Preface: Advances in Theoretical and Practical Combinatorial Optimization

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This issue consists of research papers dedicated, though not limited, to the International Symposium in Combinatorial Optimisation (CO2016) chaired by Said Salhi and which was held at the University of Kent, Canterbury, 1-3 September 2016.

This special issue on *Advances in Theoretical and Practical Combinatorial Optimization* attracted a good number of papers but 35 were considered suitable for the next stage of review resulting in 20 being accepted mostly after two rounds of reviews. We divided the issue in three parts, each covering a wider though well-defined area within CO. These three parts, which are not completely distinct, are referred to for simplicity as Mathematically-Oriented (MO), Heuristically-Based (HB) and Practically-Focussed (PF).

MO contains seven papers. These include the integration of network flows in a colouring algorithm by Scheidweiler, a polynomial time algorithm for the minimum flow problem by Khodayfifar, Raayatpanah and Pardalos and a formulation in multi-level capacitated facility location by Irawan and Jones. A.Salhi, Alsoufi and Yang provide a mixed integer program combined with an evolutionary approach for seaside operations in container ports, while Zare, Borrero, Zeng and Prokopyev produce a note on new linearized formulations in bilevel linear integer problems. Fuzzy logic is explored for portfolio optimization by Liagkouras and Metaxiotis, and for supplier selection by Chang.

HB covers six papers. Azizi, using a Genetic Algorithm, explores hub and spoke networks under disruption. Knust and Xie produce a Simulated Annealing algorithm for nurse rostering while Pei, Cheng, Liu, Pardalos and Kong investigate Variable Neighbourhood Search (VNS) for single and parallel machine serial batching. A skewed VNS is adopted by Derbel, Jarbaoui and Bhiri for the heterogeneous fleet vehicle routing problem, and an Ascent-Descent VNS by Djamic, Aloise and Mladenovic for the detection of community (cluster) structures in a network. The last paper in this category is by Brimberg, Mladenovic, Todosijevic and Urosevic, who investigate the capacitated clustering problem using a variant of VNS.

PF has seven papers that treat inspiring implementations of CO for real life applications. For example, in the area of scheduling, the use of spare parts in vessel maintenance is dealt with by Kian, Bektas and Ouelhadj, while shift scheduling for power station staff is explored by Shuib and Kamarudin. The avoidance of obstacles in off shore wind farms is optimised by Haugland and Arne and the costing of a product within a supply chain is performed by de Matta. In the health area, the maximization of the expected number of kidney transplants is performed by Alvelos, Klimentova and Viana, a preventive health care network is designed by Davari, while the layout of an operating theatre is produced by Osman, Chraibi and Kharraja.

Finally we are grateful to Professor E. Boros for trusting our academic judgment in acting as guest editors of the Annals of Operations Research special issue devoted, but not restricted, to CO2016. We are also thankful to the managing Editor Katie D'Agosta, for her patience and valuable support in preparing this special issue.

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