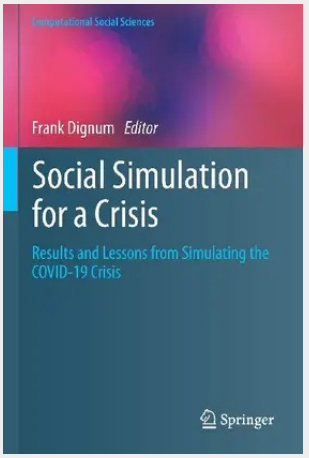
Dignum

Social Simulation for a Crisis

Results and Lessons from Simulating the COVID-19 Crisis



Simulating **for** a crisis is far more than creating a simulation **of** a crisis situation. In order for a simulation to be useful during a crisis, it should be created within the space of a few days to allow decision makers to use it as quickly as possible. Furthermore, during a crisis the aim is not to optimize just one factor, but to balance various, interdependent aspects of life. In the COVID-19 crisis, decisions had to be made concerning e.g. whether to close schools and restaurants, and the (economic) consequences of a 3 or 4-week lock-down had to be considered. As such, rather than one simulation focusing on a very limited aspect, a framework allowing the simulation of several different scenarios focusing on different aspects of the crisis was required. Moreover, the results of the simulations needed to be easily understandable and explainable: if a simulation indicates that closing schools has no effect, this can only be used if the decision makers can explain why this is the case. This book describes how a simulation framework was created for the COVID-19 crisis, and demonstrates how it was used to simulate a wide range of scenarios that were relevant for decision makers at the time. It also discusses the usefulness of the approach, and explains the decisions that had to be made along the way as well as the trade-offs. Lastly, the book examines the lessons learned and the directions for the further development of social simulation frameworks to make them better suited to crisis situations, and to foster a more resilient society.

Part 1. ASOCC Theory and Platform.- Chapter 1. Introduction.- Chapter 2. Foundations.- Chapter 3. From Theories to Implementation.- Chapter 4. Simulation Use.- Part II. Scenario's and Submodels.- Chapter 5. Closing of Schools.- Chapter 6. Testing & Smart Testing.- Chapter 7. Deployment and Effects of an App for Tracking and Tracing Contacts.- Chapter 8. How Culture Influences the Management of a Pandemic: Simulating the Effect of Culture on the Effective Management of the COVID-19 crisis,- Chapter 9. Economics.- Chapter 10. Exit Strategies.- Part III. Results and Lessons Learned.- Chapter 11. Extensible Model-Building in Crises.- Chapter 12. Comparative Validation of Simulation Models for the COVID-19 Pandemic.- Chapter 13. Supporting Policy Makers in a Crisis.- Chapter 14. From Crisis to Resilience Support.- Chapter 15. Challenges and Issues.- Chapter 16. Conclusions.

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