

AGENT_ZERO AND GENERATIVE SOCIAL SCIENCE

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ABSTRACT

Agent_Zero is a formal alternative to the rational actor model that has dominated social science since the 1940s. This software individual is the first to be endowed with distinct affective, deliberative, and social modules. Grounded in neuroscience, these internal facets interact to produce far-from-rational individual behavior. And when ensembles of these agents interact spatially they generate a panoply of social dynamics from genocide to financial panic to vaccine refusal. Epstein will discuss the background of Agent_Zero, demonstrate its application to an array of fields, and discuss future research directions including large-scale modeling in the economic, behavioral, and health sciences.

AUTHOR BIOGRAPHY

JOSHUA M. EPSTEIN is Professor of Emergency Medicine at Johns Hopkins University, director of JHU's Center for Advanced Modeling and co-director of its Systems Institute. He holds joint appointments in applied mathematics, civil engineering, economics, environmental health sciences, biostatistics, international health, and is External Professor at the Santa Fe Institute. A pioneer in agent-based modeling, Epstein has authored seminal books including *Growing Artificial Societies: Social Science from the Bottom Up*, with Robert Axtell (MIT Press, 1996); *Generative Social Science: Studies in Agent-Based Computational Modeling* (Princeton Press, 2006); and recently *Agent_Zero: Toward Neurocognitive Foundations for Generative Social Science* (Princeton University Press, 2013). He holds a Ph.D. from MIT, has taught at Princeton and lectured worldwide. In 2008, he received an NIH Director's Pioneer Award and in 2010 an Honorary Doctorate of Science from Amherst College, his alma mater.