Supporting Jeff's AO Nomination

By Dr Peter Lilly, 2018

I was honoured to provide a letter of support for Jeff Whittle's nomination for the Order of Australia, and this is what I said:

"*I was an author and presenter at the first Large Open Pit Mining Conference, jointly arranged by the AusIMM/IEAust Newman Combined Group, held in Newman in October 1986. The conference included a range of both interesting and definitive papers. However, the one seminal paper that made the largest impression on the mine planners in the audience was that by Jeff Whittle entitled "Application of Lerchs-Grossman Pit Optimization to the Design of Open Pit Mines*."

The abstract of that paper is as follows:

"*Definition of the optimum open pit, whether an intermediate phase or final design, will be sensitive to many factors. The most basic will include geological and mining constraints, mining and processing costs, pit slopes and product prices. The application of the three-dimensional Lerchs-Grossmann pit optimization procedure to this task is described for a range of gold deposits. A new approach to the modelling and manipulation of the geological model enables complex geological environments to be assessed, and sensitivity analyses to be developed. Comparisons with manually developed pit designs have been made to validate the results. The computer implementation is simple to use and can be adapted by non-computer professionals at mine sites.*"

Up until that time, estimation of the economic depth of an open pit mine – particularly in relatively complex, irregular metalliferous ore bodies, not relatively simple stratiform structures - was undertaken by a combination of rule-of-thumb, sheer experience and 2D sectional approximations. In other words, such designs were most likely to be mathematically sub-optimal.

In a very short period after 1986, amazingly short for the mining industry in fact, “Whittle” became a gold standard and a “household” name for defining the “optimum” pit shell upon which to base a more fulsome mine design. After the late nineteen-eighties, in fact, if a mining engineer presented a feasibility study based on the old rule-of-thumb approach, it would most likely not have been acceptable for bankable (funding) purposes. The Whittle software phenomenon went global around this time too, from memory.

If I were to offer an analogue, it would be this: Mercedes made the first car, but Ford made the car accessible to millions of people. So Lerchs and Grossmann defined the core algorithm, but Jeff Whittle made it accessible (and affordably so) to anyone in the mine planning fraternity.

I have no way of accurately estimating how much value the Whittle software has added to global corporate balance sheets and cash flows through the optimal assessment of mining shells and sequences. However, based on my knowledge of the value of such work to some companies, I would suggest that the net present value added to the industry would be measured in the tens of billions of dollars in today’s currency.

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To read Peter’s bio please scroll to the next page…

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Dr Peter Lilly retired at the end of 2017 after 42 years' postgraduate experience. Approximately half of this time was spent in universities and industrial research organisations where he held management positions that included Head of School, Director and Executive Director. The remainder was spent in industry, where he worked on mining and civil engineering projects located in 15 countries and held a range of roles up to and including Executive Director. Over a 20-year period he held Non-Executive Directorships on seven boards.

He is a Fellow of the Australian Academy of Technology and Engineering, a Fellow of the Institution of Engineers Australia, and a Fellow of the Australasian Institute of Mining & Metallurgy (The AusIMM). He is a past President of The AusIMM and has received the Sir Willis Connolly Medal (2008), the Beryl Jacka Award (2008) and the President's Award (2018) from The AusIMM.