

Journal Comment

The February edition of the *Journal* contains 12 papers that have something for everyone. For the extractive metallurgists, there are papers on jigging and the flotation of coal and gold. For the mining engineers, there are contributions on stope design, mine refrigeration, and decision-making strategies for the selection of heat exchangers and for mine planning. For the physical metallurgist, there are a number of papers on steelmaking. For the geoscientist, there is a review of soil science. Finally, for those who are prepared to come out of the closet and admit that they ply their trade in the murky world of 'management', there is a paper on methods for continuous improvement.

It is utterly inappropriate for me to attempt to summarize each of the 12 papers and comment on their relevance and impact, and I will hide under the somewhat weak excuse that this column does not provide enough space for me to do so. Besides, after reading the titles in the Contents, you can simply skip to the paper's Abstract to decide whether to delve into the detail.

So, how do I fill this column with relevant comment? I suffered sleepless nights worrying about this Journal Comment when it occurred to me that every paper, in some way or other, attempts to reduce uncertainty. What is research for, other than to shed light on a topic, make it make more understandable, more known, more predictable, and more useful? As that deep thinker and well-known political scientist (whose name is on the tip of my tongue, but which I just can't seem to spit out) stated recently with utter conviction:

'There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know.'

Quite so – I bow to his superior intellect – I could not have put it better myself.

It seems that every generation is convinced that uncertainty in their lifetime is increasing, that the world is becoming more, not less, complex. It is frequently said that the more we know, the less we know. Buckminster Fuller, who first reported on the existence of hollow spheres of exactly 60 carbon atoms (so called 'Buckyballs'), wrote that:

'Everything you've learned in school as "obvious" becomes less and less obvious as you begin to study the universe. For example, there are no solids in the universe. There's not even a suggestion of a solid. There are no absolute continuums. There are no surfaces. There are no straight lines.'

To use that great South African expression 'Ja-well-no-fine' – it's all perfectly clear to me! Whereas I identify with these sentiments on a philosophical and emotional level, they are at odds with the so-called rational side of

my brain that appreciates that the more we know the better the engineering outcomes. Technology is advancing at an increasing pace, only because of incredible advances in knowledge. From a purely technological standpoint, the more we know, the more we know ... if you still follow my drift! (I considered deleting the last sentence for fear that I will be placed in the same basket category as the Donald Duck of the infamous 'Unknown Unknowns', but I am sure that you are still following my line of clear thought).

To return to the mining industry, if you ever wanted evidence of increasing uncertainty, make the time to read the just released '*Mining Financial Reporting Survey 2014*' prepared by KPMG, which reports that major global mining companies suffered impairment losses of \$70 billion in 2013/14. Most of the companies surveyed admitted that falling commodity prices had negatively affected the carrying value of their underlying assets. Some coal mines are temporarily mothballed, while many other mines are cutting back on their output. Add to that the inherent instability of the global economy, climate change, and political uncertainty. Who would want the job of preparing the first draft of any mining company's annual business plan? – whatever you write is guaranteed to be trashed by your colleagues!

In South Africa, we can throw into the unsavoury basket of uncertainties, currency fluctuations, power disruptions caused by load shedding, labour relations, and the Mineral and Petroleum Resources Development Act (MPRDA) which has just been returned to Parliament for redrafting.

Despite the large number of 'known unknowns' in the mining industry, there is obviously still value to be found and made in mining, but caution, rather than bravado, is currently king in the short term. In the medium to long term, I have no doubt that the saviour will be found in improved technology, as it nearly always is. In South Africa, the key concept is mechanization in mining, and I anticipate that we will soon see an increasing number of papers being published on this topic in the *Journal*.

The only comments that I can add in closing to those feeling the heat in the boardroom is that cowpersons don't cry. Or as Lt. Col. Frank Slade said: 'If you make a mistake and get all tangled up, you just tango on' (hand-written answers as to the origin of the above quotation must be mailed to me on a plain postcard to qualify for the prize – googling the answer is strictly prohibited).

Happy reading!

R. Paul