



The Future of mining research in South Africa



There is currently a flurry of bad news emanating from the mining industry. The electricity shortages, logistical problems, and low commodity prices have resulted in the proverbial perfect storm, and this is testing the resilience of our industry. As an encouragement to the readers affected, this is not the first time the industry had to survive exceptionally difficult periods. With ingenuity and a bit of luck, we always seem to pull through. For example, the gold price was artificially low in the 1960s owing to the London Gold Pool's actions to defend the dollar price of \$35 an ounce. Many of the marginal gold mining operations in South Africa had to close. The strong mining units survived, however, and they did exceptionally

well in the 1970s during the gold boom that followed. Commodity prices will always be subjected to cyclic volatility, and we need to build our mining houses on solid rock to weather the occasional storm.

Part of building this resilience involves ensuring that we conduct the necessary research to improve our productivity and lower production costs. The Leon Commission of Inquiry into safety in the mining industry wrote in their 1995 report:

*'Furthermore, as no other region of economic significance has similar geometry, no mining industry outside South Africa pursues the solution to this problem. The platinum mines have essentially the same difficulty. **The solution must therefore be found in South Africa.**'*

The key aspect is highlighted in bold, and we therefore need to foster mining research in South Africa. In terms of geometry, the Commission was referring to our tabular orebodies at a very flat dip with a small mining height. This makes mechanization extremely difficult, and it results in very high stress levels ahead of the mining faces in deep excavations. Furthermore, the decreasing extraction ratio of the shallow bord and pillar mines with increasing depth needs to be studied in detail and good solutions found. Multi-reef mining with a small middling between the reefs also requires further study. Unfortunately, the mining research capacity in our country has shrunk drastically over the last two decades. In his 2006 paper in this journal – *Beyond Coalbrook: what did we really learn?* – van der Merwe described the transfer of COMRO to the CSIR and the subsequent collapse of CSIR Miningtek.

'Due to disillusionment and internal problems in the CSIR, there was an exodus of qualified and experienced researchers from 2003 onwards. It is estimated that in the period 2003 to 2005, an aggregate of over 1 000 years of research experience was lost. In retrospect, the collapse of Miningtek could well in future be seen as having a more severe impact than the collapse of Coalbrook.'

The situation has only become worse in the years following the publication of van der Merwe's paper. An innovative solution to this research challenge must be found and may in part lie with the small mining research groups that still survive at the tertiary institutions. Postgraduate students from industry are keen to do research and further their qualifications. A new '*distributed research organization*', involving both industry and the universities, may therefore make a huge contribution to generating new knowledge. The mining industry and government must support and grow these mining departments. The current limited funding initiatives, unfortunately, seem to become increasingly complex, and simple '*no-strings-attached*' support is required to enable the few surviving good researchers to focus on research only and to train the next generation of academics.

This edition of the Journal features several papers focusing on environmental and safety aspects in mining, and these are valuable studies for the South African industry. I congratulate the authors on their contributions to research.

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