

## **Simulating History: The Problem of Contingency**

**David R. Mandel\***

*University of Victoria*

*Simulations of world history, like the real thing, are complex systems whose outcomes most often (if not always) constitute highly contingent events. Rarely (if ever) will researchers be able to find unqualified main effects that explain important outcome measures that affect the security and prosperity of the world community. The problem of contingency for testing hypotheses about the causes of certain types of outcomes (e.g., mass killing, starvation, economic collapse) from only a few simulations of history is discussed with reference to the Global Change Game simulation reported by Altemeyer (2003).*

Simulations can play an important role in scientific discovery, particularly (but not exclusively) in cases in which the phenomena under examination are nonrepeatable and may not yet exist or no longer exist. For example, political scientists and historians cannot literally go back to a particular date in the past, induce a “minimal rewrite” of historical fact, and then allow history to resume itself so that they may assess the impact of the manipulated features (Tetlock & Belkin, 1996). In short, understanding the causes of nonrepeatable events cannot be achieved using standard experimental methods involving random selection, random assignment to experimental and control conditions, and sample sizes large enough to permit powerful tests of statistical inference. Rather, in such cases, it may prove useful to construct a simulation model of the phenomenon of interest and then to explore how the model behaves as a consequence of variations in its inputs, parameters, and/or syntax.

Altemeyer’s Global Change Game is an example of a simulation model. The participants represent the world’s citizens, and there is a set of rules for estimating the consequences of the participants’ actions or inactions. In Altemeyer’s 1998 simulation, two runs of the Global Change Game were undertaken. In the first

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\*Correspondence concerning this article should be addressed to David R. Mandel, Department of Psychology, University of Victoria, P.O. Box 3050 STN CSC, Victoria, British Columbia V8W 3P5, Canada [e-mail: dmandel@uvic.ca].

run, all participants scored highly on a measure of right-wing authoritarianism, but none scored highly on social dominance. In the second run with a new sample, all participants once again scored highly on right-wing authoritarianism, and a subset also scored highly on social dominance. These social dominators were nonrandomly assigned so that they were spread across the major geographic regions of the world. The contrast between the two runs was examined in order to infer the effect of having a small set of social dominators present among a larger set of nondominant, right-wing authoritarians.

Altemeyer (2003) acknowledged some of the important limitations of this study. First, a sample of right-wing authoritarians drawn from an introductory psychology course is undoubtedly unrepresentative of the world population of right-wing authoritarians. Indeed, given that trait ascriptions in such research are based on one's ranking in a distribution of scores on the relevant personality measures, it is likely that many, if not most, participants would be reclassified as nonauthoritarian had they been selected from a truly representative sample of the world's population. Second, the world is clearly much more complex than the simulation model. For instance, in reality, people cannot simply appoint themselves to presidential or prime ministerial positions of power on a whim. An important question to ask, however, is how informative this simulation would likely be even if the sample was representative of right-wing authoritarians and social dominators and if the real world was no more complex than the simulation. I propose that we still would not be able to conclude much from the simulation because it was based on only a single contrast of two runs.

The key problem with Altemeyer's analysis is that one cannot justifiably infer that the differences in outcome are attributable to the differences in initial conditions—much like one cannot reasonably claim to have found a gender difference on some important dependent measure after contrasting the behavior of one male and one female. Why? In part, this is because the unit of analysis in Altemeyer's simulation research is runs, not participants. Hence, there are two conditions (no social dominators vs. some social dominators, roughly controlling for right-wing authoritarianism), each with  $n = 1$ . The problem of drawing conclusions from this study, however, is augmented further by the fact that we are dealing with a complex system characterized by amplification of fluctuations over time or sensitive dependencies (Mandel, 1995; Prigogine & Stengers, 1984). Stated differently, simulations of complex systems like the Global Change Game yield outcomes that are highly contingent. Given the same set of players, it is likely that "historical accidents"—occurrences that represent an unpredictable or fortuitous confluence of factors—would lead to history unfolding in surprisingly different ways on alternative runs. Such accidents, which can reroute world history—not to mention personal histories (Bandura, 1982)—are more likely to be due to higher order interactions among actors, stimuli, and occasions rather than their main

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effects (Lebow, 2000). Indeed, the qualities of actors in a complex system are likely to develop in response to the fortuitous events that, in turn, shape how these actors subsequently behave. More generally, the causal processes that operate in complex systems with high- $N$  variables are characterized by multiple, interacting feedback loops and autocatalysis.

For these reasons, even putting aside the “riddle of induction” (Goodman, 1973), we cannot justifiably be confident that the findings of Altemeyer’s simulations are projectable (see, e.g., Cederman, 1996). Indeed, it is an empirical question whether the within-population variability in global outcomes would not be as great as (in some cases, perhaps even greater than) the between-population variability. The answer to that question would involve simulating many more runs in each condition of interest and conducting the appropriate inferential statistics—or better yet, having independent research laboratories replicate the simulation. How would history turn out if 30 runs of the Global Change Game were conducted with right-wing authoritarians who were all low in social dominance and another 30 runs were conducted with right-wing authoritarians of whom, say, 10% were also social dominators? Perhaps we would learn that, on some consequential dimensions (e.g., deaths due to ethnopolitical violence), the presence of a small number of social dominators in a population of right-wing authoritarians made a consistent critical difference or at least a reliable mean difference, whereas on other dimensions it did not seem to matter. Perhaps we would also learn something about the situational factors that permit social dominance and right-wing authoritarianism to manifest themselves in ways that threaten the prosperity and security of the world community.

If social domination and right-wing authoritarianism are a lethal combination, as Altemeyer has suggested, then experimental tests with an adequate sample of simulated runs of the Global Change Game (and other research along these lines) would undoubtedly be well worth the effort. The social dominator/right-wing authoritarian combination that Altemeyer has described might provide a useful indicator of leaders who, under the right geopolitical conditions, could—and would want to—transform themselves into instigators of collective violence. Elsewhere (Mandel, 2002), I have proposed that although some social psychological attention Q1 has been paid to the important question of how ordinary citizens become perpetrators of collective violence (e.g., Miller, 1999; Newman & Erber, 2002; Staub, 1989), there is a paucity of research in social psychology directed toward understanding the psychological factors that contribute to the emergence of *instigators* of collective violence. If we accept that most consequential outcomes in complex social systems—including the rise of instigators of collective violence—are the result of interactions between dispositional and situational factors, then we should be looking for not only personality attributes that might threaten the security of the world community, but also the situational factors that catalyze the expression of those attributes in ways that increase threat.

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## **Queries**

- Q1** AU: Should be sociopsychological?
- Q2** AU: Please provide page numbers when available?
- Q3** AU: Please provide a short (2-3 sentences) bio.