

Effects of Initial State on Opinion Formation in Complex Social Networks with Noises

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Abstract : Opinion formation in complex social networks may exhibit complex system dynamics even when based on some simplest system evolution models. An interesting and important issue is the effects of the initial state on the final steady-state opinion distribution. By carrying out extensive simulations and providing necessary discussions, we show that, while different initial opinion distributions certainly make differences to opinion evolution in social systems without noises, in systems with noises, given enough time, different initial states basically do not contribute to making any significant differences in the final steady state. Instead, it is the basal distribution of the preferred opinions that contributes to deciding the final state of the systems. We briefly explain the reasons leading to the observed conclusions. Such an observation contradicts with a long-term belief on the roles of system initial state in opinion formation, demonstrating the dominating role that opinion mutation can play in opinion formation given enough time. The observation may help to better understand certain observations of opinion evolution dynamics in real-life social networks.

Keywords : opinion formation, Deffuant model, opinion mutation, consensus making

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