Contents

1 Simplicity in Complex Spatial Systems: Introduction .................. 1
    Aura Reggiani and Peter Nijkamp

Part A: Complexity, Evolution, and Simplicity in Space

2 The “Thermodynamics” of the City: Evolution and Complexity
    Science in Urban Modelling .............................................. 11
    Alan Wilson

3 Macro and Micro Dynamics of the City Size Distribution:
    The Case of Israel .......................................................... 33
    Lucien Benguigui, Efrat Blumenfeld-Lieberthal, and Michael Batty

4 A Morphogenetic Perspective on Spatial Complexity:
    Transport Costs and Urban Shapes ....................................... 51
    Francesca Medda, Peter Nijkamp, and Piet Rietveld

5 Algorithmic Complexity and Spatial Simplicity ...................... 61
    Rajendra G. Kulkarni, Roger R. Stough, and Kingsley E. Haynes

6 Polyplexity: A Complexity Science for the Social
    and Policy Sciences .......................................................... 75
    Helen Couclelis

Part B: Evolutionary Networks in a Socio-Economic Context

7 Complexity, Evolution and Learning: Empirical and Experimental
    Validation of Heterogeneous Expectations .......................... 91
    Cars Hommes
8 Homophily, Conformity, and Noise in the (Co-)Evolution of Complex Social Networks ........................................ 105
George Ehrhardt, Matteo Marsili, and Fernando Vega-Redondo

9 Complex Evolution and Learning: The Role of Constraints ......... 117
Massimo Ricottilli

10 Proximity, Social Capital and the Simon Model of Stochastic Growth .................................................... 133
Koen Frenken

11 Evolutionary and Preferential Attachment Models of Demand Growth ......................................................... 141
Terry L. Friesz, Changhyun Kwon and David Bernstein

12 Modelling the Economy as an Evolving Space of Flows: Methodological Challenges ........................................ 151
Kieran P. Donaghy

Part C: Empirical Aspects of Network Complexity in the Space-Economy

13 Effects of a Simple Mode Choice Model in a Large-Scale Agent-Based Transport Simulation .............................. 167
Dominik Grether, Yu Chen, Marcel Rieser, and Kai Nagel

Kevin Seel and Nigel Waters

15 Measuring and Visualizing Urban Network Dynamics: A GIS and Graph-Theoretic Approach ............................ 209
Laurie A. Schintler and Giacomo Galiazzo

16 Spatial Autocorrelation in Spatial Interaction: Complexity-to-Simplicity in Journey-to-Work Flows ............... 221
Daniel A. Griffith

17 Complex Networks Analysis of Commuting: Recent Advances and a Research Agenda .................................. 239
Andrea De Montis, Alessandro Chessa, Michele Campagna, Simone Caschili, and Giancarlo Deplano
18 Spatial and Commuting Networks: A Unifying Perspective .......... 257
Roberto Patuelli, Aura Reggiani, Peter Nijkamp, and Franz-Josef Bade

Part D: Epilogue

19 From Complexity to Simplicity: Interdisciplinary Synthesis
and Future Perspectives .................................................. 275
Aura Reggiani
Complexity and Spatial Networks
In Search of Simplicity
Reggiani, A.; Nijkamp, P. (Eds.)
2009, XIV, 284 p. 83 illus., 57 illus. in color., Hardcover
ISBN: 978-3-642-01553-3