It may be a function of my 'maturing' years but I am finding that the first two months of the calendar year are becoming much more of a challenge. One gets lulled in to a complete false sense that business and life are well under control, brought about by the shutdown of many companies over the holiday period. I tend to carry on working through this period, so my desk gets tidied, the 'to do' list gets shorter, *etc.* Even those chores around the home that tend to be conveniently ignored by all but the Home Manager get sorted out – usually preceded by hours of research at the local hardware store …

Then suddenly and rudely the whole country catches a wake-up and there is a mad scramble as all and sundry are back in the work place, full of renewed purpose and Christmas pudding. And here I am, suddenly confronted with the realization that two months of the year have already passed. How it happened without me noticing, I don't know. However, I am quite sure that other SAIMM Presidents before me have sat down to write an article for the President's Corner and stared dolefully at their computer screen desperately trying to get their thoughts together before the editor's deadline. At such times one turns to the contents of this month's *Journal* for inspiration.

At first glance it seems there is little in common between (for example) 'Influence of surface preparation on the precision of electrochemical measurements' and 'A stochastic simulation framework for truck-shovel selection and sizing in open pit mines'. However, what has struck me about the papers in the March *Journal* is a common theme that reflects research at the microscopic and sub-microscopic level of metallurgical, materials, and engineering science to resolve or improve understanding of issues in the macro world. Without meaning to be glib – the devil is in the detail, as the saying goes. The gap between laboratory research work and theoretical physics is getting smaller and the gap is managed through the use of mathematical algorithms. Algorithms are at the heart of our digital world. They are the universal translator between the theoretical physicist, the laboratory research that tests the variables and calculates physical constants, and the business world where decisions about corrosion protection standards or the optimal fleet selection for a new open pit have to be made by management.

More on this management subject can be read in the relatively new publication 'The Attacker's Advantage: Turning Uncertainty into Breakthrough Opportunities' by Ram Charan. In this book the author postulates that our next generation of leaders must 'get ready for the most sweeping business change since the Industrial Revolution. To thrive, companies – and the execs who run them – must transform into math machines.' His argument (and I believe we already experience this in our everyday lives) is that the rapid advances in the development of algorithms that describe our real world in digital terms (think of 3D simulation and optimization tools) and the related complex software, are disrupters of the status quo in today's companies. Companies that are not up to the challenge of keeping abreast of these innovations are at risk of falling behind better equipped competitors.

This has resulted in the 'Age of Unicorns', but more about that in my article next month …

To close, these Journal papers bring to the fore yet again the reality that without strong math and physics skills our future engineers and managers will not be equipped adequately for business.

J.L. Porter
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