



President: 2011-2012

There was a time

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There was a time, more than 25 years ago, when South Africa was the undisputed leader in mining research. Only rightly so, the most challenging mining conditions in the world needed to be attacked by the best research in the world. The mining industry deserved the support of the best efforts of the best researchers in the world. And that support was there.

A hard-core researcher only needs a few things to be successful. Internally, that person has to be plagued by insatiable curiosity backed up by some measure of intelligence, a lot of patience and perhaps most importantly, perseverance. Albert Einstein said of himself 'I think and think for months and years. Ninety-nine times, the conclusion is false. The hundredth time I am right'.

Externally, there has to be a challenge, a laboratory, and funding. In South Africa, the challenge was certainly there. Serious research really started in reaction to the Coalbrook disaster, which was at least in part due to the lack of a formal design procedure for coal mine pillars. That was the initial challenge.

Suddenly, after the disaster, funding for research was available. Funding attracted bright young researchers, mainly from Europe, to come to South Africa. Everything was here: the challenge, full support of the industry, funding, laboratories, full access to information, everything a researcher could wish for.

The most important outcome of the initial drive was that the Chamber of Mines Research Organisation was born. The experienced researchers there taught the next generation and a magnificent upward spiral was set in motion. Bright young locals joined in. The whole mining world knew about COMRO, for decades the most respected brand name in mining research.

As a measure of the success and quality of work performed by COMRO, consider that South Africans (or at least people who worked here) won the Rocha Medal, awarded by the International Society for Rock Mechanics to the best rock engineering PhD thesis in the world, six times – more than any other country in the world. No small feat, considering that anything between five and seven hundred rock engineering PhDs are awarded annually.

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Then, exactly twenty-five years ago this year, in a move that must have seemed sensible at the time, the Chamber of Mines transferred COMRO to the CSIR. In several respects this was an understandable move. Research is not the core business of the Chamber of Mines, while transferring the unit to the CSIR placed it in the heart of South Africa's national research entity.

What could not be foreseen was the impact of the loss of intimate contact between mining operations and research. Suddenly, the researchers were external, no longer part of the family. Such was the strength of COMRO that the momentum

carried the research effort for some time, but it could not be sustained. Some of the senior researchers had difficulty adapting to the new environment, finding it restrictive compared to the previous milieu. Many left the organization.

Gradually, it all slowed down. Numbers started decreasing. The mining research unit, known as Miningtek, lost its divisional status in the CSIR. Now it was even further removed from the heart of the industry. By 2013/14 it had all but disappeared.

Meanwhile there were attempts at recreating a national research entity but none were successful. They could not excite the industry and without enthusiastic industry support they were doomed to failure.

Research continued to be done but it was fragmented. Smaller and larger private consultants were awarded research contracts and the universities also continued. What was lost was the coherence of the efforts and, very importantly, the fundamental research upon which applied research depends.

The younger researchers no longer had the giants to lead and to coach them, to have tea with, to say good morning to in the passage. It had all come down to individual efforts of a few, scattered and working in isolation. Significant and solid results were still produced but it has to be remembered that consultancy is a commercial activity where the ratio of time spent on a project to the time allocated by the contract is of prime importance. There was no more room for Einstein's ninety-nine first attempts.

The mining industry as a whole is also not in the same good shape it was in 1993. Over the last twenty-five years output of almost all our minerals steadily declined, for a number of reasons. But the complexity of the problems to be dealt with - in the case of rock engineering it is mining-induced seismicity - is not correlated to the size of the industry.

Up to this point, we are not looking at a great twenty-five years that has gone by. The industry is in decline with the bottom not yet in sight and we have lost arguably the greatest mining research entity the world has ever seen.

So, is everything lost? The answer is a resounding no!

No matter which way we look at it, as long as there are people on this Earth there will be material things that they need and perhaps more importantly, things that they just want. Most of those things are minerals-based. There is only so much of any mineral in our Earth and we still have substantial reserves of that. It is still here beneath our feet.

Some point to political interference as one of the main reasons for the industry's decline. That may well play a part, but let us remember that the interplay with politics and society has always been part of mining. Just think back of Nicolaas Waterboer and what happened to his diamonds, look at the shape of the border between the Free State and the Northern Cape in the vicinity of Kimberley, consider the Anglo-Boer War. The industry always survived, at least in part due to the fact that only the brave and adventurous are attracted to mining in the first place.

Perhaps we are still in the melting pot with safety, general benefit of the people, and environmental concerns being more important than ever before. We have to mine in a different way, we have to become cheaper and safer and spread the profits wider. The fact that we can no longer mine in the same way we did twenty-five or fifty years ago does not mean that we can no longer mine, we just have to find new ways.

Where will those come from? Research, of course, followed by site-specific adaptation of generic results. But the adaptation cannot happen if the generic results are not in place. We simply need the fundamental work to be done if we are to survive and for that to be done efficiently, we need a national research organization of some description.

This year, the Rocha Medal was once again awarded to a South African. For the first time, not to a person engaged in full-time research but one who did his work while engaged in the industry at the forefront of operations. We still have the insight and the tenacity to produce excellent results. Just imagine what we can do if we had something like the old COMRO, but addressing today's needs in today's manner.

It may already exist. In 2016 the old Miningtek was revived in a different form, now with state support. They address different needs in a different way than before. Some of the senior researchers from the old Miningtek are back in research. Will this work? Are crystals beginning to form in the melting pot? Time will tell.

Yes, there was a time... and there will be a time... *

Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world.

Albert Einstein