

SOE 5: Young Scientist Award for Socio- and Econophysics

Time: Monday 15:00–17:00

Location: HSZ 01

Invited Talk

SOE 5.1 Mon 15:00 HSZ 01

After more than two decades: The bounded confidence model reconsidered — ●RAINER HEGSELMANN — Frankfurt School of Finance and Management, Frankfurt, Germany

By usual academic standards, the bounded confidence model (BC model) is quite successful. It is often cited; to overlook all its extensions is hardly possible. I find that surprising. But the success is probably due to two factors. First, the definition of the model is extremely simple. The dynamics is basically driven by just one parameter. Second, it is often easy to modify the model such that it covers whatever one thinks is missing.

The talk will demonstrate that the definitional simplicity of the basic BC-model is deceptive. There are lots of counter-intuitive effects that usual simulation approaches (including my own) have overlooked for a long time. The effects, for the most part surprising non-monotonicities, are not completely understood until now.

I will then focus on a certain class of extensions. They introduce an external signal that is heard by some or all of the agents that exchange in an BC-process. The talk demonstrates the explanatory advantages of a methodological approach that substitutes random start distributions by their deterministic idealisations.

Presentation of the YSA Award to the Awardee**Prize Talk**

SOE 5.2 Mon 16:00 HSZ 01

Multilayer modeling and analysis of complex socio-economic systems — ●MANLIO DE DOMENICO — ICT Fondazione Bruno Kessler — Laureate of the Young Scientist Award 2020

Complex systems are characterized by constituents – from neurons in the brain to individuals in a social network – which exhibit special structural organization and nonlinear dynamics. As a consequence, a complex system can not be understood by studying its units separately because their interactions lead to unexpected emerging phenomena, from collective behavior to phase transitions.

Recently, we have discovered that a new level of complexity characterizes a variety of natural and artificial systems, where units interact, simultaneously, in distinct ways. For instance, this is the case of multimodal transportation systems (e.g., metro, bus and train networks) or

of social networks, whose interactions might be of different type (e.g. trust, trade, virtual, etc.).

The unprecedented newfound wealth of socio-economic data allows to categorize system's interdependency by defining distinct "layers", each one encoding a different network representation of the system. The result is a multilayer network model.

In this talk we will discuss the most salient features of multilayer systems, with special attention to socio-ecological and socio-technical ones.

Prize Talk

SOE 5.3 Mon 16:30 HSZ 01

Quantifying Science and Art — ●ROBERTA SINATRA — IT University of Copenhagen — ISI Foundation Torino — Laureate of the Young Scientist Award 2020

Performance, representing the objectively measurable achievements in a certain domain of activity, like the publication record of a scientist or the winning record of an athlete, captures the actions of an individual entity. In contrast, success, captured by impact or visibility, is a collective phenomenon, representing a community's reaction and acceptance of an individual entity's performance. We are often driven by the belief that the detection of extraordinary performance is sufficient to predict exceptional success. However, the link between these two measures, while often taken for granted, is actually far from being understood. Nevertheless, differently from performance, success is quantifiable and predictable: given its collective nature, its signatures can be uncovered from the many pieces of data around us using the tools of statistical physics, complex systems, network science, and data science. In this talk, I will focus on success in science and art as a way to test our ability to model and predict the collective phenomenon of success. I will discuss the role of luck in achieving success, and will address the relation between performance and success in a variety of settings, highlighting the challenges of gauging performance through success.

The session will be followed by an informal get-together with beer and pretzels alongside the poster session on the 4th floor of HSZ.