Of Interest:

Articles on theory, research and practice

Back to routine or a new routine? Simulation of urban resilience

A. Yair Grinberger and Daniel Felsenstein

While the direct physical effects of an urban catastrophe are relatively straightforward to assess, indirect and long-term impact on the urban system are more circumspect. A large scale shock such as an earthquake derails the complex urban system from its equilibrium path onto an unknown trajectory. Consequently, assessing the effect of policy intervention that aims to mitigate this shock and increase urban resilience, is fraught with complexity. This paper presents the implementation of dynamic agent-based simulation to test long run effects of a hypothetical earthquake in Jerusalem, Israel. We focus on investigating the effectiveness of policy choices aimed at restoring the urban equilibrium. Cities are found to have a self-organizing market-based mechanism which strives to attain a new equilibrium. They therefore may not always bounce back- they may also bounce forward. Decision makers, engineers, emergency and urban planners need to be cognizant of this tendency when designing policy interventions. Otherwise, well-intentioned efforts may inhibit urban rejuvenation and delay the onset of city recovery.

Keywords: urban resilience, simulation, self-organizing systems, emergency policy

A. Yair Grinberger *is a PhD student in the Department of Geography, Hebrew University of Jerusalem. His research interests include spatial behavior, urban dynamics, and agent-based simulation.*

Daniel Felsenstein *is a Professor in the Department of Geography and Director of the Center for Computational Geography, Hebrew University of Jerusalem. His research interests include economic geography, spatial econometrics and urban simulation. He serves a consultant to the OECD in the area of local employment and economic development.*