AKSOE 3: Dynamics of Groups and Organizations II

Time: Monday 14:00–16:00 Location: H8

AKSOE 3.1 Mon 14:00 H8

YouTube, don't you? — •Riley Crane and Didier Sornette — ETH Zürich, Chair of Entrepreneurial Risks, Zürich, Switzerland

Peering into the world of online social communities, we present a study of the dynamics of the number of downloads of videos on YouTube.com - a popular online destination for viewing, contributing, sharing, and discussing videos. We show how YouTube offers a unique probe into the dynamics of networks of viewers, characterized by scale-free distributions of statistics as well as power law memory kernels.

AKSOE 3.2 Mon 14:30 H8

Spatial Structure Formation and Population Dynamics: What a Landscape Ecologist could learn from a Ferromagnet — •Florian Hartig and Martin Drechsler — Helmholtz Centre for Environmental Research - UFZ, Department of Ecological Modeling, Leipzig, Germany

Transferable development rights (TDRs) have been proposed to allow for market based, self organized landscape management, where agents buy and sell rights for landscape development and ecological goals are incorporated in the trading rules. Unlike in CO2 emissions trading, space is a feature of crucial importance for species and therefore for TDR trading, which makes these markets so interesting from a system theoretical point of view.

We apply ecological-economic simulations to study the effect of an agglomeration bonus on a TDR market. The resulting landscape dynamics exhibit similarities to those of a spin system with a temperature (fluctuation of costs for habitats) and a next neighbor interaction (agglomeration bonus). Subsequently, the impact of the emerging landscape structures on population networks living on the latter is examined, taking species characteristics like population growth and dispersal into account.

We show that in addition to cost fluctuations, information access of the agents has a crucial influence on structure formation and the overall effectiveness of a TDR market. The gained understanding is used to optimize the market rules in terms of costs for species conservation.

AKSOE 3.3 Mon 15:00 H8

Non-equilibrium phase transitions in negotiation dynamics — Andrea Baronchelli[1,2], Luca Dall Asta[3,4,5], Alain Barrat[3,4,6], and •Vittorio Loreto[1] — [1]Dipartimento di Fisica, Universita "La Sapienza" and SMC-INFM, P.le A. Moro 2, 00185 ROMA, (Italy) — [2]Departament de Física i Enginyeria Nuclear, Universitat Politècnica de Catalunya, Campus Nord, Mòdul B4 c. Jordi Girona 1-3 08034 Barcelona (Spain) — [3]LPT, CNRS, UMR 8627, Orsay, F-91405 (France) — [4]Univ Paris-Sud, Orsay, F-91405 (France) — [5]Abdus Salam International Center for Theoretical Physics, Strada Costiera 11, 34014, Trieste (Italy) — [6]Complex Networks Lagrange Laboratory, ISI Foundation, Turin, Italy

We present a model of negotiation dynamics whose aim is that of mimicking the mechanisms leading to opinion and convention formation in a population of individuals. The key elements of negotiation are memory and feedback, while processes of opinion formation are usually modeled exploiting local majority or imitation rules. The model displays a non-equilibrium phase transition from an adsorbing state in which all agents reach a consensus to an active not-frozen stationary state characterized either by polarization or fragmentation in clusters of agents with different opinions. The transition is driven by external noise, intended as an 'irresolute attitude' of the agents in making decisions. We recover analytically the critical values of this parameter for various topologies of the agents' interaction network, and find results in perfect agreement with data obtained from numerical simulations.

AKSOE 3.4 Mon 15:30 H8

Why Capitalism is so stable — •Hans Danielmeyer and Thomas Martinetz — Institute for Neuro- and Bioinformatics, University of Luebeck, Ratzeburger Allee 160, 23538 Luebeck

The distributions of incomes, expenses, and wealth are determined for a population of owners and employees assuming that both classes make their living while the output of goods and services increases over 2 orders of magnitude by investment in two storable values per capita: The value of physical capital k for production on the factory floor, and the value of human capacity h for consumption on the home floor. The acquired part of h is quantitatively provided by education. The distribution of wealth shifts and sharpens with the capitalization ratio k/h. The income distribution stabilizes at 25 to 30 per cent for the owners.The maximum consumable share of the output is reached for k/h = 4. Since West Germany and Japan passed this critical ratio in 1990, further internal growth can only be achieved with better and higher education at an investment level of 7 per cent of the GDP. Germany's level decreased from 7 in 1975 to 4 per cent in 2005. These results are obtained without any adjustable parameter because the effective lifetimes of h and k are known from the industrial society's evolution, and the working orders on the factory and home floors are provided without cost by the laws of nature and our genetic outfit, respectively.