AKSOE 3 Dynamics of Groups and Organizations II

Time: Monday 14:00–15:30   Room: BAR 205

AKSOE 3.1 Mon 14:00 BAR 205

Personal versus economic freedom — •KATARZYNA SZNAJD-WERON — University of Wroclaw, Institute of Theoretical Physics, pl. M. Borna 9, Poland

Modern societies rely heavily on group decision, but the part of what makes for healthy faith communities is a sense that all members feel heard. That is why finding consensus is very important in many branches of social life - from very personal problems (like religion, abortion, etc.) to economic problems (like marketing, investments, etc.). Recently both sociologists and physicists have tried to find out when a complete consensus from initially diverging opinions emerges. In this talk we propose a model which allows to discriminate between two kinds of behavior, connected with areas which we will call personal and economic. It seems that an attitude with regard to the personal area spreads in a different way than that with regard to the economic area. Thus, we assume that each agent tries to influence its neighbors, but in the personal area the information flows inward from the neighborhood (like in most opinion dynamic models), whereas in the economic area the information flows outward from the agent or group of agents to the neighborhood.

AKSOE 3.2 Mon 14:30 BAR 205

Enforcing consensus — •JAN LORENZ[1] and DIEMO URBIG[2] — [1]University Bremen, Department of Mathematics, Bremen, Germany — [2]Humboldt-Universität zu Berlin, Department of Computer Science, Berlin, Germany

We explore possibilities of enforcing consensus in continuous opinion dynamics due to modification of communication rules. We regard the model of Deffuant et al. [1], where n agents adjust their continuous opinions as result of random pairwise encounters whenever their opinions differ not more than a given bound of confidence ϵ. High ϵ leads to consensus, while low ϵ leads to polarization into several opinion clusters.

We drop the random encounter assumption and ask: How low may ϵ be such that consensus is still possible? Mathematical analysis shows that consensus can be reached for drastically lower ϵ than in the random pair wise case. Apart of planning communication for the whole group, we simulate dynamics with simple agent-based strategies. We show that balancing agents that search opinions from different sides to compromise with can raise the chances for consensus as well as curious agents can, who explore opinions in the direction they had previously moved to. Thus, raising the chances for consensus is possible not only due to a great master plan but also to agent-based strategies.

[1] G. Deffuant, D. Neau, F. Amblard, & G. Weisbuch. Mixing beliefs among interacting agents. *Advances in Complex Systems*, 3:87–98, 2000.

AKSOE 3.3 Mon 15:00 BAR 205

On the Emergence of Hierarchies as Governance Structures — •DIANA MANGALAGIU[1] and RADEL BEN-AV[2] — [1]Reims Management School, 59, rue Taittinger, 51061 Reims, France — [2]Racah Institute Of Physics, Givat Ram Hebrew University Jerusalem 91104 Israel

We discuss a model for the emergence of hierarchies and firms. The hierarchy, as governance structure is a contractual construction. It is conceived not as a stand-alone entity, but is to be compared with alternative modes of governance. In our model, the agents represent individuals in the market. They are heterogeneous, cognitive, self-interest and their only goal is to increase their own achievements. Initially, the agents are isolated. The model dynamics allows the use of contracts between agents in order to increase the overall utilization. The model rewards collaboration. The collaboration is achieved through "employment contracts" between the initially isolated agents. There is a limitation on the bandwidth of communication between the agents, which forces the agents to have only a limited number of connections. When an opportunity in the market is optimally executed only with a large number of agents, a hierarchy is bound to appear as a favourable outcome of the dynamics. As a result a tree-graph of relations between agents can emerge. We investigate the contracts that are generated in the model. Some forms of contract facilitate the emergence of hierarchies while others not. In addition, we investigate the emerged hierarchies as a function of the different contract parameters (attributes, renewal interval, incentives intensity).