Preface

EMOTIONAL, COGNITIVE, AND SOCIAL FACTORS shape the behavior of individuals in groups and hence shape the emergence of important social dynamics, from genocide to financial panic. I wish to generate such social dynamics "from the bottom up," in social networks of neurocognitively plausible individuals. To this end, I introduce a new theoretical entity, *Agent_Zero*, endowed with interacting emotional/affective, cognitive/deliberative, and social modules. *Agent_Zero*'s affective component is based on the Rescorla-Wagner model of conditioning and extinction, supported by recent science on the neural mechanisms of fear conditioning specifically. The agent's cognitive (deliberative) component reflects well-documented biases and heuristics in the estimation of probabilities (e.g., sample selection bias). Agents belong to social networks, and the social component exhibits contagion effects. But, crucially, it is not observable behavior that is transmitted in this model, but *disposition*. I define this here as an explicit function of (a) the individual's emotion and cognition ("passion and reason"), and (b) others' affective and deliberative states. Action is binary and is triggered when individual disposition exceeds threshold. These thresholds, and susceptibility to dispositional contagion, can be heterogeneous across agents, all of whom can exhibit emotional inertia and memory of events. The same basic model, interpreted and extended variously, is shown to generate core phenomena in the fields of social conflict, psychology, public health, law, network dynamics, and economics. Mathematical and spatial agent-based computational versions of the general model are presented.

I believe *Agent_Zero* to be a departure in what it includes (e.g., neurally grounded internal modules), what it excludes (e.g., standard behavioral imitation), the range of phenomena it generates, and the set of tools it offers the field. Overall, I submit *Agent_Zero* as a step toward unified—and neurocognitively grounded—foundations for generative social science.