

HUMAN DYNAMICS AND SELF-ORGANIZATION OF HIERARCHY AND VILLAGES

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We present a minimal agent-based model for self-organization of hierarchy which is characterized by fighting between agents and relaxation of their wealth. By Monte Carlo simulation and a mean field analysis, we show that the self-organization of hierarchy takes place when the ratio of the fighting probability and the relaxation constant exceeds a critical value. In order to understand the spatial inhomogeneity in our society and the effects of social trends, we consider agents on lattice sites of a square lattice and allow them to perform random walk on the square lattice. We find that in a war-like society where agents try to fight all the time and to fight against the strongest among the neighbors, a village emerges when the hierarchy is self-organized. We also show that the structure of the hierarchical society strongly depends on the order taken by agents for random walk. Namely, when the agents are allowed to make a move in random order, a large village appears with layered structure of the ranking of agents around which some losers stray[1]. On the other hand, when the agents make their move in a pre-assigned order, several villages can be formed each of which has similar social structure[2].

Keywords

Social hierarchy, war-like society, agent-based model, village

References

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