Mechanisms behind collective social phenomena

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Collective social phenomena can be modelled considering a set of agents in different possible states which are located at the nodes of a complex network of interactions. I will give an overview of some relevant mechanisms in the modelling of paradigmatic collective phenomena such as the consensus and social contagion problems. These mechanisms include dyadic interaction vs. group interaction, co-evolution dynamics of the topology of the network of interactions and the state of the agents, and aging introduced as non-poissonian distributions of the interaction interevent times.

I will illustrate these mechanisms in the Voter Model of opinion formation[1, 2], the Granovetter-Watts model of complex contagion [3, 4] and the Coordination Game[5, 6]. I will also discuss the problem of social polarization and social balance through a general homophily-heterophily coevolution model [7].

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