

NetLogo 3.1: Low Threshold, No Ceiling

NetLogo is a programmable modeling environment for simulating natural and social phenomena. It is well suited for modeling complex systems developing over time. Modelers can give instructions to hundreds or thousands of independent "agents" all operating concurrently. This makes it possible to explore the connection between the micro-level behavior of individuals and the macro-level patterns that emerge from the interaction of many individuals. NetLogo powers the HubNet architecture that supports participatory simulations, where users can assume the role of agents alongside virtual agents; facilitating social science experimentation on a large scale. NetLogo also contains: (1) NetLogoLab which connects NetLogo to external hardware-based effectors and sensors and enables the "grounding" of models in real world data, (2) BehaviorSpace, a model analysis package that enables automated parameter sweeping, experimental analysis, and parameter space visualization, and (3) System Dynamics Modeler, a stocks and flows simulator that can be used alone or integrated with multi-agent simulations to create "hybrid" models. Furthermore, NetLogo 3.1 was released in April of 2006, and contains many new features. For instance, a major component of NetLogo is the models library, which contains hundreds of pre-built models, ready to be used as "seed models." In NetLogo 3.1 there are new GIS data integration models, models of evolution, mathematical models, physics-based models, neural network simulations, evolution of cooperation models, and hybrid system dynamics models. There are three major new components of NetLogo 3.1. The first is the integration of primitives that facilitate the building, analysis and examination of network models. The second is that the NetLogo world has expanded beyond view-centered, full wrapping, toroids to include a variety of standard lattices. The third innovation is that NetLogo 3.1 defaults to randomized agent ordering, which reduces inadvertent bias in agent-based models.