

# T01P10 / Systems Theory and Modelling for Public Policy: System Dynamics, Agent-based Models, and Other Approaches

**Topic :** T01 / Policy Process Theories

**Chair :** Inna Krachkovskaya (SOAS University of London)

**Second Chair :** Alberto Asquer (School of Oriental and African Studies, University of London)

## GENERAL OBJECTIVES, RESEARCH QUESTIONS AND SCIENTIFIC RELEVANCE

The panel aims to raise attention to the systems theory approach. The approach notoriously originates in the 1950s at least and gained some attention in various disciplines in the following decades. The role of systems theory in social science generally, and in public policy in particular, however, remained relatively modest. At the theoretical and methodological level, the concepts of systems theory have been relatively under-utilised when theorising about the policy process. Some methodologies for operationalising the systems theory approach - like systems dynamics and agent-based models - gained some attention but they have remained somehow limited to specific applications.

The expected results from the panel consist of a fresh view onto the ways systems theory is used in the study of the policy process. Studies that relate the systems theory approach to public policy would be helpful to critically assess the potential contributions of the former to the latter. Studies that show how principles of systems theory can result in pieces of policy analysis, policy design, guidelines for policy implementation, and policy evaluation, are also welcome because they can help forming and consolidating a literature around the approach.

## CALL FOR PAPERS

Systems theory - that is, the interdisciplinary study of systems in general and of the dynamic properties that they exhibit - has been long applied in many fields of scholarly inquiry, including biology, ecology, and engineering. Yet, the use of a systems theory approach to public policy has been relatively modest so far. In part, it would be fair to acknowledge that theories of the policy process are systemic in nature, in the sense that they build on an ontology of component parts (including policy-makers, constituencies, lobbies, target groups, and various other stakeholders) and on an epistemology that posits attention to mutual influences between them. Theories of the policy process, however, make relatively little use of the conceptual resources of systems theory, such as the importance of feedback loops, the cascading effects of small perturbations, and the emergence of aggregated behaviour out of interactions between component parts.

This panel aims to bring together scholars who are interested in the application of systems theory to the policy process. We welcome works that:

- Develop the use of systems thinking for the policy process
- Critically assess the role of systems thinking with respect to the study of public policy
- Discuss methodological approaches for the study of the policy process from a systems theory perspective
- Illustrate policy findings through the use of systems theory modelling, including for example system dynamics, agent-based models, and complex adaptive systems in any policy area including health, transport, security, and the environment.

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## Session 1 Theoretical perspectives

Friday, June 30th 08:15 to 10:15 (Block B 2 - 3 )

### **Discussants**

Alex Marsh (University of Bristol)

Tony Casey (University College Dublin (UCD))

### **The uncertainties of complexity in policy studies**

Alex Marsh (University of Bristol)

### **Ontological Meta-Analysis and Synthesis for Public Policy**

Arkalgud Ramaprasad (University of Illinois at Chicago)

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### **Do effective systems processes make effective governance networks?**

Tony Casey (University College Dublin (UCD))

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## Session 2 Complexity in infrastructure and utilities

Friday, June 30th 10:30 to 12:30 (Block B 2 - 3 )

### Discussants

Jos Timmermans (Delft Unniversity of Technology)

Ching Leong (National University of Singapore)

### A SYSTEM DYNAMIC ANALYSIS OF THE LEVEE EFFECT ON THE BRAHMAPUTRA RIVER AND POLICY IMPLICATIONS

Robert Wasson (Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore)

Leong Ching (Institute of Water Policy, Lee Kuan Yew School of Public Policy, Singapore)

Joost Buurman (Institute of Water Policy, Lee Kuan Yew School of Public Policy, NUS)

### Game theoretic study on methods for measuring costs of decision-making and effects of consensus building

Nakamura Naoki (Tokyo Institute of Technology Graduate School of Decision Science and Technology (in training) / Secretariat of the House of Councillors)

Takehiro Inohara

### A MODEL BASED APPROACH TO SUPPORT URBAN WATER SECURITY PLANNING

Febya Nurnadiati (TU Delft)

Jos Timmermans (Delft Unniversity of Technology)

Hadihardaja Iwan Kridasantausa (Institut Teknologi Bandung)

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## Session 3 Complexity across policy domains

Friday, June 30th 13:45 to 15:45 (Block B 2 - 3 )

### **Discussants**

Carlos Potiara Castro (Universidade Federal do Pará)

Mitchell Young (Charles University)

### **Regulatory Arbitrage and the development of a Nimobsian Regulatory Achitecture**

Patrick Bell (Jean Monnet Center for European Excellence/Florida International University)

### **The university as a resilient actor: A complex systems perspective on the university and its policy environment**

Mitchell Young (Charles University)

Romulo Pinheiro (University of Agder)

### **From a closed to an open system: asymmetric communication, local micro institutions and development policies**

Carlos Potiara Castro (Universidade Federal do Pará)