Editorial: Special Issue on Military Operations Research

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This issue of the Journal of Applied Operational Research (JAOR) includes contemporary research being conducted by operations researchers across three continents supporting military forces. It features diverse works submitted by the Director General Military Personnel Research and Analysis in Canada, Defence Science and Technology Group in Australia, the Finnish Defence Research Agency, Naval Postgraduate School in the USA, and Naval Surface Warfare Centre in the USA. Together, they represent cutting-edge contributions to furthering the application of advanced analytical tools and techniques to the field of military operations.

Not only are these works diverse in their origin but also in methodology and application. Within military operations research, simulation is a prolific tool. This issue of JAOR includes three contributions to furthering the state-of-art in that respect. The application of artificial intelligence to wargaming is explored by Lucek et al. More specifically, a genetic algorithm and simulated annealing are used in place of human-in-the-loop controllers to control brigade-level operations. Kuikka has introduced a simple yet intriguing alternative to using traditional Lanchester equations to model attrition. Instead, a model based on Brownian motion is used to determine the probability of victory in two-party conflicts. Novak et al. have used discrete event simulation and branch-and-bound methods in a novel way to evaluate and compare tenders in a competitive bid supplying aircraft training. The simulation includes various scenarios empowering the contracting authority to collaborate with tenderers to improve the quality of all bids.

Marlow and Dell apply mixed integer linear programming techniques to a more traditional problem in operations research - that of scheduling. More specifically, they optimize squadron-level flight operations, accounting for maintenance and a variety of other constraints. Their analysis includes numerous test scenarios.

The final two works in this issue illustrate the evolving nature of the problem-space challenging armed forces. Diener addresses a chronic challenge within the Canadian Armed Forces - that of bilingual-imperative positions. This is a classic assignment problem for which Diener proposes a model identifying target staffing levels within the various rank and occupation groups within the forces. A notorious problem among contemporary operations - that of mission creep - is addressed by Hester et al. Their work introduces a metric they have coined mission hazard potential used to help mitigate the potential for mission creep to have negative impacts on system safety and human-system integration.

Within this issue, the reader will find both traditional and novel analytic tools. Likewise, both traditional and novel challenges posed to the OR community by military forces are explored. The issue represents a true testament to the diversity of work and critical contributions being made by OR practitioners to the improvement of military operations.

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