WHAT IS IT?

This is an adaptation of the Relative Agreement model of opinion dynamics (Deffuant et al. 2002), which models how extreme, minority views in a population can take hold in a population of individuals who are influenced by each others' opinions. This particular adaptation extends the Meadows and Cliff (2012) implementation of the Relative Agreement model in a manner that enables the exploration of the effect of the network structure among the agents.

HOW IT WORKS

Agents are initialized with heterogeneous opinions expressed as a point on a continuum from -1 to 1. Each agent also has a certain level of confidence in their opinion, which is expressed by a bounded interval around the opinion -- i.e., the narrower the interval, the higher the confidence. "Extremist" agents are defined as those with values less than -0.8 or greater than 0.8. Extremists have a high degree of confidence in their opinion. The remaining agents are classified as "moderate." Moderate agents have less confidence in their opinion than extremist agents. As the model runs, agents randomly interact, updating their opinion based on what they learn about their interaction partner's opinion. The amount an opinion is updated depends on the degree to which their confidence intervals overlap.

The "opinions" plot shows the changes in the agents' opinions over time. There are three classes of outcomes that characterize the final beliefs of the population of agents: central convergence, bipolar convergence, and single extreme convergence. This information is quantified by a "convergence indicator" (as described in Cliff and Meadows 2012). When this indicator is approximately 0, central convergence has occurred; when the indicator is approximately 0.5, bipolar convergence has occurred; and when the indicator is approximately 1.0, single extreme convergence has occurred. A typical (though not only) exercise with the model is to understand under what conditions the extremists' views come to dominate the population (single extreme convergence).

HOW TO USE IT

This model implements three initial network structures among agents, which bias the likelihood of interaction: fully connected graph (equivalent to the random mixing assuming by the original model), small world network, and preferential attachment (scale-free) network.

The NETWORK-TYPE drop-down box allows you to select the desired network. If a small world network is selected, it will be created based on the value of the REWIRING-PROBABILITY slider. You can visualize the network structure using the graph titled "Network Structure." Calculated clustering coefficient and average path length are displayed in the CLUSTERING-COEFFICIENT and AVERAGE-PATH-LENGTH monitors respectively.

You can change the number of people in the network using the NUMBER-OF-PEOPLE slider. The PROPORTION-OF-EXTREMISTS slider determines the proportion of these people who have extreme opinions (extremists are displayed in red). All agents have opinions between the values of the

MIN-OPINION and MAX-OPINION sliders, but extremists' opinions are within EXTREME-DISTANCE of these two extremes. Moderates' opinions are between the values of the MIN-MODERATE-OPINION and MAX-MODERATE-OPINION sliders, which automatically update based off the value of EXTREME-DISTANCE (moderates are displayed in white). You can adjust moderates' and extremists' uncertainty using the UNCERTAINTY-OF-MODERATES and UNCERTAINTY-OF-EXTREMISTS sliders respectively. You can also modify the ADJUSTMENT-RATE slider, which controls the extent to which interactions cause opinions to change.

After adjusting the parameters, press the SETUP button to create and initialize the people. Click the GO-ONCE button to perform one iteration; click the GO-FOREVER button to perform iterations in a loop. You can view output in the plot titled "opinions."

CREDITS AND REFERENCES

Deffuant, G., Amblard, F., Weisbuch, G. and Faure, T. (2002). How can extremism prevail? A study based on the relative agreement interaction model. Journal of Artificial Societies and Social Simulation 5(4): 1 http://jasss.soc.surrey.ac.uk/5/4/1.html.

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Wilensky, U. (2005). NetLogo Preferential Attachment model. http://ccl.northwestern.edu/netlogo/models/PreferentialAttachment. Center for Connected Learning and Computer-Based Modeling, Northwestern University, Evanston, IL.

Wilensky, U. (2005). NetLogo Small Worlds model. http://ccl.northwestern.edu/netlogo/models/SmallWorlds. Center for Connected Learning and Computer-Based Modeling, Northwestern University, Evanston, IL.