

## Editorial

# Metaheuristics and worst-case guarantee algorithms: Relations, provable properties and applications (ECCO XV)

This special issue of *European Journal of Operational Research* is devoted to the ECCO XV Conference, the fifteen annual meeting of the European Chapter on Combinatorial Optimization, held at the University of Lugano (Switzerland), from May 30 to June 1, 2002.

ECCO, the EURO Working Group on Combinatorial Optimization, was created in 1987 by C. Roucairol, D. De Werra and A. Rinnooy Kan. It provides an excellent opportunity to discuss recent and important issues in combinatorial optimization and its applications. The group, which has about 500 members, is open to everybody interested in the field, either in theoretical aspects or in business, industry or public administration applications. During the first ten years, Catherine Roucairol (Université de Versailles, France) coordinated the ECCO activities. The current coordinator is Silvano Martello (University of Bologna, Italy).

The ECCO meetings are held on a regular basis (once a year during Spring) and are devoted to all aspects of combinatorial optimization: operations management and logistics, production scheduling, location and distribution problems, resource allocation, flexible manufacturing, scheduling, VLSI design and computer design, network optimization, etc. Recently, special sessions in ECCO meetings put particular emphasis on new local search methods (tabu, genetic algorithms, simulated annealing), polyhedra approaches to difficult problems and recent developments in classical optimization problems (such as scheduling, assignment, knapsack, partitioning, etc). At ECCO meetings usually about 100 participants nicely combine scientific works and exchange of new ideas with an exciting atmosphere like Paris (May 1988), Venice (June 1989), Barcelona (May 1990), Dubrovnik (May 1991, canceled due to the unstable political situation in Croatia), Graz (April 1992), Bruxelles (April 1993), Milano (February 1994), Poznan (May 1995), Dublin (April 1996), Tenerife (May 1997), Copenhagen (May 1998), Bendor (May 1999), Capri (May 2000), Bonn (2001), Lugano (2002), Molde (2003), Beirut (2004).

The Scientific Program Committee for ECCO XV was formed by Jacek Błażewicz (Technical University of Poznan, Poland), Van-Dat Cung (Univer-

sity of Versailles, France), Alain Hertz (Université de Montréal, Canada), Luca Maria Gambardella (IDSIA Lugano, Switzerland), Silvano Martello (University of Bologna, Italy), and Paolo Toth (University of Bologna, Italy). The meeting was organized by Luca Maria Gambardella, who was at that time the Director of IDSIA, Istituto Dalle Molle di Studi sull'Intelligenza Artificiale, a non-profit research institute affiliated to both University of Applied Sciences of Southern Switzerland (SUPSI) and University of Lugano (USI). We would like to thank Leonora Bianchi, Alberto V. Donati, Monaldo Mastrolilli, Roberto Montemanni and Andrea E. Rizzoli, all from the Research Institute IDSIA, for their service in the Organizing Committee. The conference dinner was held at the panoramic Ristorante Vetta on top of Monte San Salvatore, a beautiful hill which dominates the city of Lugano.

During the conference, the following plenary talks were given:

- Dominique de Werra, (École Polytechnique Fédérale de Lausanne, Switzerland), "TEA for TO";
- Alain Hertz, (Université de Montréal, Canada), "Recent advances for arc routing problems";
- Michel Minoux, (Université Pierre et Marie Curie, Paris, France), "On combining exact and heuristic solution methods for combinatorial problems: illustration on a class of hard discrete cost network optimization problems";
- Wieslaw Kubiak, (Memorial University of Newfoundland, Canada), "Just-In-Time Sequencing: Algorithms, Links and Challenges".

Additionally, in three parallel streams, eighteen sessions on the following topics were organized: scheduling, heuristics, network, logistics, graph, location, general. In these sections sixty-seven papers were presented and discussed. After the conference fifteen papers have been submitted to the special issue "Metaheuristics and worst-case guarantee algorithms: relations, provable properties and applications" and after a strict refereeing process seven papers have been selected for publication.

The goal of this special issue is to investigate both approximation algorithms based on metaheuristics techniques and approximation algorithms with worst-case guarantee. The first class is currently used to practically solve large combinatorial optimization problems, but less attention is given

to prove properties of the generated solutions. The second class is mainly investigated for its formal properties, but less attention is given to the applicability of the techniques.

This issue wants to fill this gap by presenting papers focused on provable properties of metaheuristics algorithms and on the practical applicability of methods with worst-case guarantee. Emphasis is also given to papers that investigate the experimental methodologies used to prove properties of approximation algorithms

The organizers of ECCO XV thank all the institutions which supported the meeting. Thanks are due in particular to:

- City of Lugano;
- EURO, European Association of Operational Research Societies;
- IDSIA, Istituto Dalle Molle di Studu sull'Intelligenza Artificiale;
- SVOR, Swiss Operations Research Society;
- SUPSI, University of Applied Sciences of Southern Switzerland;
- USI, University of Lugano.

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All the papers of this special issue were strictly refereed. We would like to thank the referees for their fruitful remarks and comments.

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