

# Simulating the Social Processes of Science

7 – 11 April 2014, @Oort

Science is the result of complex interactions between institutions and individuals self-organizing their research. This workshop took this idea seriously, seeking to understand these interactions and their impact upon the development of science using simulation models and other analytic techniques. Its aims were to:

- Bridge the micro-macro gap in observations, descriptions and theorizing using computer simulations as the platform
- Contribute to an understanding of macro level outcomes as result of collective actions of individuals, and how individual actions are framed by emergent macro structures
- Develop a framework to understand better what a simulation can explain and what lies beyond the epistemic power of models and simulations – validation strategies for simulation
- Link existing simulation models with current development of computer science techniques to support this kind of research.

In the proposal the organisers considered that it would be a success if during the week: (a) new simulations are started (b) existing simulations are improved, based on the discussion (c) links between existing models and simulations are identified to design a fabric of simulation models (d) new collaborations are initiated across disciplinary boundaries (e) participants are stimulated to do further research into the topic. All of these were achieved during the course of the week.

The week brought together a wide variety of researchers, including those from: computer science, socio-physics, sociology, computational social science, psychology, philosophy and scientometrics. The workshop revealed the diversity of model approaches as well as the diversity of epistemic functions of those models. This variety entails data-driven and data-based modelling as well as to the use of mathematical models to foster thinking and to deepen understanding of the social and cognitive processes of science. The two keynote talks of Katy Börner (IU, Bloomington, US) and Paul Thagard (Univ of Waterloo, Canada) framed the workshop along those lines.

The extensive time for discussion resulted in a focus on a number of different areas, including: peer review, inter-disciplinary science, early-stage researchers, identifying disciplines from citation data, and researcher attention. As a result of the workshop a host of initiatives were started, including: special issues (Scientometrics and Frontiers), a follow up workshop in Valencia in 2016, a road map of the area, a list of challenge problems, a resource list of tools and data sets, a systematic comparison of models in the area, a list of accepted stylised facts, a mailing list, the formation of a special interest group on “SimScience” games, and an overview/position paper.

Three different networks were involved in the workshop: the two other sponsors: KnoweScape the COST action (TD1210) looking at mapping knowledge spaces and the European Social Simulation Association, as well as the newly launched COST action looking at Peer Review PEERE (TD1306). For further news of outcomes from this workshop see:

<http://simsocsci.blogspot.com>.

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