SOE 5: Award Session - Young Scientist Award for Socio- and Econophysics (YSA)

Time: Monday 16:15–18:15 Location: HSZ 03

Invited Talk SOE 5.1 Mon 16:15 HSZ 03

The Mesh of Civilizations in the Global Network of Digital Communications — Bogdan State[1], Ingmar Weber[2], Yelena Mejova[3], and •Michael Macy[4] — [1]Stanford University — [2]Qatar Computing Research Institute — [3]Yahoo! Research Barcelona — [4]Cornell University

In The Clash of Civilizations, Samuel Huntington challenged the prevailing consensus that the axes of international geopolitical alignments reflect economic and ideological divisions. Based on a top-down analysis of the alignments of nation states, Huntington famously concluded, "The great divisions among humankind and the dominating source of conflict will be cultural." On the 20th anniversary of the publication of Huntington's thesis, we revisit his analysis, taking instead a bottom-up view using hundreds of millions of anonymized email and Twitter communications among tens of millions of worldwide users to map the global alignment of interpersonal relations. We also extend previous research on spatial and geographic patterns by examining economic, demographic, historical, political, and cultural correlates of international communication densities. Results confirm the existence of the eight culturally differentiated "civilizations" posited by Huntington, with the divisions corresponding to differences in language, religion, economic development, and spatial distance.

Presentation of the YSA to Roger Guimera

Prize Talk SOE 5.2 Mon 17:15 HSZ 03

Complex (social) networks: from description to prediction — •Roger Guimera — ICREA & Universitat Rovira i Virgili, Tarragona, Catalonia

In complex systems, individual components interact with each other giving rise to complex networks, which are neither totally regular nor totally random. Because of the interplay between network topology and dynamics, it is crucial to characterize the structure of complex networks. Although during the last decade significant progress has been made in the study of complex networks, we are still far from the ultimate goals of understanding the precise mechanisms responsible for the observed topology, and evaluating the impact of the structure of the network on the dynamics of the system. The two main impairments to achieve these goals are: (i) most network data are very unreliable, that is, for most systems there is uncertainty as to what is the real structure of the network; and (ii) we lack the tools to extract the relevant information contained in the structure of networks, and to evaluate the impact of network structure on a system's dynamics. In my talk, I will discuss how we can use very general properties of complex networks to address these two very prominent problems, and even to go one step further and uncover previously unknown interactions. This opens the door to radically new applications of network theory, including, for example, the prediction of human decisions and preferences, and of novel drug interactions.

After the awardees talk, there will be a social gathering with beer and pretzels (on third floor of the HSZ, close to HSZ03 and the posters)