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**VERY-LARGE-SCALE AGENT SYSTEMS AND EMERGENT
MACROECONOMICS**

The tremendous advances in computer technology of the past generation have made possible the creation of large-scale agent models of whole economies. Although this approach to economics is in its infancy, we currently have examples of models instantiated with 10 million, 100 million, 150 million agents, with 300 million and 500 million agents on the horizon. I will review some of the computational challenges associated with models operating on this scale and highlight the strengths and weaknesses of the underlying representations of economic processes in such models. Insofar as such agent models typically eschew any kind of macroeconomic specification, and simply let statistics about the aggregate level arise from the interactions of the agents, it seems natural to call this approach 'emergent macroeconomics'. The ways in which this approach to macro differs from conventional macro will be emphasized.

BIOGRAPHY

Robert Axtell is Chair of the new Department of Computational Social Science at George Mason University (Fairfax, Virginia, USA) and External Professor at the Santa Fe Institute (Santa Fe, New Mexico, USA). He holds an interdisciplinary Ph.D. from Carnegie Mellon University (Pittsburgh, Pennsylvania, USA) where he studied computing, social science and public policy. He has pioneered the application of multi-agent systems computer science to social science questions. His book, "Growing Artificial Societies: Social Science from the Bottom Up" (MIT Press, coauthored with JM Epstein) was an early statement of this computational approach to social science. Professor Axtell's work has been published in "Science," "Proceedings of the National Academy of Sciences USA," and field journals in economics, organization theory, computer science, industrial ecology, and so on, as well as being reprised in "Nature," online (Discover.com), in major newspapers ("Wall St. Journal," "Washington Post," "LA Times," etc.) and magazines ("The Atlantic," "Wired," "Scientific American"), on the radio ("Soundprint") and in a museum installation (Mannheim Landesmuseum fur Technik und Arbeit). His current work focuses on building large-scale agent systems on shared memory, multi-core architectures, using a variety of parallel programming schemes.