Cellular Automata (2): Urban CA models

Batty, Michael, Helen Couclelis, and Marc Eichen. 1997. Urban systems as cellular automata. *Environment and Planning B: Planning and Design* 24, no. 2: 159-64.
Introduction to the Special E+P B issue on CA. Some of the papers were originally presented at two1994 AAG special sessions organized by Marc Eichen. The whole issue is a must-see if you are interested in CA.

Colonna, Antonio, Vittorio Di Stefano, Silvana Lombardo, Lorenzo Papini, and Giovanni A. Rabino. 1998. Learning urban cellular automata in a real world: the case study of Rome Metropolitan Area. *Cellular automata: research towards industry. ACRI'98- Proceedings of the Third Conference on Cellular Automata for Research and Industry, Trieste, 7-9 October 1998.* Eds. S. Bandini, R. Serra, and F. Suggi Liverani, 165-84. London: Springer.
An intriguing piece of work from Italy, where the rules of the CA model were 'discovered' from the data, using a neural network. The idea sounds very promising - not clear how far they got in practice!

Couclelis, Helen. 1989. Macrostructure and microbehavior in a metropolitan area. *Environment and Planning B* 16: 141-54.
An early 'ideas' paper on CA modeling in a planning context. But see the doubts raising their ugly heads in the final section...

———. 1997. From cellular automata to urban models: new principles for model development and implementation. *Environment and Planning B: Planning and Design* 24, no. 2: 165-74.
CA revisited (by Helen) after an 8-year hiatus. Moves from an overview of generalized CA to proposing a new concept of space ('proximal space') for modeling spatio-temporal dependence. The CA-based modeling language GeoAlgebra, by my former PhD student Masanao Takeyama is also briefly outlined.

Portugali, J., and I. Benenson. 1995. Artificial planning experience by means of a heuristic cell-space model: simulating international migration in the urban process. *Environment and Planning A* 27: 1648-65.
I couldn't find this one for copying & comments but it's worth having on the bibliography.

Portugali, J., I. Benenson, and I. Omer. 1997. Spatial cognitive dissonance and sociospatial emergence in a self-organizing city. *Environment and Planning B:Planning and Design* 24, no. 2: 263-85.
The Israeli team's work with urban CA has always been imaginative and 'different'. Portugali manages to combine his interest in spatial cognition and social science with CA-based urban simulations. A fun paper!

White, R., and G. Engelen. 1997. Cellular automata as the basis of integrated dynamic regional modelling. *Environment and Planning B: Planning and Design* 24, no. 2: 235-46.
More exploratory and theoretical than the next paper by the same authors, it still is a model of a real place, using real data. Note in particular the section on "Uses and misuses of the model"!

White, Roger, and Guy Engelen. 1999. High resolution integrated modelling of the spatial dynamics of urban and regional systems.
A very interesting and ambitious effort to model land cover and land use for an entire country (Holland), using a CA model. White was the first to implement CA models in geography and his work has always been original and thoughtful. Note the coupling of the CA-based land use model with a regional model of the economy and demography.