Data science and Complex networks szeminárium

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Cím: Structural spillovers and the emergence of institutions: Agent-based modelling as a means to bridge network science and the humanities

Absztrakt:
Built upon the suggestion of Bednar & Page (2007), game theory is used as a means for studying culture and institutions. Here, economic agents are modelled as Moore machines that need to play different games sequentially. Thus, there is an incentive to economise cognitive effort and to develop strategies that work not only in one, but in several games. This is consistent with numerous empirical studies in decision sciences indicating that human beings develop behavioural receipts and heuristics which they apply in numerous contexts.

Based on the basic idea of modelling culture and institutions using multiple games, the related literature is extended into a network dimension: while there is some work on how agents use behavioural receipts in one context as a vantage point for their behaviour in other contexts (behavioural spillovers), the impact of social ties formed in one context to the behaviour in another context (structural spillovers) is less understood. Here an agent-based model that addresses this challenge is introduced: how the social ties developed in one interaction context can affect the performance of players in another interaction context. The impact of various fixed interaction structures on the performance of the agents in various games is tested, just as the effect of dynamic networks where agents choose their interaction partners endogenously.

Such models can help to introduce results from network sciences to social sciences, and serve as a means to facilitate interdisciplinary research. On the other hand, there are also potential pitfalls, such as the heavy reliance on numerical solution techniques and the enormous flexibility in specifying such models.

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