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Attitudes with multiple dimensions and hierarchical bounded confidence: A mechanism producing more extreme, but balanced attitudes

Attitude theory considers attitudes as summary evaluations of psychological objects. They are composed of beliefs that associate an object with some relevant attributes and evaluations of these attributes. This single attitude's multi-dimensionality is usually not considered in models of opinion and attitude dynamics that approach the opinion formation process in a group of interacting individuals. The influence coming across by other agents is influenced by the interaction partners' heterophily and their selective attention. Both mechanisms, in models of opinion dynamics often summarized by the concept of bounded confidence, cause agents to be less affected by agents with a strongly differing attitude. We present a model of a social attitude formation process that incorporates multi-dimensionality of a single attitude and bounded confidence at the overall attitude but also at the attributes' level. Agents compromise if they do not differ too much. We believe that attitudes towards complex issues as political programs or complex products are not only affected by exchanging opinions about the whole, but also by communication about single aspects. We analyze this model based on Markov chains. We are able to show that the hierarchical bounded confidence based on a multi-dimensional model of attitudes in connection with social interaction promotes an attitude balancing principle, such that attributes associated with the same object tend to be evaluated similarly. This balancing comes without need for any balancing mechanisms located in the agents themselves. We can show that there are less and bigger majorities with more extreme attitudes than predicted by other models of multidimensional opinion dynamics. Without any repulsion mechanism, the compromising agents with hierarchical bounded confidence get more extreme despite they interact with many agents that have less extreme attitudes. We compare our results with an agent-based model for continuous opinion spaces with a finite number of agents.

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