SOE 17: Social Systems, Opinion and Group Dynamics: Dynamics of Team and Network Formation

Time: Wednesday 15:30–16:15 Location: H36

SOE 17.1 Wed 15:30 H36

Is bigger always better? How local online social networks can outperform global ones — •Kaj Kolja Kleineberg and Marian Boguna — Departament de Fisica Fonamental, Universitat de Barcelona, Marti i Franques 1, 08028 Barcelona, Spain

The overwhelming success of online social networks, the key actors in the cosmos of the Web 2.0, has reshaped human interactions on a worldwide scale. To help understand the fundamental mechanisms which determine the fate of online social networks at the system level, we describe the digital world as a complex ecosystem of interacting networks. Here, we discuss the impact of heterogeneity in network fitnesses induced by competition between an international network, such as Facebook, and local services. To this end, we construct a 1:1000 scale model of the digital world, consisting of the 80 countries with the most Internet users. We show how inter-country social ties induce increased fitness of the international network. Under certain conditions, this leads to the extinction of local networks; whereas under different conditions, local networks can persist and even dominate the international network completely. These findings provide new insights into the possibilities for preserving digital diversity.

SOE 17.2 Wed 15:45 H36

Why some teams perform and other do not: Quantifying and analyzing human-human interactions in early stage product design teams — •Achim Gerstenberg and Martin Steinert — Department of Engineering Design and Materials, NTNU

The concept creation and evaluation phase of early stage engineering product design is often conducted in co-located design teams. We wonder what makes some teams perform outstandingly and create innovative products while others deliver conservative solutions. We believe that one decisive component is how team members interact subconsciously with one another. We suggest an experimental setup for quantifying and analyzing human-human interactions that lead to in-group relatedness. We propose to measure spatial proximity and touch between group members, body orientation and posture, gestures and eye contact as indicators for in-group relatedness. This concept of relatedness is linked to intrinsic motivation, learning ability and favoring group over individual gains. We aim to use multivariate and time series analysis for identifying statistically significant correlations between indicators of in-group relatedness and performance. The aim of this presentation is to initiate a discussion about the experimental design and the data analysis.

SOE 17.3 Wed 16:00 H36

Why a hypothetical 4-point rule would be good for soccer — •Andreas Heuer[1], Dennis Riedl[1,2], and Bernd Strauss[2] — [1]Institute f. Phys. Chemistry, WWU Münster — [2]Institute of Sport and Exercise Sciences, WWU Münster

It is shown how the rules of a soccer match influence the actual outcome via the impact of psychological effects [1]. More specifically, we present a statistical framework which allows one to define the theoretical distribution of final goal differences. Comparison with the actual distribution, determined for different international leagues, reveals significant deviations. They are mainly reflected by an increase of the actual number of draws. This effect is stronger in the case of the 2-point rule (mainly before 1995) as compared to the 3-point rule. Extrapolation suggests that in case of a hypothetical 4-point rule this effect should disappear. Since the increased number of draws reflects a more passive behavior during the final stage of a match [2,3], the introduction of the 4-point rule would thus very likely improve the quality of soccer matches. We show that this result is in quantitative agreement with the prediction of the prospect theory [4], describing the human behavior in different socio-economic situations.

[1] D Riedl, B. Strauss, A. Heuer, J. Sport Exerc. Psychol. 37, 316-326 (2015).

[2] A. Heuer, O. Rubner, PloS ONE 7/11, e47678 (2012).

[3] A. Heuer, Der perfekte Tipp - Statistik des Fußballspiels, Wiley-VCH, Weinheim (2012).

[4] D. Kahnemann, Thinking: fast and slow, Allen Lane (2011).