

Transformative modeling: Identifying drivers, blockages and fundamental leverage points for sustainability transition

Planetary boundaries, sustainability transition and degrowth

After over forty years of modern environmentalism and twenty years of discourse and practice on sustainable development, the result is mixed – locally, nationally and internationally. The global outlook is critical – both for environmental and socio-economic indicators.¹

Given this situation, existing approaches, strategies and instruments to foster sustainable development need to be critically examined and new pathways must be explored in order to adapt socio-economic systems to planetary boundaries (Rockström et al. 2009). Recent debates around zero growth, post growth, de-growth, sharing economy or new measurements of life quality beyond GDP reflect this more fundamental and ambitious sustainability discourse (Jackson 2012, Heinrichs 2013). These approaches reflect the need for a more fundamental – systemic – sustainability transformation. Accordingly in social sciences as well as in inter- and transdisciplinary environmental and sustainability sciences transformative research and research on transformation gaining momentum (WBGU 2012). Even though much more integrative theoretical-conceptual work of socio-ecological transformation and transitions is needed, the existing approaches have already significantly increased the understanding of the complexity of transitions (Smith 2004). However, many transition approaches remain somewhat mechanistic and overly optimistic regarding the potential of (network) governance (Loorbach 2002). Central phenomena of societal dynamics, such as power, conflict, interest, inequality, behavior motives or post-democratic risks in network governance are under theorized. With regard to these limitations we propose a different approach, which enable the production of reflexive knowledge on drivers and blockages of transition towards sustainable societies, identify fundamental leverage points, and may activate transformative empowerment.

Transformative modeling - Method and Technology

Societal transformation in general and sustainability transition in specific are systemic phenomena. It is about interconnected subsystems, actors and processes with regard to present dynamics and (potential) future developments. Quantitative modeling and (participatory) scenarios, based on systems thinking and complexity theory are important

¹ Global Environmental Outlook: <http://www.unep.org/geo/geo5.asp>; Report on Millenium Development Goals: <http://www.un.org/millenniumgoals/pdf/report-2013/mdg-report-2013-english.pdf>

methods to generate future-oriented insights (Meadows et al. 1972; Jäger et al. 2003). Next to this approaches developments in information and communication technologies open up new ways for qualitative modeling (Neumann 2012). Here the focus is not on projecting possible, likely or desirable futures, moreover the focus is on reflecting and understanding complex interconnected cause-effect relationships and the identification of drivers and blockages through interactive modeling. By using everyday speech and easy-to-use interfaces experts and non-experts, individual as well as collaborative modeling can be realized. Thus, the method of qualitative modeling aims at making visible and accessible complex cause-effect relationships in order to reflect current action and non-action regarding the issue at hand and opening up perspectives for transformative actions and alternative developments. Methodologically this modus operandi is based in grounded theory (Glaser et al. 2010). Insights emerge through the modeling procedure, in which the participants bring in their knowledge, experiences, perceptions. For the explorative identification of crucial influence factors the “KNOW-WHY-Method” is applied. Focusing on one focal factor – in our case “sustainable society” – the KNOW-WHY-method asks four questions:

1. What leads directly to more of this?
2. What leads directly to less of this?
3. What leads potentially directly to more of this in the future?
4. What leads potentially directly to less of this in the future?

With one focal factor as starting point and this questions procedure the software allows the systemic exploration of perceived decisive factors of the modeling participants. As such the model will not be in the end an objective “world model”, but rather a context-specific reflection and identification of perceived drivers, blockages and options for action.

Pilot study: Understanding societal self-blockage and identifying fundamental leverage points for sustainability transition and degrowth

Within a pilot study, funded by the German Environmental Protection Agency, we exemplarily employed the qualitative modeling procedure for the analysis of drivers, blockages and fundamental leverage points of sustainability transition in Germany. A broad spectrum on modeling sessions, differing in number, composition and background of participants were conducted. All in all 26 modeling sessions with 42 invited participants and one open space session with over 100 participants took place. Finally the individual models were integrated in to one “integrated assessment model”. The integrated model contains 62 key factors and 214 key relationships. Important factors which have been identified are, among other, non-sustainable and sustainable business models, media and journalism, education, economic

competition within and between countries, technological development, resource prices, (in-) stability of financial markets, political cooperation, socio-psychological preconditions and motives, progressive and status-quo consumers. Looking at the key factors and relationships, some (new) insights regarding sustainability transitions can be concluded: The model suggests, that actors are suffering of collective blockage, because everyone is waiting for each other. Citizens and consumer seemingly are predestined to rupture this vicious cycle of stalemate. Sustainability transition and degrowth will only be supported and realized by larger groups of society, if fundamental biopsychological preconditions of human actions are satisfied. According to the qualitative modeling feelings of integration and further individual development are key factors to do something in a different – more sustainable – way. The cognitive reflection of the need for sustainability transition and degrowth are hence insufficient to drive individual transformative behavior, which then may drive transformative organizational behavior of business and politics.

Certainly not all of the manifold findings of this exemplary qualitative modeling study are completely new. However, the multiperspective procedure of the modelling, which generates a more comprehensive picture of the transition complexity on the one hand, and the transdisciplinary setting, stimulating reflexive knowledge by involving experts and non-experts with very diverse backgrounds, on the other hand, open up a new way for discourse and practice of sustainability transition. Even though more research on methodological questions is certainly needed, the pilot study has proven, that the employed approach of qualitative modeling is able to create reflexive knowledge on drivers, blockages and fundamental leverage points of sustainability transitions. And, last not least, the capability to involve groups of different size and different backgrounds allows self-empowerment and activation. In this perspective qualitative modeling may “transform” into transformative modeling, not only analyzing but empowering and activating decision-makers in politics, business and civil society as students in educational settings as well.

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