Mind Soc (2015) 14:153–154
DOI 10.1007/s11299-015-0184-x

Special issue on "Complexity modeling in social science and economics"

Introduction

Itzhak Aharon[1] · Sacha Bourgeois-Gironde[2] · Yakir Levin[3]

Published online: 25 September 2015

Complexity modeling seeks to show how the behavioral patterns of complex systems emerge from relatively simple semi-random interrelations and interactions between rather homogenous components of these systems. Inspired by complexity modeling in physics, and beginning with Thomas Schelling's 1971 classical modeling of segregation, complexity modeling has found its way into social science. Indeed, in recent years it has been thriving in the form of agent-based simulation, complex social network analysis, and econo-physics. In addition, it echoes in non-computational accounts of individual psychology in terms of dynamical systems theory, accounts that have been gaining ground recently. According to standard wisdom in social science, the social world being complex because people are complicated, social explanations must reflect and embody the rather tortuous and varied psychology of individuals. The complexity modeling paradigm, in contrast, posits that the complex social patterns of behaviour are the outcome of something akin to the semi-random statistical atomic-level interactions that give way to the clockwork precision of thermodynamics. Physics-like laws are taken to provide a new picture of human or "social" atoms, to use Mark Buchanan's disturbing phrase, and of the complex social patterns emerging from their interactions, a picture that gives little space to individual psychology with all its complexity and variety. Complexity modeling thus forms a new—and perhaps revolutionary—research paradigm in social science and economics that may prove to have far-reaching theoretical and practical implications. Indeed, in the guise of agent-based simulation

✉ Yakir Levin
yakirl@bgu.ac.il

[1] The Interdisciplinary Center, Herzliya, Israel

[2] Department of Economics, Université Panthéon-Assas, Paris, France

[3] Department of Philosophy, Ben-Gurion University of the Negev, Beer-Sheva, Israel

and complex social network analysis it has already been applied to such diverse phenomena as seasonal migration, sexual reproduction, the transmission of disease and the spread of epidemics, the co-evolution of social networks and culture, stock-market crashes, traffic jams, the growth and decline of ancient civilizations, the evolution of ethnocentric behaviour, and political cooperation between US Senators. In addition, it has been used to solve a variety of business and technological problems such as supply-chain optimization and workforce management.

This special issue is devoted to examining conceptual, methodological, programmatic, and implicational aspects of complexity modeling as well as to illustrating concrete applications of this type of modeling, particularly in the field of economics. The eight papers included in this issue are mainly of the first, conceptual-cum-methodological kind, while five further papers, which will appear in the next issue of M&S, are mainly of the second, illustrative-cum-applied variety.