Editorial

OR Modelling

Associate Editor: Miles G. Nicholls

The Editors are pleased to offer this opportunity for the associate editor for OR Modelling to outline his domain, and seek contributions from potential authors.

OR Modelling in its broadest definition could cover every application of OR from ‘hard’ to ‘soft’, from simulation to dynamic programming and encompass analytical solutions through to heuristic ones. However, for the purposes of OR Insight it is considered as the depiction and analysis of real world situations approaches, using suitable approaches, methods, and techniques, with the intention of obtaining optimal, best practice, or improved solutions to resource allocation problems. This includes ‘hard’ and/or ‘soft’ modelling using appropriate solution algorithms/heuristics (or combinations in the case of mixed-mode modelling problems). For detailed discussion of mixed-mode modelling, the interested reader is referred to Nicholls et al (2001).

I would rephrase the following paragraph to offer more of a range of approaches.

The problems to which OR Modelling can be applied are numerous. They include:

- the well known oil refinery models (using LP)
- glass manufacturing and sequencing (MILP)
- aluminium smelter modelling (MILP and Bi-level Non-linear Heuristics)
- maintenance of genetic diversity (NLP)
- developing strategies for higher education (MILP)
- holistic modelling of production incorporating ‘soft’ sub-models (a mixed-mode modelling approach using

appropriate heuristics for solution)

- a variety of production and process problems
- applications in defence, health, manufacturing, supply chain
- many others not mentioned!

The key feature about Or Modelling in the ORI sense is that the way in which the modelling is undertaken is of great interest. The emphasis for publication in *OR Insight* with respect to OR Modelling, is on for practical examples of its application, ones that will be of interest to the OR community as a whole, rather than a subset. In recent years, there appears to be a very welcome increase in the number of articles published in *OR Insight* of this nature (see examples below).

One question that needs to be addressed, is where is the distinction drawn between OR Modelling and Combinatorial Optimisation for *OR Insight*? An editorial was The is eloquently provided by the Associate Editors for Combinatorial Optimisation (Kathryn Dowsland and Bill Dowsland (2002)), where they indicate “*Combinatorial Optimisation (CO) involves choosing options from a set of possibilities in such a way as to optimise one or more objectives*”. OR Modelling may overlap with this but is not constrained this definition.

For OR Modelling, practitioners and academics are invited to submit papers on applications of OR Modelling to ‘real’ problems that involve any of the approaches outlined in this article (or indeed using any other appropriate approach that has not been mentioned). ORI would be especially pleased to

consider papers that addresses the processes associated with the formulation of models. Examples of these types of papers may to be found in *OR Insight* include:

- *The Formulation of OR Models* (Nicholls (2003))
- *Making Steel Cool* (Vasko *et al* (1999))
- *Short-Term Modelling in Refinery Planning* (Main (1999))

Please forward any OR Modelling contributions for *OR Insight* electronically to Miles Nicholls at mnicholls@swin.edu.au or directly to the Editors. I look forward to receiving your papers.

References

- Dowsland K and Dowsland B (2002), Editorial – Combinatorial Optimisation, *OR Insight*, 15, 3, 2-3.
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- Nicholls M. G (2003), The Formulation of OR Problems – A Critical Craft, *OR Insight*, 16, 1, 25-32.
- Nicholls M. G, Clarke S and Lehaney B (2001), Mixed-mode Modelling: Mixing Methodologies for Organisational Intervention, *Applied Optimization*, Volume 58, Kluwer Academic Publishers, Dordrecht/Boston/London.
- Vasko F, Gilles H, Bright D, Kocatulum B and Wolf F (1999), Making Steel Cool – an Intelligent Search Strategy for Optimising Water Spray Settings on a Continuous Caster, *OR Insight*, 12, 4, 2–11.