

Behavior Through Mathematical Modeling

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Understanding behavior through Mathematical Modeling has been used to simulate everything from climate patterns to population growth, but Dirk Helbing uses them to examine something even more complex, namely human behavior. Drawing on his background in physics, Helbing developed the “social force model” to simulate the movement of pedestrians, whose behavior can depend on variables such as desired velocity and the distance between a pedestrian and other people or objects. He has also used mathematical methods to study a variety of behaviors including cooperation, social norms, conflicts, and revolutions, traffic flows, and the self-organization of groups. Helbing is currently leading an ambitious project called FuturICT with its Living Earth Simulator, a computer simulation that aims to model life on Earth, with a focus on techno-socio-economic systems. He hopes to one day use this computer-modeled world to understand current global economic and societal activity, and prevent or mitigate crises.