

J. Doyne Farmer

ABSTRACT

Agent-based modeling is now tangibly successful in several fields, such as traffic planning and epidemiology, but in economics it remains on the fringe. This is substantially due to a self-reinforcing, path-dependent cultural process, but there are also inherent reasons: Building good agent-based models to accurately describe economics is a major challenge. I will review agent-based models in economics, acknowledging what has been done while emphasizing what remains to be done, and laying out the key milestones that need to be accomplished for agent-based modeling to become a standard component of the economist's toolkit.

J. Doyne Farmer is a Professor with the Institute for New Economic Thinking at the Oxford Martin School and with the Mathematical Institute, and he is External Professor at the Santa Fe Institute. He has broad interests in complex systems, and has done research in dynamical systems theory, time series analysis and theoretical biology. At present his main interest is economics. Particular projects include making realistic agent-based model of the economy (he is the scientific coordinator of the CRISIS project and PI for an INET-funded project to model housing markets); understanding technological evolution and economic growth, and understanding market ecologies, in particular with relation to financial instability. He was a founder of Prediction Company, a quantitative automated trading firm that was sold to the United Bank of Switzerland in 2006. During the eighties he worked at Los Alamos National Laboratory, where he was an Oppenheimer Fellow, founding the Complex Systems Group in the theoretical division. He began his career as part of the U.C. Santa Cruz Dynamical Systems Collective, a group of physics graduate students who did early research in what later came to be called "chaos theory". In his spare time during graduate school he led a group that designed and built the first wearable digital computers, which were used to beat the game of roulette.

