relative importance of service industries and partly by better technology, substitution by other materials, and more sophisticated use of materials. The absolute demand for minerals and metals, however, continues to increase.

Time prevents me from commenting further, but the net effect of all such changes is clearly a more difficult and competitive global environment for the industry.

THE QUEST FOR THE WORLD'S BEST PRACTICE

One of the notable developments in all industries in recent years has been the increased awareness by companies of their competitors, and the drive to improve their operations where these fall short of the world's best. 'Benchmarking' is now a common practice. Companies seek to match or exceed the best practices in the various areas, which are, of course, constantly being improved by the leaders.

Where the present practices fall well below the best, 'quantum leaps' are undertaken to catch up. The philosophy behind this was expressed by the Chairman and Chief Executive Officer of the Aluminum Company of America, Paul O'Neill, as follows:

> 'Continuous improvement is exactly the right idea if you are the world leader in everything you do. It is a terrible idea if you are lagging the world leadership benchmark. It is probably a disastrous idea if you are far behind the world standard. In these cases we need rapid, quantum-leap improvement. We cannot be satisfied to lay out a plan that will move us toward the existing world standard over some protracted period of time—say 1995 or the year 2000—because if we accept such a plan we will never be the world leader.'

THE COMPETITIVE EDGE

This widespread ambition of companies to at least equal their best competitor (by definition passing all other competitors) has a number of consequences.

First, there is now open competition where in the past this may not have been obvious. Information on costs and practices and making comparisons are now high on management's agenda.

Secondly, with everybody trying to become the world's best, the industry cost curve is likely to go lower and flatten out. There will be some who for various reasons will maintain a lead and some will fall behind, but a large proportion are likely to achieve more or less the same standard.

And thirdly, the bringing up to the world's best standard of the most important resource within the control of the companies—their people—will assume overwhelming importance because it is the abilities of the people that will determine the success or otherwise of the whole endeavour.

Dr P. Bridenbaugh*, Executive Vice President in charge of science, technology, and engineering of the Aluminum Company of America, recently spoke about the skills and qualities required of the people in the industry in the future as follows:

- 'Abstract problem solving built upon a firm foundation and demonstrated competence in mathematics, physics and chemistry. Analytical tools, such as computer literacy, modelling theory and statistics, also fit within this envelope;
- Interpersonal skills, including strong written and oral communication capabilities, the ability to work well in a team environment, acceptance of a culturally-diverse workplace and a working familiarity with at least two, and preferably three, languages and cultures;
- A third essential skill lies in what I call cross-disciplinary thinking. Tomorrow's scientists and engineers must be able to integrate cost-analysis, economics, marketing and labor relations into their thinking to fully contribute in an industrial setting;
- Fourth, and certainly not least, the next generation must demonstrate deep individual acumen in their chosen discipline...whether it be materials science or mechanical, electrical, or civil engineering.
- These are clearly daunting requirements for any single person to posses. Their all-consuming nature leads me to my fifth, and final, skill set... the ability for ongoing self-learning.'

I would add another essential skill for the future professionals and leaders of the industry.

After all we can do to hone our technological effectiveness, and the efficiency of the use of resources within our control to the sharpest possible edge, there remains another very significant influence on our future: the external conditions imposed by governments and the community in the areas we operate. Often no more than 50 per cent, sometimes less, of our costs are controlled by us. The rest is imposts from the outside.

In many ways the key to our future is the ability of the people in the industry to demonstrate to the community that the industry is working in their best interests and should be encouraged, not hindered. Unnecessary imposts must be removed, and the others have to be as competitive with world's best practice as the activities within the enterprises.

The future professionals and leaders of the industry must be as proficient and superior in the skill of communicating with the public to achieve these results as they need to be in technical and business matters. They will need to have the broadest possible understanding of political, public-policy, and community issues and how to deal with them. Technical professionals must acquire skills and abilities well beyond their technical disciplines if they aspire to the most senior management positions.

There will continue to be a premium on people who can penetrate quickly to the heart of the matter, avoiding the distractions of peripheral issues.

We need people with what has been called a 'periscopic mind'—people who can see an answer before most of us have even grasped that there is a question. The industry must lead, instead of reacting defensively to issues raised by others.

* Dr P.R. Bridenbaugh, *First among Equals*. Distinguished Lecture Series, Tennessee State University, 23rd Mar., 1993.

Complementing the importance of the skills of people is the need for organizational arrangements that allow and encourage them to exercise these skills. Many organizational changes are taking place in the industry to achieve just that, some of these extremely unorthodox. Management wisdom of not so long ago is being seriously questioned and often turned on its head.

Once again, time will regrettably prevent me from going into this very interesting and important topic. The purpose remains to gain a competitive edge in a world and in an industry that are becoming rapidly more competitive and where falling behind is becoming synonymous with going out of business.

THE CONSEQUENCES OF COMPETITIVENESS

What does this relentless quest for a competitive edge mean in terms of how we in the industry will work in the future? Will there be less openness and more restrictions on the exchange of information in areas where there has been openness in the past? Does it mean less cooperation through bodies such as, for example, joint research associations? Will there be fewer conferences such as this where information is presented freely, and less opportunity for professionals to visit one another's operations and learn from each other?

There are conflicting forces at work here.

On the one hand, the need to gain an advantage over one's competitors would indicate closing up and seeking to monopolise on the progress made within the enterprise.

On the other hand, companies are forming joint ventures and alliances to handle projects that are too large for them alone, whether in capital cost, or risk, or availability of human or other resources. This is most noticeable in the petroleum industry where arch rivals participate in many projects and joint ventures together, but there are also examples in minerals. These participants are in competition, and yet they share information, skills, and knowledge to ensure the success of their joint activities. No doubt, they apply careful judgement as to what to share and what not to share.

Another argument for the view that there will not be a major adverse effect on information sharing is that often the achievement of world's best practice depends less on technology than on the way people are trained, motivated, and induced to exercise their ingenuity and to work together. I have heard it said that leading Japanese manufacturers do not mind showing competitors around their factories because it is not the equipment or any special technology but work practices and human attitudes that give them the lead. This the competitors cannot readily copy or take away.

What will happen in the mineral industry? I do not think that it is possible to make a reliable forecast at this time. As in many other fast-evolving areas today, only time will tell.

It is, however, vital that we should all be aware of what is happening. The time when we could concentrate our attention on our own particular business and ignore what was happening around us, if there ever was such a time, has passed.

Meanwhile, I hope you are enjoying this conference in case such occasions may be fewer and more restricted in the future. I hope not, but the future is at present even less predictable than it usually is. May I also wish you every success in your deliberations.

*Delfos & Atlas Copco Travel Grant**

More than 200 guests, representing the *crème de la crème* of the South African mining industry, attended a gala function held at the Sandton Sun on 27th July to wish the winners of the 1993 Delfos & Atlas Copco Travel Grant for Mining Engineers *Bon Voyage*.

This year's grant was awarded to Robin Berry, Assistant Mine Manager, Amcoal—Bank Colliery, and Johan Oelofse, Production Manager, Anglovaal. They will travel to Australia and South Korea in August, visiting mining projects and institutions of interest.

The grant is awarded annually to mining engineers with a minimum of three and a maximum of ten years of experience in the South African mining industry, and the chief criterion for selection is excellence achieved within the industry.

According to Delfos & Atlas Copco's Managing Director, Antonio Belcastro: 'The awarding of the grant enables Delfos & Atlas Copco to make a positive contribution towards the industry from which we make our living. There can be no doubt that affording our young mining engineers the opportunity of gaining overseas experience can only benefit the industry as a whole'.

From left to right: **J.P. Hoffman, President of SAIMM, J.G. Oelofse, A. Belcastro, R.G. Berry, and G.Y. Nisbet**

The grant is run under the auspices of The South African Institute of Mining and Metallurgy, who appoint an independent committee to select the winners. To date some 25 young men have benefitted from the grant, which was first introduced in 1984.

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