

Issues in the theory of models -1

Models and Modeling in Human Geography

- Batty, Michael. 1976. *Urban Modelling*. Cambridge: Cambridge University Press.
Another classic book from the heydays of urban modeling. While the chapters on computational implementation are of course obsolete, the body of the book on spatial interaction models and their calibration is still valid.
- Batty, Michael. 1989. Urban modelling and planning: reflections, retrodictions and prescriptions. in *Remodelling geography*. Ed. Bill Macmillan, 147-69. Oxford: Basil Blackwell.
Mike Batty has been at the forefront of urban modeling since its inception more than 30 years ago. He's very, very good both technically and conceptually. His papers on models are always worth reading.
- Clarke, Martin, and Alan Wilson. 1989. Mathematical models in human geography: 20 years on. In *New models in geography*. Eds. Richard Peet, and Nigel Thrift, 30-40. Vol. Volume Two. London: Unwin Hyman.
By two of the most respected senior people in urban modeling - a bit defensive perhaps, but it's part of the book claiming that mathematical models in human geography have no relevance.
- Echenique, Marcial. 1972. Models: a discussion. In *Urban space and structure*. Eds. Leslie Martin, and Lionel March, 164-74. Cambridge: Cambridge University Press.
One of the few 'theoretical' pieces by a very no-nonsense applied modeler - the one who became rich and famous by working with the same model for 35 years (MEPLAN and its predecessors and successors).
- Harris, Britton. 1985. Urban Simulation Models in Regional Science. *Journal of Regional Science* 25, no. 4: 545-67.
Britt has been called the 'doyen' of urban modeling. Still very active after a long and distinguished career in modeling, he has kept up with changes in the field.
- Harvey, David. 1969. *Explanation in Geography*. London: Edward Arnold Ltd.
'THE' book about scientific method in geography. Superb chapters on models, systems, the role of mathematics and geometry, and everything else of interest to us, from a philosophy of science perspective. Too bad David Harvey later decided he prefers Marxism to the scientific approach.
- Haynes, Kingsley E., and A. Stewart Fotheringham. 1984. *Gravity and Spatial Interaction Models*. Scientific Geography Series ed., Vol. 2. Scientific Geography, ed. Grant Ian Thrall. Beverly Hills: SAGE Publications, Inc.

A readable brief introduction to the core principles of urban modeling.

Hesse, Mary B. 1966. *Models and Analogies in Science*. Notre Dame: University of Notre Dame Press.

The only reference on our list by a professional philosopher, it has inspired many of the early urban modelers.

Klosterman, R. E. 1994. Symposium: Large-scale urban models: twenty years later. *Journal of the American Planning Association* 60, no. 1: 3-44.

D. B. Lee's "Requiem to large-scale models" is still making waves "twenty years later". Why is this - if it was wrong - headed as people claim? Useful contributions by Klosterman, Batty, Wegener, Harris, and Lee (himself!).

Lee, Colin. 1973. The Lowry Model (Chapter 6). In *Models in Planning: an introduction to the use of quantitative models in planning.*, 89-112. Oxford: Pergamon Press. For some 30 years Lowry's was the model to end all models. It still survives in many of the modern modeling software packages.

———. 1973. *Models in Planning: An Introduction to the Use of Quantitative Models in Planning*. Urban and Regional Planning Series ed., Vol. 4. Urban and Regional Planning Series. Oxford: Pergamon Press. Useful, readable text on the topic.

Lee, Jr Douglass B. 1973. Requiem for Large-Scale Models. *AIP Journal* May 1973: 163-77.

Many have accused Lee of having killed urban models. In fact, he only helped bury them - for some 25 years.

———. 1975. Urban Models: Causes of Failure. Reprinted from Proceeding of the 1975 International Conference on Cybernetics and Society; September 23-25 1975; San Francisco, California. Two years later... he has not changed his mind! But this 4-page paper is more constructive than its notorious 1973 predecessor.

Lowry, Ira S. 1968. Seven Models of Urban Development: A Structural Comparison. *Urban development models: proceedings of a conference*. Washington, DC.: Highway Research Board, National Research Council.

By the creator of the Lowry model, a useful critical review of the state of the art at the time.

Macmillan, Bill, ed. 1989. *Remodelling Geography*. Cambridge: Basil Blackwell Inc.

A bitter-sweet assessment of progress made/ ground lost in urban modeling over two decades, in the context of tumultuous research and application environments. Some very good papers by old masters (and some young Turks) of urban modeling.

Openshaw, Stan. 1989. Computer modeling in human geography. In *Remodelling geography*. ed. Bill Macmillan, 70-88. Oxford: Basil Blackwell.

A provocative piece by a controversial but very creative British geographer. I strongly disagreed with many of his points but couldn't resist putting it on our readings shortlist!

Sayer, R. A. 1979. Understanding urban models versus understanding cities. *Environment and Planning A* 11: 853-62.

A critique of models from the 'social theory' perspective in geography. Since then his main themes have been picked up by many other critics of quantitative geography.

Willmot, Cort J., and Gary L. Gaile. 1992. Modeling. In *Geography's inner worlds: pervasive themes in contemporary American geography*. eds. Ronald F. Abler, Melvin G. Marcus, and Judy M. Olson, 163-86. New Brunswick, NJ: Rutgers University Press.

One of the most recent general assessments of models in geography. Wilmott is a physical geographer, Gaile a human geographer, and that makes for a nicely balanced perspective.