The Volatility of Social Influence When Everyone is Your Neighbor

THERE IS LITTLE DOUBT THAT AMERICAN POLITICAL ELITES have become extremely polarized in recent years. Whether ordinary citizens are similarly polarized is a more contentious question — one that continues to polarize scholars. For example, legal scholar Cass Sunstein has argued that the Internet and other information technologies are helping to foster a "balkanized speech market," in which people expose themselves to like-minded sources and insulate themselves from alternative points of view. Economists Matthew Gentzkow and Jesse Shapiro counter this with evidence that ideological segregation in Internet news consumption is low, both in absolute terms and relative to ordinary face-to-face interactions.

In this brief essay, I will show how both claims could be correct, and how some features of information technology create the potential for distinct and sometimes dramatic patterns of social influence.

There is little doubt that individual psychological processes contribute to political polarization. For example, social psychologist Susannah Paletz and I found that when people learn of new research findings on controversial policy topics, they are reluctant to speculate about the political affiliations of the researchers…unless the researchers' findings contradict their own views. But it is far from clear that such psychological tendencies are increasing over time. What is surely changing is the ability of ordinary citizens to monitor an ever-increasing share of opinions in the population at large.

In a forthcoming paper in *Psychological Review*, I propose and test a mathematical model of social influence based on the notion that people tend to resist social pressure until a critical level of opposition is encountered. This critical threshold constitutes one key parameter of the model. A second key parameter is *norm clarity*; it measures the degree to which members of a faction share the same threshold. When clarity is very high, the model predicts the kind of stark "tipping points" explored by Thomas Schelling (in his analysis of racial segregation in housing) and popularized in the writings of Malcolm Gladwell. But the model also explains why such dramatic discontinuities are far from ubiquitous; when clarity is sufficiently low, any changes will be gradual rather than sudden. My paper offers a wide variety of tests of the model using classic data sets on conformity, deliberation, the diffusion of innovations, and social movements, as well as checks to verify that the model finds thresholds where it should and not where it shouldn't.

The model can be used as a tool to estimate these parameters in real-life situations. But it can also be used to explore social

Figure 1 - *Vision = 1*

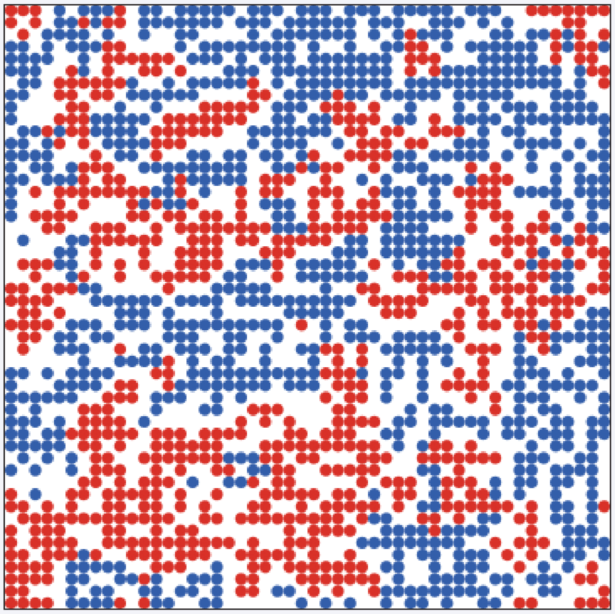

Figure 1. *Clustering* After 200 iterations, an initially random configuration of 50% Blue and 50% Red forms dense clusters of like-minded agents. Both sets of actors have Threshold = .5, Clarity = 5, and Vision = 1 (allowing each agent to monitor up to 8 immediate neighbors).

Figure 2 - *Vision = 10*

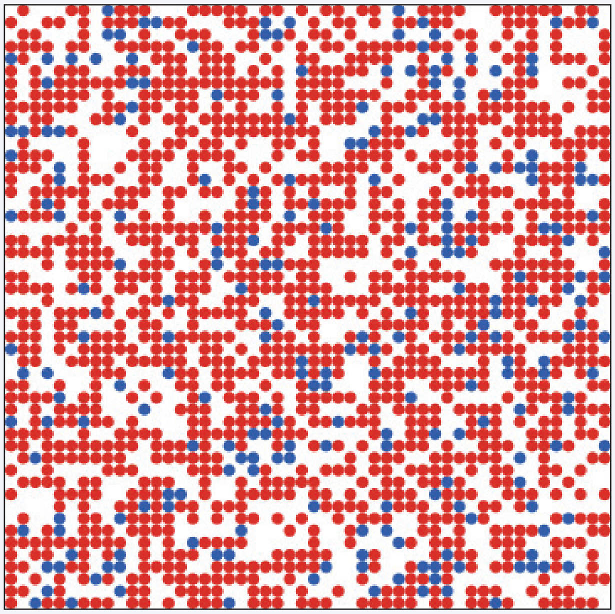

Figure 2. *Depolarization*
The same settings as in Figure 1, except that Vision is now at 10 (corresponding to a view of up to 440 neighbors per agent).

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scenarios that would be nearly impossible to test in social psychology experiments. Some of my initial simulations use an approach called *agent-based modeling*, in which large numbers of simulated agents simultaneously react to the distribution of opinion in their neighborhood in accordance with the threshold model. After they react, the social situation has changed, and so they each react again, sometimes but not always reaching a stable equilibrium. In these simulations, I have found that the threshold and clarity parameters produce qualitatively different behavior as I vary a third parameter called *vision*.

Vision refers to the number of neighbors whose opinions each agent is able to monitor. I believe that the vision parameter is quite important because we are seeing a dramatic shift in our ability to monitor the views of an ever-increasing share of the national (and ultimately global) population. How? Through an endless barrage of highly publicized public opinion polls, user recommendations on Amazon.com and other commercial sites, "likes" on Facebook and YouTube, and rants in blogs and Twitter posts.

As vision increases, actors are less attuned to their immediate neighborhood and more attuned to the population as a whole. Moreover, as vision increases, actors' perceptions are based on larger sample sizes, a factor that tends to reduce volatility. But actors' perceptions can become increasingly correlated, which can sometimes *increase* volatility.

To illustrate how influence patterns emerge in the model, consider a completely random configuration of 800 Red and 800 Blue agents, spread across 2500 locations. (There are 900 empty cells to allow for local variation in social density.)

Start with a base case where each group has a Threshold of .5, Clarity set at a moderate level of 5, and Vision = 1, so agents can "see" their immediate neighbor in each of the eight major compass directions — a maximum of 8 neighbors. Figure 1 shows what happens after 200 time periods. The faction sizes have changed very little — 55:46 rather than the original 50:50 split. But rather than being randomly scattered, the opinion groups are clustered into coherent bands of red and blue — not because they moved together but because people conformed to their local neighborhood culture.

But if Vision increases to 10, agents can see 10 cells in each direction — a maximum of 440 neighbors. Figure 2 shows one example of what can happen — *depolarization*, in this case, a dramatic shift toward the Red opinion. This is not due to any intrinsic drawing power of Red arguments. Rather, it is entirely due to the way Vision and Clarity can amplify slight variations in initial random clustering. (Thus in other runs of the same scenario, sometimes Blue wins, and sometimes there is a tie.) At this level, Vision is broad enough to produce correlated shifts across many agents, yet not so broad as to provide an accurate perception of the full population's even split.

Finally, Figure 3 shows that at the same level of Vision, increasing Clarity dramatically amplifies clustering. This example is more like the first one, with sustained polarization, but now the clusters are very large — an image reminiscent of the regional differences in "Red and Blue" maps of the American electorate.

Naturally, these simulations are not "findings" about the world; rather, they are hypothetical projections from a model that has proven useful in fitting real data. Of course, the simulations abstract away many factors, like media campaigns and geographic mobility. Still, they illustrate how changes in our collective ability to monitor social opinion data may produce not only polarization, but also the potential for radical *depolarization* on some issues. The latter pattern is a reminder that collegial and reasoned deliberation isn't the only alternative to polarization — another alternative is groupthink, a premature closure of debate on issues. As our ability to monitor opinions broadens, we are likely to see increases in clustering and correlated movement that can foster either polarization or depolarization. Both kinds of change will create threats for some stakeholders and opportunities for others. G

Figure 3 - *Vision = 10*

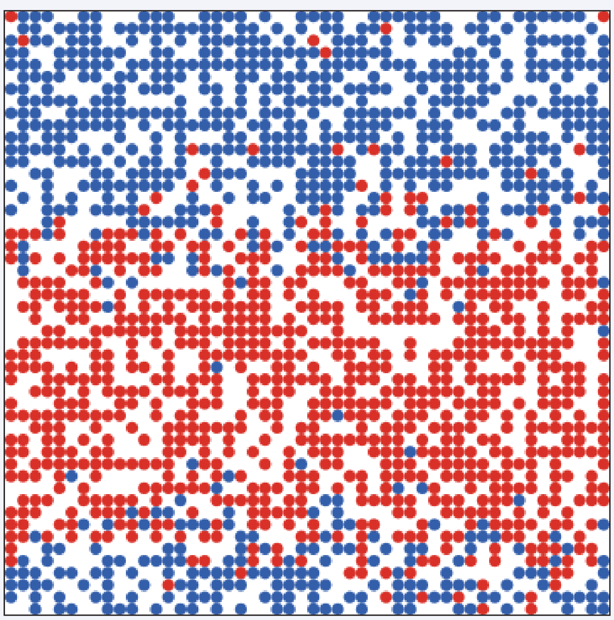

Figure 3.
200 iterations of the same settings as Figure 2, except Clarity is increased to 10.

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