



Report State of the Art Workshop Societal Complexity 2009

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Organized by the Euro Working Groups of Methodology of Societal Complexity, OR for Developing Countries, Ethics & Centre for Business Analytics at the University of Applied Sciences, Remagen, Germany, Europe July 5, 2009 connected to the 23rd European Conference on Operational Research [EUROXXIII, Bonn, 2009](#)

[For the Book of Abstracts of the discussion State of the Art Workshop Societal Complexity 2009](#)

[For Program of State of the Art Workshop Societal Complexity 2009](#)

The goal of the State of the Art Workshop on Societal Complexity 2009 is to give the Chairs of the Euro Working Groups who are doing research in overlapping fields of societal complexity such as in ethics, decision making and developing countries the opportunity to meet and discuss with each other interesting content matters in their field. In this platform top researchers have the opportunity to discuss the problematic and difficult issues in their research among each other.

In the workshop of half a day, each researcher gives a short overview of his/her research field. In this multi-disciplined research group of highly scholar and experimented researchers, the researchers have the opportunity to discuss the questions and issues in the field of societal complexity that interest them most. Each researcher gives an overview of their field, overview of recent research, a discussion about future research questions, and discuss the latest developments in research including interesting literature with a special focus on problems in research, urgent societal issues and uncertainties.

The workshop was evaluated by the participants as very useful and efficient.

Prof. dr. Cathal M. Brugha of the Centre for Business Analytics of the Quinn School of Business University College Dublin in Ireland discussed issues on the relation of China and Europe based on his frequent visits to China and cooperation with Chinese researchers. The starting point for putting this case is that Chinese growth has been over-focused on trade to the U.S. market; it now needs to develop new international markets, especially Europe. In working with the Chinese researchers Brugha uses his own developed methodology based on on Nomology. He encounters major culture differences in making decision and keeping appointments and keep the agreements. It is not easy to build an inter-cultural trust.

Prof. dr. Gerhard Wilhelm Weber of the Middle East Technical University Institute of Applied Mathematics, ODTU Ankara 06531 Turkey presented the beauty of OR hosted and supported Data Mining. This has become a vivid discipline with a growing number of important applications in science, technology and social sciences. In fact, he motivated and presented two new contributions in Clustering Theory and in Classification Theory. In both cases, mathematics and statistics will be very helpful, in particular, by the means of optimization theory. This presentation served as an appetite to vivid modern OR.

Prof. dr. Dorien DeTombe, Chair International Research Society on Methodology of Societal Complexity in Amsterdam, The Netherlands, presented the need of handling complex societal problems, such as Global Safety, in a multidisciplinary instead of mono-disciplinary way. Policy makers on Global Safety often lack an overview of the issue, miss the real causes and suggest interventions that are based on a too shallow analysis of the problem using a mono-disciplinary approach and focus mostly only on the effects. In order to give politicians the opportunity to handle complex problems multidisciplinary, multidisciplinary research institutes should be created. These multidisciplinary research institutes provide politicians with better approaches to handle this type of problem. In these institutes the knowledge necessary for the change of these problems can be created through the use of the Compram methodology which has been developed specifically for handling complex societal problems. Global Safety is a container concept referring to various threats such as HIV/Aids, floods and terrorism; threats with different causes and different effects. These dangers threaten people, the global economy and the stability of states. It would be more appropriate to develop policy related to these issues by utilizing the approaches, methods and tools that have been developed for complex societal problems.

Prof. dr. Fred Wenstøp of the Department of Strategy and Logistics of the Norwegian School of Management in Oslo Norway pointed the way to Kenneth Boulding who had a vision in 1966 of OR as a tool for benevolent decision making, where rationality and computer power joined forces to develop efficient and therefore ethical methods to save 'spaceship earth'. OR and Ethics literature is now devoted to this purpose, where MCDA and System Dynamics are examples of methods used. The other major branch is development and implementation of Guidelines for the practice of OR. Occasionally the two meet in efforts to develop specific guidelines that, if followed, will lead to good consequences. In parallel, a debate is going on about where is the proper place of Ethics in OR. Should ethics somehow enter the models, or should it be kept outside to preserve the scientific ideals and relegated to the OR process? The literature in OR and Ethics draws heavily on other fields such as Decision Sciences, Psychology, Sociology, Economics, Theory of Organization and Management, and does not itself have a core set of concepts or methods.

Prof. dr. Alexander Makarenko of the Institute for Applied System Analysis of the National Technical University of Ukraine (KPI) in Kiev Ukraine talks about the new models of society proposed by him and his colleagues as the source of handling new mathematical problems and phenomena. The models had been formulated as discrete dynamical systems with presumable multivalued solutions including the models of opinion formation in geographically distributed social systems: GIS. The models are new and interesting as in applications as well as in the development of social systems theory. Examples are the next: game 'Life' with anticipation; cellular automata models of crowd's movement; neural network models of society. Such calculations help to illustrate the new presumable types of solutions in such mathematical objects. The list of topics is the next: mathematical modeling of social processes; decisionmaking; sustainable development; complexity, brain and consciousness, micro-world, Universe.

Dr Annette Hohenberger of the Middle East Technical University Institute of Applied Mathematics and Informatics ODTU Ankara in Turkey talked about the cognitive perspectives on climate change and sustainability. The problems related to climate change and the striving for sustainable development have been approached as ecological, economical, and technological problems that mainly have political and engineering solutions. However the problem of climate change includes also social, cultural, philosophical, psychological, and cognitive aspects. So these sciences contribute to a broad and comprehensive analysis of a

problem the solution of which concerns all of humanity as its major problem-owner: It is foremost humans who will be struck by climate change. Hohenberger discussed in how far the human cognitive system is apt at tackling and solving the problem, on various levels of organizational complexity, individual and collective. She wants to open the floor to an interdisciplinary discussion with the various workshop members, extending into the following EURO-OR conferences on climate change for multi disciplinary points of view.

Dr. Honora Smith of the University of Southampton in UK talked about location theory and other aspects of optimisation that contribute to sustainability of healthcare facilities in developing countries. In this respect, healthcare facilities might consist of a number of health workers in villages who can deliver a service to their neighbours or those from surrounding villages using a mobile health clinic, a field center, a community healthcare centre giving basic primary health care in a remote rural region that can contribute to establishing sustainable facilities. However, many difficulties arise of applying solutions at the point of decision making. Experience has shown that contacting and collaborating with planners in these areas is hard to initiate and follow through.