

**AGENTS AND LIGHTWEIGHT USE OF LOGIC,
COMBINED SIMULATION
LOGIC AND NEURAL AGENT NODES**

Kevin D. Reilly
Computer & Information Science
Behavioral Neuroscience – Psychology
Civitan International Research Center
University of Alabama at Birmingham
reilly@cis.uab.edu

ABSTRACT

Promoting research on agents, particularly in modeling and simulation contexts, is a part of this paper's purpose. Particular promotions are sought with respect to characterizing the notion and the role of formal reasoning. After definitional material, we present a formally defined notion of a programming system or style to support "symbolic simulation," designed, e.g., to join numerical simulation in a combined or hybrid system. The presentation is related to a movement in "lightweight use of logic in conceptual modeling." Abstractions that emerge in these discussions are viewed in agent supporting contexts. Discourse moves to decision making (using a table format) and another role for logic programming. Properties emerging in this context are mentioned, followed by discussion of agent style migration of the logic problem description to a "neural network" node (a creating and processing node). Property preservation and NN enhancements precede a final return from the NN node of data and suggested processing to the (originating) logic node.