

*Book of abstracts*

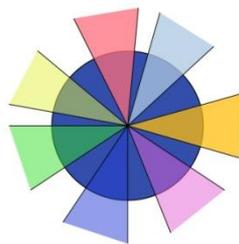
*State of the Art Workshop*

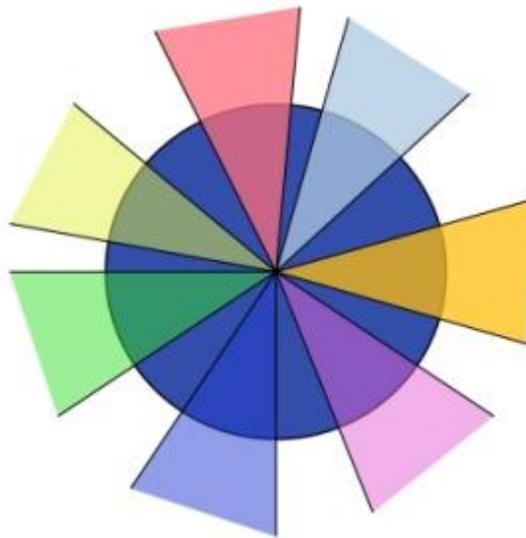
*Societal Complexity*

*Vilnius 2012*

Volume 24

Dorien DeTombe, Cathal Brugha, Gerhard-Wilhelm Weber,  
Fred Wenstøp (Eds.)





Book of abstracts of State of the Art Societal Complexity

Vilnius 2012, Round Table Discussion

Operational Research EUROMSC / EURO MCDA / EUROPT / EURO ORD / Ethics and OR

Volume 24

Dorien DeTombe, Cathal Brugha, Gerhard-Wilhelm Weber, Fred Wenstøp (Eds.)

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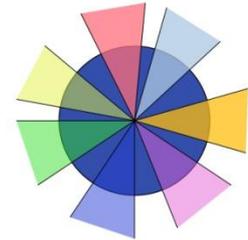
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## Satellite Event / Round Table Discussion State of the Art Vilnius 2012



Sunday, July 8<sup>th</sup> 2012, 10 a.m. till 1 p.m. in Vilnius, Lithuania  
related to EURO XXIV conference

Cooperation of the Euro Working Groups of

**EWG Methodology for complex societal problems**  
**Euro MCDA**  
**EWG EUROPT, EURO Continuous Optimization**  
**OR for Development**  
**EURO Working Group on Ethics and OR**

**EUROMSC / EURO MCDA / EUROPT / EURO ORD / Ethics and OR**

Organized by

Prof. Dr. Dorien DeTombe [EWG Methodology for complex societal problems](#)  
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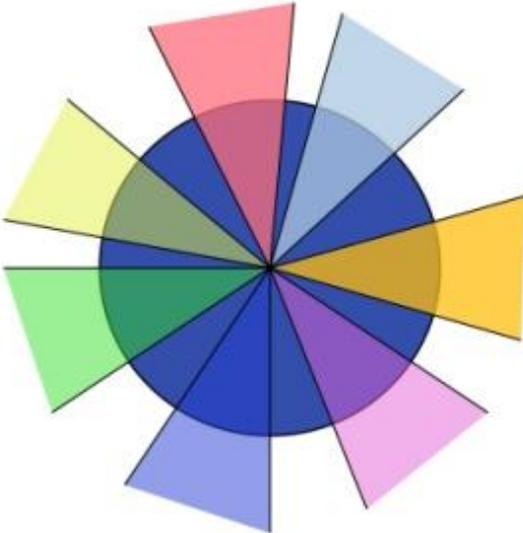
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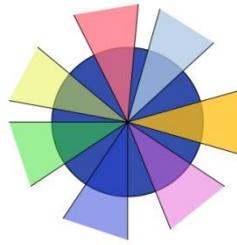
Presenters give an overview of their field and discuss actual research questions

Info :

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## **Program Satellite Event / Round Table Discussion State of the Art Vilnius 2012**

Chair Prof. Dr. Cathal Brugha

Prof. Dr. Dorien DeTombe

*Opening Statement On Cooperation Of Research Between The Euro Working Groups (Video)*

Prof. Dr. Cathal Brugha

*Inter-Religious Conflict Resolution*

Prof. Dr. Gerhard-Wilhelm. Weber

*On Ellipsoidal Collaborative Games*

Prof. Dr. Fred Wenstøp

*The Problem With Righteousness In Environmental Management*

Prof. Dr. Dorien DeTombe

*How to Handle Societal Complexity*

Prof. Dr. Annette Hohenberger

*Applications of Cognitive Science to Complex Societal Problems – Climate Change and Sustainability*

Prof. Dr. S. Taylor

*Quebec Student Protest 2012: An Example Of A Complex Societal Problem*

Prof. Dr. Cristóbal Miralles

*The Disabled People As A Moral Commitment Within CSR Policies.*

Prof. Dr. Alexander Makarenko

*Anticipatory Aspects in Behavior of Complex Social, Natural and Technical Systems*

## **Inter-Religious Conflict Resolution**

**Prof. Dr. Cathal Brugha**

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This paper contextualizes religious-political interaction as a mutual adapting process starting with Hegel's proposals about the separation of church and state to prevent Conflict, then moving to Confrontation firstly in terms of the freedom to act productively as in Rawls, and then to promote the common interests of society without being abused as proposed by Habermas.

The paper uses a conflict-resolution meta-framework to propose where the discussion should go in the future, which is into Cooperation, where people with different views openly discuss what they have in common, such as belief in God, the good of society, peaceful coexistence, etc. and work together to foster what they have in common, to develop trust, and to build relationships.

It also uses the same framework to map the difficulties with this process, and to show why the final phase of Collaboration is so far from our grasp.

Keywords: Systems Methodology, Nomology, Decision Science, Philosophy.

## Spline Regression Models for Target-Environment Networks

Gerhard-Wilhelm Weber, Z. Alparslan Gök and M. Branzei

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Modelling and prediction of regulatory systems and identifying regulating effects between the targets and environmental components of the network have a significant importance in various application fields such as financial and the environmental sector, computational biology and medicine. We analyse time-discrete target-environment regulatory systems with spline entries and introduce a regression and classification model which provides us to find the unknown system parameters by using the multivariate adaptive regression spline (MARS), and CMARS developed as an alternative method to MARS.

Keywords: Cooperative Games, Uncertainty, Ellipsoids, Intervals, the Core.

## The problem with Righteousness in Environmental Management

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The word *righteous* means in accordance with virtue or morality. A righteous person has good intentions and wants to do the right thing, as prescribed by religious or secular law. Although the word is central in many religions, my use of the word here is without religious connotations. With regard to the environment, a righteous person acts on the basis of moral instincts, such as respect for authorities' laws and regulations; intentions of no harm to people, animals or plants; respect for nature; etc.

Some times, however, righteousness produces detrimental consequences, which could have been avoided with rational analysis. Examples are bio-fuel, organic food, bio-diversity. While bio-fuel is sustainable in a perspective of several hundred years, the chopping down of forest to produce wood pellets will probably emit more CO<sub>2</sub> than carbon based fuels in a shorter perspective, such as a hundred years. Further, there is no clear correspondence between organic farming and sustainability. For one thing, organic farming needs more land for the same output. Our struggle to maintain bio-habitats by keeping invasive aliens out, leads to costly programs and ridiculous controversies with arguments about who where here first, and whether a species arrived by itself or got some human assistance.

The paper is not about consequence modeling of such issues, but about the danger of emotionally based righteousness, and an appeal to OR about addressing such dangers in our complex societies.

Keywords: Operational Research, Ethics

## **How to Handle Societal Complexity**

### **Prof. Dr. Dorien DeTombe**

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In the intertwined and global world of today there are many complex societal problems such as climate change and credit crisis, and there are local complex societal problems like traffic, energy problems and pollution. Policy makers handle these problems globally or locally depending on the scale of the problem. However, most policy makers are neither educated nor capable or sometimes not willing to handle these problems in the most optimal way in order to reach sustainable changes. To improve this situation, policy makers should be aware of the complexity of the problem and learn how to handle complex societal problems. Therefore they need a good scientific education at academic level. When policy makers are not trained during their academic education they should ask for scientific support on handling complex societal problems or attend special courses for learning how to handle societal complexity. A scientific methodology for handling complex societal problems is developed in the field of Methodology of Societal Complexity: the methodology Compram (complex problem handling method) DeTombe (1994-2011). Applying this methodology leads to a more stable and sustainable changes of complex societal problems.

Keywords: Complex Societal problems, Compram, Policy Making

## **Applications of Cognitive Science to Complex Societal Problems – Climate Change and Sustainability**

**Prof. Dr. Annette Hohenberger**

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Cognitive Science is the interdisciplinary study of the human mind. As such it is also concerned with problem solving. Striving for handling complex societal problems such as Climate Change and sustainable development is a great challenge for society and for science alike. Cognitive Science, which is at the interface between the natural and the social sciences, may identify the strengths and weaknesses of the human reasoning, action, and emotional system which may help or hinder handling these issues. In my presentation, I will point out the internal (cognitive, psychological) and external (political, societal) constraints human beings are subject to at various levels of the society: as individuals, groups, institutions, national and international organizations. Cooperation, which is a distinguishing characteristic of humans, is considered the key for tackling these complex societal problems.

Keywords: Internationalization of Education, Knowledge Economy, Learner Society, Sustainable Development

## **Quebec Student Protest 2012: An Example Of A Complex Societal Problem.**

**Prof. Dr. Stephen Taylor**

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Recently, Québec post-secondary students took to the streets to protest an increase in university tuition fees. As more students joined the almost daily demonstrations, larger numbers gathered and more police services were required to contain the participants. Subsequently, with the onset of spring weather, violence often erupted. In the major cities, such as Montréal, downtown activity was disrupted. The general public were inconvenienced. The restaurants, bars, and night clubs began to lose business. Residents were disturbed and restricted. An impasse developed among the key players: students, the universities, including faculty and administrators, and the national government. With the general public becoming polarized, the Government of Québec proposed Bill 78 which was then passed into law. The repressive elements of this law incited further demonstrations and further outrage from a more general population. Although many students returned to class and completed the academic year, 30% remain “on strike”. This problem is presented as a case study of a complex societal problem, and a rationale for further developing methods for studying this type of problem.

Keywords: Complex Societal Problems, Students Protest, Canada, Democracy

## **The Disabled people as a moral commitment within CSR policies.**

**Prof. Dr. Cristóbal Miralles**

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During recent decades legal frameworks and regulations surrounding the people with disabilities have been significantly modified, pushing their right to integrate themselves as fully as possible into society. This paper analyses how this institutional effort can only have real effect if there is a real commitment of private companies since they have, as social institutions, a clear role in the solution of social problems.

In areas like Urbanism or Architecture, people with disabilities have been increasingly considered as stakeholder, offering solutions that are respectful and inclusive. But this responsibility often remains eluded in many other areas due to the use of management tools and methodologies that (still) tend to standardize processes. Sen affirmed that genuine freedom demands the expansion of people's capabilities to live a life they have reason to value, and therefore the application of Universal Design principles becomes a moral commitment that companies should adopt as a priority within their CSR policies.

Keywords: Disabled People, Architecture, Sen

## Anticipatory Aspects in Behavior of Complex Social, Natural and Technical Systems

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During the investigations and management of complex social systems many different factors should be accounting. The presentation is devoted to the description of rather new intrinsic aspects complex social objects – namely to the influence of anticipation.

Since the introduction of strong anticipation by D.Dubois and earlier the weak anticipation by R. Rosen the numerous investigations of concrete systems had been proposed. As concentrated (discrete, ordinary differential equations) as distributed (electromagnetic theory equations, cellular automata) systems with anticipation had been considered earlier. Mathematically such objects sometimes frequently have the form of advanced equations. But further development of the theory of anticipatory systems depends on the investigations of new examples of systems with anticipation and their new applications.

So in proposed paper the new examples of distributed and concentrated models with anticipation had been considered.

We propose a list of some properties and manifestations of anticipatory property in different systems and processes:

1. Global sustainable development as strongly anticipative processes;
2. Regional sustainable development as weak anticipatory processes;
3. Origin of scenarios of evolution of complex social systems as the consequences of anticipation manifestation;
4. Self-referencing, reflexivity and mentality aspects in anticipation agents;
5. Medical manifestation of anticipation including schizophrenia;
6. New consciousness models which are based on the anticipatory effects in the brain and artificial intelligence;
7. Quantum-mechanical, microphysics, gravitation and anticipatory analogies in the behavior of large complex systems.

Also the examples of anticipatory effects are described for some real systems. It is proposed neural network models, cellular automata for crowd's movement, sportive games, communication and social networks etc.

**Keywords:** Anticipatory Property; Anticipatory Systems, Complex Multivalued Behavior, Manifestation of Anticipation Property in Applications; Consciousness Model.

