

# Modelling Transitions: Virtues, Vices, Visions of the Future

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A new volume from the [Routledge Series in Sustainability Transitions](#), edited by J. Schot, J. Grin, and J. Rotmans

Transitions modelling has been part of the transitions research portfolio since its inception, and it is now a growing niche within the sustainability transitions community. This new volume critically investigates what modelling of transformative change means and could mean for transitions research and for other disciplines that study societal changes and could potentially benefit from transition concepts. This leads us to examine both the virtues and the vices of modelling and to look further to approaches that are currently not part of the standard toolkit of modellers in transition research. The volume gives due attention to the state of the art of transitions modelling but with the explicit aim of evaluating the contributions to the broader transitions field and the modelling lessons learnt.

After an introductory chapter by the editors, the volume continues with an overview of transitions modelling as an approach to understand transitions. In this part, *J. Rotmans* introduces us to the ongoing and growing importance of modelling in the study of transitions; and *J. Köhler* and *G. Holtz* review some of the approaches to modelling innovation for sustainability and identify stylised strategies for developing transition models.

Part 1 explores the meanings of modelling for transitions research, what it is, what it could be and what it can do for the field. This part is both looking inward (i.e. critical self-reflection) and looking outward (i.e. regarding the role of modelling in the development of the field). In this part, *F. J. de Haan* discusses the possibility and desirability of a transitions science; and *F. Bianchi* and *F. Squazzoni* look at the role of model and modelling in social sciences, in particular the role of agent-based models (ABMs).

Part 2 provides an overview of what has been done in transitions modelling, both in the sense of the models out there and in the sense of methods, techniques and applications. The emphasis will be on lessons learnt. In this part, *J. Köhler* revisits the MATISSE model, one of the few classics in transitions modelling, and discusses how the structure of a model can be

adaptable to different cases; *G. Holtz* and *E. J. L. Chappin* continue with the role of ABMs and focus on the conceptualisation of actors and institutions in transitions research and its suitability as basis for ABMs; *G. Papachristos* and *J. Struben* explore the potential contributions from system dynamics modelling to transitions research; and *A. Rojas* and *F. J. de Haan* use the idea of formalising socio-technical systems as a tool for the study of transitions.

Part 3 investigates what avenues could be pursued in modelling transitions. Here the emphasis lies on approaches that are not often used and those that push the boundaries of what modelling means. In this part, *S. Malekpour* investigates normative explorative planning in transitions research under uncertainty; *J. Halbe* undertakes an extensive analytical review of participatory modelling in sustainability transitions research; *F. J. de Haan*, *A. M. Arranz* and *W. Spekkink* develop a methodological argument for data-driven transitions research; *E. A. Moallemi*, *F. J. de Haan* and *J. Köhler* focus on the systematic treatment of uncertainties in transitions and discuss the adoption of exploratory modelling—as an emerging computational approach for coping with uncertainties—to transitions; and finally, *F. J. de Haan* and *E. A. Moallemi* reflect on the state of affairs of transitions modelling in relation to the broader enterprise of transitions research, to other fields and the grand challenges of transitions.

This volume speaks to modellers and non-modellers alike who value the development of robust knowledge on transitions to sustainability, including colleagues in congenial fields. Be they students, researchers or practitioners,

everyone interested in transitions should find this book relevant as reference, resource and guide.

The volume is available to order from the publisher website: <https://www.routledge.com/Modelling-Transitions-Virtues-Vices-Visions-of-the-Future/Moallemi-Haan/p/book/9780367174064>

