Editorial

Patrick T. Hester*

University of North Carolina at Asheville,
Ramsey Library 219,
One University Heights, CPO 1850,
Asheville, NC 28804, USA
Email: phester@unca.edu
*Corresponding author

Andrew J. Collins

Engineering Management and Systems Engineering,
2101 Engineering Systems Building,
Old Dominion University,
Norfolk, VA 23529, USA
Email: ajcollin@odu.edu

Biographical notes: Patrick T. Hester is an Associate Professor of Management at the University of North Carolina at Asheville. He received his PhD in Risk and Reliability Engineering and Management from the Vanderbilt University. His research interests include systemic thinking, multi-criteria decision analysis, and performance measurement and management. His research has led to over 100 publications in books, journals and conferences, and is summarised in his award-winning textbook, *Systemic Decision Making: Fundamentals for Addressing Problems and Messes*. He is a member of the IISE, INFORMS, Performance Management Association, Society for Judgment and Decision Making, and International Society on Multiple Criteria Decision Making.

Andrew J. Collins is an Assistant Professor at the Department of Engineering Management and Systems Engineering in Old Dominion University. He received his PhD in Operations Research from the University of Southampton, and undergraduate degree in Mathematics from University of Oxford. He has published over 80 peer-review articles. His projects have been funded to the amount of approximately $5 million. He has developed several research simulations including an award-winning investigation into the foreclosure contagion that incorporated social networks.

Quantitative, or hard, methods for addressing complex systems have permeated the literature for decades, especially in the USA. Qualitative, or soft, methods such as rich pictures, participatory methods and soft systems methodology, however, have been used extensively elsewhere throughout the world to address complex problems.

This issue aims to highlight the theoretical developments and practical contributions of so-called 'soft operations research' methods in addressing complex systems. Researchers from the USA as well as other areas of the world more traditionally oriented towards the use of these methods contributed to the issue. The included papers are geared

towards researchers and practitioners who are frustrated with the limitations of a traditional hard operations research-centric approach for dealing with complex systems. It is hoped that this issue will expose readers to methods unknown to them, as well as highlighting the successful use of such methods for real problems.

- 'Categorising and clustering knowledge in fuzzy cognitive maps'

Fuzzy cognitive maps are a powerful tool to understand the dynamic relationships in complex systems. They allow researchers to see the impact that permutations of a single concept have on the remainder of the system. However, the creation of a fuzzy cognitive map is subjective. To understand the impact of the subjective nature of creation, Metzger et al. propose an approach to grouping different stakeholder's fuzzy cognitive maps; graphing statistics were used to create these groupings. Through a case study of the problem of flooding, the authors were able to show that new insights are given from their grouping approach. These insights are the differences in mentality between the different stakeholder groups. By understanding the mentality differences, between stakeholders, an analyst may be empowered to determine a way of reconciliation between these different groups.

- 'Using rich pictures outside of soft systems methodology: a case study analysis'

There are many different approaches to problem structuring; some are easily followed and some are more complex. Some, like soft systems methodology, require multiple steps to complete. What Berg et al. show in their paper is that it can be useful only to consider parts of the process as a stand-alone exercise; specifically, they argue that rich pictures, a part of soft systems methodology, can be used as a stand-alone to help problem owners. To exemplify this point, they use a case study from a workshop on caregiving for children with autism. The authors point that there are puritans within the problem structuring academic community that insist that techniques, like soft systems methodology, need to be completed in their entirety to be useful, whereas practitioners actually use parts that they find useful; this shows, sadly, a disconnect between the two communities, which has, sadly, plagued the operations research world and highlights the underlying aim of soft operations research techniques – to be useful.

- 'Systemic analysis of a drug trafficking mess'

Many complex problems exist across national boundaries (i.e., poverty, disease and war). Such problems require a combination of hard and soft approaches to address. Sapiano and Hester attempt to tackle the international problem of drug trafficking, a situation that involves aspects of drug production, importation, and consumption, using a multi-methodology approach. In this paper, the authors present a case study that draws on a theoretical foundation of systemic thinking to understand drug trafficking across national borders, propose an intervention in this mess to reduce drug trafficking, and analyse the utility of the suggested intervention. This approach focuses on the complexities inherent in having multiple, interconnected problems with varied stakeholders using fuzzy cognitive mapping as a tool to provide both a visualisation as well as analytical capability. The paper aims to demonstrate a practical fusion of soft and hard operations research techniques that goes beyond the theoretical realm.