

Preface

The presented approach combines risk research and complex system research by using agent-based simulation. The study is exploratory, yet holds great potential as both, risk research and complexity science facilitate an open and interdisciplinary perspective for system analysis. They provide a theoretical research framework to focus on the meaning of interrelations and feedback in systems, for risk and vulnerability, between human and environment or micro and macro. In the same way, agent-based simulation allows to regard vulnerability as a multi-dimensional and context-sensitive social phenomenon that derives from characteristics, behaviour and relationships of individuals in society.

Social simulation is an analytical method and unique tool to explore the individual, relational and spatial aspects leading to dynamics of vulnerability or other social phenomena under uncertainty. By means of simulation the dynamics of the considered system can be studied—to explore the effects of causal relationships and interdependencies in thought experiments and derive theoretical consequences about the future system development. In my model approach, I equivalently considered a theory-based conceptual model and an empirical-based computational model. The theory-based conceptual model development might stress the importance of agent-based modelling in risk research and as a powerful interdisciplinary tool. The computational model and the simulation experiments outline how agent-based models can be combined with empirical data in vulnerability assessments. By using this different methodological approach, schema and vocabulary for system analysis I hope to contribute to a different perspective on the research target of social vulnerability.

Agent-Based Simulation of Vulnerability Dynamics

A Case Study of the German North Sea Coast

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2013, XIV, 226 p., Hardcover

ISBN: 978-3-642-32364-5