List of Models in which Observed Patterns are Important

Supplemental material for Chapter 18 of *Agent-Based and Individual-Based Modeling*

This is a list of models for Exercise 1 of Chapter 18. The purpose of this exercise is to identify patterns that were used to structure and design agent-based (and sometimes other) models.

Please notify us of additional good models for this exercise!

- A model of how people move and get trapped when trying to escape buildings in panic:

  Helbing, D., I. Farkas, and T. Vicsek. 2000. Simulating dynamical features of escape panic. *Nature* 407:487-490.

- The models of complex structures arising from individual traits in biological systems described in Part II of:

  Camazine, S., J.-L. Deneubourg, N. R. Franks, J. Sneyd, G. Theraulaz, and E. Bonabeau. 2001. *Self-organization in biological systems*. Princeton University Press.

- Models of how rabies spreads in wild fox populations:

  Jeltsch, F., M. S. Müller, V. Grimm, C. Wissel, and R. Brandl. 1997. Pattern formation triggered by rare events: lessons from the spread of rabies. *Proceedings of the Royal Society of London B* 264:495–503.

  Thulke, H.-H., V. Grimm, M. S. Müller, C. Staubach, L. Tischendorf, C. Wissel, and F. Jeltsch. 1999. From pattern to practice: a scaling-down strategy for spatially explicit modelling illustrated by the spread and control of rabies. *Ecological Modelling* 117:179-202.

- A model of how habitat affects survival of shorebirds:

  Stillman, R. A., J. D. Goss-Custard, A. D. West, S. E. A. V. l. d. Durell, R. W. G. Caldow, S. McGrorty, and R. T. Clarke. 2000. Predicting mortality in novel environments: tests and sensitivity of a behaviour-based model. *Journal of Applied Ecology* 37:564 –588.

- A stock market model:

  LeBaron, B. 2001. Empirical regularities from interacting long- and short-memory investors in an agent-based stock market. *IEEE Transactions on Evolutionary Computation* 5:442-455.

- A model of *in vitro* cell growth:

  Stockholm, D., R. Benchaouir, J. Picot, P. Rameau, T. M. A. Neildez, G. Landini, C. Laplace-Builhé, and A. Paldi. 2007. The origin of phenotypic heterogeneity in a clonal cell population in vitro. *PLoS ONE* 2:e394. Available at: http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0000394

- A model of the inflammatory system designed to understand Systemic Inflammatory Response Syndrome:

  An, G. 2001. Agent-based computer simulation and SIRS: building a bridge between basic science and clinical trials. *Shock* 16:266-273.