Social clusters: role of memory and opinion alignment

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Individuals building social systems are characterized by complex states, and interactions among individuals can align their opinions. The Axelrod model describes how local interactions can result in emergence of cultural domains. We discuss two variants of the Axelrod model where local consensus is reached either by listening and accepting one of neighbors' opinion or two agents discuss their opinion and achieve an agreement with mixed opinions. It is shown that the local agreement rule affects the character of the transition between the single culture and the multiculture regimes.

In the accepting model, during each interaction the receiver accepts the whole providers opinion while in the discussing model the opinions are aligned in the democratic way: on average, each interacting agents accepts half of traits of its interlocutor. The discussing updating result in the behavior very similar to the original Axelrod model (discontinuous transition). In contrast, the accepting model leads to graded transition from the ordered to the fully disordered final states.

Additionally, we explore the Axelrod model with an extended conservativeness which incorporates not only similarity between individuals but also a preference to the last source of accepted information. The additional preference given to the last source of information increased the initial decay of the number of ideas in the system, changes the character of the phase transition between homogeneous and heterogeneous final states and could increase the number of stable regions (clusters) in the final state.

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