Preventing extreme polarization of political attitudes

December 8 2021

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Encouraging interactions between people on opposite ends of the political spectrum may not be the best way to foster tolerance in a polarized nation.

In fact, a new study in the *Proceedings of the National Academy of Sciences* suggests extreme polarization can be avoided when two sides of a stubbornly intolerant population have low exposure to each other.

Stephanie Forrest, a Sante Fe Institute External Professor and computer scientist at Arizona State University, and coauthors Joshua Daymude, a

postdoctoral researcher at ASU, and Robert Axelrod, a professor of political science at the University of Michigan, created an agent-based model to study ideological polarization that is unique in its simplicity.

In their Attraction-Repulsion Model (ARM), each individual agent is assigned two rules governing their behavior. In essence, the rules dictate that individuals move closer to or further away from extreme positions based on their attraction or repulsion to others' ideological positions.

"We tried to make the simplest model possible that captures what we thought were realistic assumptions," Daymude said. "It enables us to ask questions like what happens over time when the agents are more or less tolerant of others' ideological positions or more or less likely to be exposed to differing viewpoints."

Using the model, the researchers showed that a high level of intolerance was the key component of runaway polarization, especially when it was enhanced by high exposure between dissimilar individuals.

"While it at first may appear contrary to practical experience, our model suggests strictly limiting exposure to dissimilar views could be an effective mechanism for avoiding rapid polarization," Daymude said.

Another interesting finding of the study was that extreme polarization could be avoided when individuals were assigned a preferred ideological position based on economic self-interest and acted in favor of this assigned position.

"Even a small amount of self-interest can dramatically reduce polarization," Forrest said. "This is perhaps the most promising result of the model because it suggests a direction for policy intervention by which this polarizing dynamic could be moderated."

This paper is part of a *PNAS* special issue on the dynamics of polarization. The 11 papers and additional perspectives in the special issue include contributions by SFI External Professor Jenna Bednar and SFI External Professor and Science Board Member Scott Page, and came out of a series of "Dialogues in Complexity" workshops co-hosted by Forrest and SFI Science Board Member Simon Levin, Andrea Graham, and Ann Kinzig. The articles represent collaborative research between political scientists and complex-systems theorists.

"Polarization is a process and that is what complexity theory can best help us understand," write Levin and special issue co-editors Helen V. Milner and Charles Perrings in their introduction. "The main goal of the Special Feature is to deepen our understanding of the dynamics of political polarization and related trends, and especially the interplay among these processes at multiple scales, from the local to the international."

More information: Robert Axelrod et al, Preventing extreme polarization of political attitudes, *Proceedings of the National Academy of Sciences* (2021). DOI: 10.1073/pnas.2102139118

Provided by Santa Fe Institute