



Editorial

Special edition on “OR in Defence”

Operational Research (OR) as a recognized activity began with the application of rational analysis to help military and political decision-makers in the United Kingdom during (and just before) the Second World War. Its success in this regard has been well documented. After the war, OR diffused into civil government, industry and commerce but, within the UK at least, the military domain remained the largest single area of application. OR—or OA (Operational Analysis) as it is usually called within the UK defence environment—was influential in many important decisions taken by the Ministry of Defence during the Cold War and this influence continues today in the more uncertain circumstances in which we now find ourselves.

The recent formation of the Defence Science and Technology Laboratory (Dstl) within the UK Ministry of Defence seemed an appropriate moment to reflect on and gather together a snapshot of the ideas, methods and approaches that are being generated to help key defence decision-makers, both in the UK and overseas, as they ponder both near- and far-term challenges.

The papers in this special issue reflect an enthusiasm and diversity of approach that comes from innovative people engaged in an obviously worthwhile enterprise. Despite reducing budgets following the end of the Cold War, there has been no slackening of demand for high-quality OR in the defence sector. Indeed, new tasks have arisen. Not least among these is an increased emphasis on direct support to commanders in the field, reflecting the increased frequency with which the forces of the UK and its allies find themselves deployed on active operations. In this respect, the defence OR community is returning to its roots.

For obvious reasons, the papers in this special defence-related edition tend to focus on methodology rather than on the more sensitive aspects of implementation. However, in the first paper, Forder gives an overview of OR within the UK defence context that, *inter alia*, surveys the range of current applications and examines the reasons for its continued vigour and influence, more than 60 years after its birth in quite different strategic circumstances. This is followed by a number of papers that focus on the way in which OR supports higher-level decisions about defence policy and the way in which military capability should be provided. The paper by Taylor and Lane describes the development of an extremely significant set of new simulation models that support much of the advice that Dstl gives on high-level balance-of-investment issues within the UK Ministry of Defence. This is followed by the paper on

validation by Moffat, Campbell and Glover, which underpins that development, showing that the emergent behaviour of such simulations is consistent and acceptable. The next paper, by Huber and Schmidt, reports how analysis has been brought to bear on the political and military constraints surrounding the reform of the German armed forces. The issues of terrorism and weapons of mass effect are also of great importance at the present time, and Sullivan and Perry show how intelligence information on such issues can be analysed in a structured way. The final paper in this first set, by Lambert, shows how a multi-methodology approach was applied to the issue of restructuring a key NATO headquarters.

In the second set of papers, the focus shifts to the systems level. The first paper in this set, by Mathieson, discusses the concept of benefits analysis, a systematic, multi-methodology approach for formulating complex, multi-factor investment appraisal problems. The following paper, by Walmsley and Hearn, describes a system mix study, which—by contrast—used a formal optimization approach, Mixed Integer Linear Programming, to consider the balance of investment in future land combat support vehicles. Brennan and Denton then provide an example of the extensive use of OR by defence industry to support acquisition programmes during their development, production and acceptance phases. The final two papers focus on logistics, which has become an increasingly important topic for analysis as a result of the new emphasis on expeditionary operations. Amouzegar, Tripp and Galway address the problem of logistics support for the US Air Force as it restructures itself and this provides another example of the use of a formal optimization approach, in this case Linear Programming. Also in the context of air operations, the paper by Eaves and Kingsman considers improved methods of forecasting and inventory control for spare parts to support the aircraft of the Royal Air Force.

We hope you enjoy reading the articles in this special edition as much as we did in putting it together. We should like to take the opportunity to thank, in particular, Professor Terry Williams and General Sir Rupert Smith for their support.

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