

Beyond Cellular Automata: Irregular CA and agent-based urban simulation models

- Axelrod, Robert. 1997. *The complexity of cooperation: agent-based models of competition and collaboration*. Princeton Studies in Complexity. Princeton, NJ: Princeton University Press.
- Batty, Michael, and Bin Jiang. 1999. Multi-agent simulation: new approaches to exploring space-time dynamics within GIS. www.casa.ucl.ac.uk/multi_agent.pdf. A good 'theory & techniques' paper with some illustrative applications - none at the urban scale, but useful to fix ideas about the new agent-based simulation 'paradigm'.
- Bellomo, Matteo, and Sylvie Occelli. 2000. Simulating accessibility by SWARM. Work still in progress - but a very interesting take on agent-based urban simulation, using the simulation platform 'Swarm'. I particularly liked the agent type 'Whispers'!
- Casti, John L. 1997. *Would-be worlds: how simulation is changing the frontiers of science*. New York: John Wiley & Sons, Inc.
- Mathian, Helene, Boguslaw Mikula, and Lena Sanders. 2000. Modelling the dynamics of spatial systems within a GIS; problems and perspectives. *Spatial models and GIS: new potential and new models*. Eds. Stuart A. Fotheringham, and Michael Wegener, 203-21. London: Taylor & Francis.
A good reading 'to wrap it all up' with: it goes well beyond our discussions of urban models but reviews some fundamental issues we have been discussing (or should have!): dynamics, time, change, calibration, CA, agent-based modeling...
- O'Sullivan, David. In press. Exploring spatial process dynamics using irregular cellular automaton models. *Geographical Analysis* .
An exploration of the properties of CA models defined on irregular grids.
Theoretical work (and not an easy read!) that could have great practical interest if some of the problems with irregular grids could be solved. Note the entropy-based measure used to determine spatial 'information' content.
- Sanders, L., D. Pumain, H. Mathian, F. Guerin-Pace, and S. Bura. 1997. SIMPOP, a multi-agents system for urbanism. *Environment and Planning B: Planning and Design* 24, no. 2: 287-305.
Presented at the 9th Colloquium on Theoretical and Quantitative Geography, September 9-13, 1995, Spa (Belgium).