

Behavior and Centrality in Idea Exchanging Adaptive Social Networks

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Adaptive networks [1] are increasingly being used to model complex phenomena in the social sciences. Among these phenomena is the exchange of ideas over social networks. One body of research demonstrates that the selection pressure experienced by a set of evolving ideas is directly tied to the topology of static social network in which the ideas are embedded [2] [3]. Other investigators have found that the clustering behavior of an adaptive social network is strongly affected by the manner in which links are updated whenever ideas are exchanged between individuals [4]. In this study, we investigate the relationship between individual behavior and network position. Unlike many previous studies, our model considers multiple ideas residing within each individual, real valued directed social links between individuals, and heterogeneous behavior distributions. Our individual agents must divide their time into 3 distinct actions: thinking about and reconciling one's own ideas, disseminating ideas to others, and listening to ideas from one's peers. Each individual is host to a local population of ideas, some of which are fixed, while others can be replaced as a result of social interaction. Individuals evaluate ideas based on their local idea population, and these

evaluations are used to update the (directed) link weights whenever ideas are exchanged. Using this model, we calculate the distribution of network centrality over the space of all possible individual behaviors. Details of the model, simulation results, implications, limitations and future extensions of the model will be discussed.

REFERENCES

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