Transformation and Contestation. Learning from Actors and Socio-political Engagements in Transformative Science

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Abstract

The chapter presents the design and content of a sustainability research project in the humanities and the social sciences, as well as some methodological and theoretical guidelines from two different transformational frameworks that were assessed in the project. It then outlines the tension that emerges when we consider transformation from the point of view of processes and try to integrate the role of agency, especially of actors that contest structures or processes rather than initiating or supporting them. It finally explores how this tension challenges the assessed frameworks and which aspects of them can be stressed in order to face the challenge.

1 Introduction

The challenges that sustainability research poses to scholars, practitioners, stakeholders and policymakers have been widely stressed. These challenges concern aspects as varied as different types of knowledge, different perspectives and interests, as well as different methodologies and disciplines which should be integrated in order to address sustainability problems and develop strategies.¹ The

¹ Th. Jahn formulates them as “integrative challenges” and stresses integration as the “major cognitive challenge of the research process” in sustainability research (2013, p. 51 and 54). Lang, Rode and Wehrde systematically present different types of knowledge integration (Lang et al. 2014, p. 119–121).

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particular challenge that I focus on in this chapter concerns the tension between a system-based and an actor-based perspective on transition, transformation and change. This tension is particularly striking when we aim to design sustainability research projects with a focus on socio-political engagements and their role, i.e. the role of their individual and collective actors, as a *transformative force* in the quest for sustainable paths. The sustainability research group of the network *Saisir l'Europe – Europa als Herausforderung* took this focus in three of its five research projects. In what follows, I elaborate on some theoretical and methodological questions arising from our experience and relate them to two transformational methodologies for sustainability research, the one formulated by Th. Jahn (2013) and the TRANSFORM framework formulated by A. Wiek and D. J. Lang (2016).

In order to show the tension between the system-based and actor-based perspectives and the challenges it poses to transformational methodologies, I begin by sketching, in the first section, the three research projects on which the analysis presented in this paper is based, as well as the network in which the projects were involved. The structure and purposes of the network had a decisive effect on the design of the sustainability research team and the projects of its members, so it is relevant to include them in the following description. In the second section, I formulate the central elements of transformational methodology that were discussed in the design of our research. In the same section, I then clarify the conceptual and theoretical assumptions we made about contestation practices, engagement processes and the critical component that emerges as a relevant aspect of the research design. In the last section, I finally formulate two major challenges and its possible impact on the TRANSFORM framework.

2 Sustainability Research in the Context of *Saisir l'Europe – Europa als Herausforderung*

2.1 The Network, its Core Aims and its Research Areas

The research network was founded in 2012 with the aim of researching three problem-fields that are especially urgent and, at the same time, key in acting as a lens for grasping Europe after the financial crisis of 2008: the phenomenon of urban violence and its spatial dimensions, the model of the welfare-state and its potential to be maintained after the crisis and the goal of sustainability as an overarching principle in European policy-making. In addition, the network sought

to strengthen joint research between France and Germany, given the role of the relations between both countries as a motor of the European integration process (Weidenfeld 2015, p. 25–28). Finally, the network was conceived as a space for training young researchers, giving them the opportunity of exchange with experts in an international setting. The institutions that made up the network were mainly universities and research institutes.

The network's research area on sustainability was constituted by two groups working in coordination, one of them attached to the Philosophy Department at Goethe University and the other to an interdisciplinary research laboratory at the ENS Lyon. There was a total of 5 researchers, carrying out individual projects in the following areas:

Field	Specific topics
Environmental Justice	The determinants of citizen engagement against industrial pollution from the perspective of the environmental justice approach and the capabilities approach.
Transregional Sustainable Development	Citizen acceptance of transport projects across regions; the different scales of intervention and participation; regional sustainable development.
Transnational Environmental History	Local protest actions against industrial pollution across regions; the role of industry in shaping environmental change and its connection to other factors, especially industry policy.
Transnational Environmental Policy	The normative grounds of sustainability as a principle of individual and collective action, especially of transnational environmental policy.
Environmental Movements	Social movements, especially those under the "political ecology"; Europeanization processes; regional development through transport policies

Fig. 1 Subject areas of the projects in the research group on sustainability of the network *Saisir l'Europe – Europa als Herausforderung*

The three projects highlighted in Fig. 1 are the ones I will focus on in my analysis. They investigate local and regional protest groups and, in one case, the potential of these groups to form the historical precedent for more encompassing

social and environmental movements. Before I go on in the next section with sketching the research topics of each of these three projects, I want to explain in the remainder of this section the relevance of describing the configuration and aims of the network. This configuration accounts for the methodological framework that was chosen for the group in order to properly integrate the activities and results in the field of sustainability research. The relevance is particularly evident regarding two key aspects of sustainability research:

Inter and transdisciplinarity. The need for researching sustainability through collaboration between disciplines and discipline-based methods, as well as among scientific and non-scientific knowledge, has been widely stressed (Kates et al. 2001, 641; Kates 2012, 6; Vilsmaier and Lang 2014; Jahn 2013, 51 ff.). The challenges of this integration are less often explored, and explored even lesser than those is the question of how institutional designs and traditions, i.e. established research conceptions, affect the practice of inter and transdisciplinary research (Lang et al. 2014, p. 139–140).² In our case, the institutional background was determined by a strong disciplinary orientation and by one of the central aims of the network: the creation of a space for professional qualification (i.e. completing a PhD or a professorial qualification). The joint effect of these two circumstances was the development of individual research projects within the boundaries of particular disciplines, and the team thus performed the interdisciplinary work in a second step.³ This second-level interdisciplinary integration was theoretical rather than methodological, i.e. based on a shared understanding of the sustainability dimensions of each project and not on a common methodology. The theoretical character of an interdisciplinary second-level work that is ‘disciplinary’ anchored is explained by two circumstances: first, sustainability does not belong to the canon of any of the disciplines represented in the group; second, sustainability problems as “ill-defined problems” (Vilsmaier and Lang 2014, p. 90) and

² K. Peattie focuses on the rigidity of disciplines as it is reflected in the system of publication, especially scientific journals (2011, p. 28–30). Th. Jahn mentions a series of aspects spanning from conceptual to institutional challenges such as career perspectives for young researchers, for example (2013, p. 10).

³ One might of course wonder if the identification of a sustainability problem could have preceded the definition of the individual projects. The explanation of why this was not the case goes beyond the disciplinary-bounded perspective in the research group and has to do with other circumstances, in particular, a very narrow focus on the professional qualification through subjects and problems strictly belonging to the particular disciplines as they are established in the host institutions. Since the host institution did not have, at the time, disciplinary or research areas in sustainability, environmental sciences, environmental ethics and politics, and so on, the choices were –again– very narrow.

sustainable development as a research subject (Peattie 2011, p. 25) both transcend disciplinary boundaries.

Problem-orientation. The above-mentioned imposition of a theory-driven integration of research activities appears to be at odds with another key aspect of sustainability research, i.e. identifying socially relevant questions and problems that lead the research process rather than picking up questions and problems formulated as part of the scientific tradition (Vilsmaier and Lang 2014, p. 89). The focus on social or “life-world” problems (ibid.; Jahn 2013, p. 55) is characteristic of transdisciplinary research and has also been stressed as key to sustainability research; this has been explained with reference to the nature of sustainability problems as complex and often difficult to grasp, and thus requiring the participation of non-scientific, maybe directly affected, actors at all stages of the research process (cf. Lang et al. 2014, p. 136). Although our research of sustainability was not led by an identified and collectively elaborated socially relevant problem, the question that drove our research was carefully worked out using a transdisciplinary perspective. The general research question and its transdisciplinary treatment will be described in the following section.

2.2 The Research Group on Sustainability and the Three Projects Focusing on Actors and Contestations

The key question common to all individual projects and constituting the sustainability aspect researched by the group is the focus on (1) social transformation towards (2) environmental responsible practices and policies. Aspect 1 refers to the transformation of society’s structures, practices and values, as well as the mechanisms for achieving and fostering transformation, both at individual and collective or political levels. Aspect 2 is understood in a multi-faceted sense, spanning from health and quality of life, safe and clean local environments, as well as environmental protection at a larger scale. In what follows, the three projects are described in more detail.⁴

*Project 1: Industrial pollution in low-income neighborhoods and their coping strategies.*⁵ The project explores the determinants of people’s agency when facing

⁴ For a systematic presentation of all projects, including specific research questions and methodology, see: http://nachhaltig.hypotheses.org/files/2017/12/AG_Nachhaltigkeit.pdf. Last accessed: 6/8/2020.

⁵ Partial results of the research project are published in Börner 2018; for the whole research see Börner 2017.

and coping with environmental risks and, at the same time, being part of low-income and minority populations. It draws on two case studies: one in Germany and another one in Mexico. The German case study deals with the polychlorinated biphenyl (PCB) pollution of the harbor district in the northern part of the city of Dortmund as a result of the inappropriate disposal of large transformers containing PCBs. The Mexican case study explores coping experiences in a neighborhood in Huichapan, Mexico, where the incineration of waste in a cement factory has affected the neighborhood. In both cases, local communities not only face waste-related environmental, social, and health impacts; they also struggle for a voice in environmental decision-making processes. As a result, local protest groups have formed in both communities in order to leverage community empowerment and to achieve environmental justice. However, it was observed that large parts of the population have remained inactive in the face of the environmental health risks that threaten the quality of life and well-being in the neighborhood. In consequence, the research project explores how perceptions of individual resources and social opportunities determine the capability of the affected people to participate in environmental decision-making.

The research project sheds light on how self-perceptions of individual resources and of social opportunities have determined the coping-actions of not only active, but also of non-active residents in the affected neighborhoods. It uses narrative biographical interviews to produce narratives of coping with environmental injustice. The narrative biographical interviewing method makes it possible to actively engage community members in participatory story-telling and to give a voice to individuals from marginalized and overburdened communities. The research project also uses the MOVE model as a heuristic to analyze how vulnerable populations cope with environmental burdens, adapting it in order to illustrate coping as a life-long process rather than a static present condition.

*Project 2: Industrial pollution in a cross-border region and the debates surrounding it.*⁶ The project investigates the emergence of an environmental debate in a region extending between national borders in response to ongoing pollution at the end of the 1950s. The “Saar-Lor-Lux” region is situated along the border between France and Germany and the project focuses on two German cases of local protest against water pollution produced by a nuclear power station pertaining to a French company and situated in the town of Großbliedestroff in France. The pollution of the Saar River affected populations in German territory and two local protest groups were formed in 1957 and 1958. The research project investigates the formation and development of both groups and relates these particular cases to

⁶ Partial results of the research project are published in Kaesler 2018.

the larger context of emergence of environmental movements in the 1970s, working on the hypothesis that a continuity can be traced between these local cases and the later movements, and thus contradicting the historical thesis of a “latency phase”, prior to the 1970s, in the development of an environmental consciousness as we know it today. The research relies instead on the thesis that a long transformation process in the environmental history has taken place, and aims thus to uncover the role of the transnational protest processes in the 1950s and 1960s in preparing the way for later movements.

In order to trace the roots of this long-term value transformation, the research investigates archives containing a great collection of original, and partially undisclosed, documents of both groups, focusing on five types of actors –from civil society to industry managers and policymakers– that participated in the emergent debate. The research uses discourse analysis through the lens of what has been called “political behavior style” (Engels 2006), as well as guidelines from the methodology of “entangled history” (*Verflechtungsgeschichte*).

*Project 3: Large-scale transportation projects and their local acceptance.*⁷ The research investigates the degree of acceptance of a renovation project in Germany that is part of a European transportation project under the goal of fostering sustainability. The renovation of the central station in the city of Stuttgart is part of the development of a railway speed axis between Paris and Budapest, which is one of 30 projects funded by the European Commission under its sustainability policy. A great tension arose from the beginning of the renovation project and the research aims to assess the local acceptance through a detailed analysis of the protest processes involved. The research thus focuses on the question of what is exactly being contested in this case, since different dimensions –environment, economy, politics– and multiple interests play a role in both the promotion of the renovation project, as well as in its contestations. In particular, it aims to assess the role that sustainability and sustainable development play in the large-scale project of restructuring transportation axes in Europe, to which the renovation plan for Stuttgart belongs. This questioning arises from the suspicion that sustainability is being used as a slogan rather than a truly shared goal between stakeholders, public administration and policymakers.

The assessment of the local acceptance of a project that is part of a transnational strategy is carried out through a combination between the spatial analysis of the project’s effective implementation and an actor-focused research. For the first dimension, the research relies on investigations already done concerning transportation infrastructure and its environmental impact at the different levels –local,

⁷ Partial results of the research project are published in Volin 2018.

national and European—, creating a cartography of the quantitative and qualitative data from these studies. For the actor-focus, the research uses semi-structured interviews applied to different types of actors, both civil ones from the different associations and protest groups around the renovation project, as well as institutional ones from the European Commission and the state administration of Baden-Württemberg.

3 Methodological Framework and Theoretical Background

Given our research's focus on social transformation toward environmental responsible practices and policies on the one hand, and the configuration of the research team on the other hand, a transformational methodology, as exposed by Lang et al. (2014, p. 134–135), was discussed in the search for guidelines, especially concerning our procedure for integrating individual results in a second step of the research. Another approach, which combines different transformational frameworks, is the TRANSFORM framework. In assessing this methodology for its potential use in our sustainability research, some challenging aspects of the research projects became clear. In what follows, I first sketch some transformational methodologies, including the TRANSFORM framework, and then present some theoretical observations concerning both our research focus and key aspects of the approach to sustainability transitions.

3.1 Transformational Methodology and the TRANSFORM Framework

Several methodological frameworks in sustainability research stress the transformative dimension as central to the very conception of sustainability. Jahn (2013, p. 53) identifies an “operative level” as one of three essential aspects of the complex social understanding of sustainability that sustainability research has to incorporate and reconstruct in a critical manner. At the operative level, concrete and realistic solutions are sought and the corresponding task for sustainability research is the production of “transformative knowledge”, i.e. knowledge that

can be translated into practical solutions and action.⁸ This type of knowledge is always sought in relation to all kind of sustainability problems, even those with lesser complexity and greater convergence regarding the knowledge in the other two levels (normative and descriptive; cf. *ibid.*, p. 55). With a particular focus on processes of transformation oriented towards sustainability, Lang et al. (2014, p. 134–135) describe transformative research methodology in four steps. After having identified the transformation processes that are to be investigated or managed, the first step is to summarize the knowledge at hand concerning the processes in question. In a second step, the synthesized knowledge is used to design strategies to initiate the envisaged transformation processes, e.g. in the form of real laboratories. The follow-up of the processes by the research team is the third step, and the final step is the integration of the new knowledge obtained, and the consequent expansion of the stock of knowledge about the processes in question.

Wiek and Lang (2016) highlight two research streams in sustainability science: one that is descriptive-analytical and one that is transformational. Transformational research aims at “developing evidence-supported solution options” to solve sustainability problems (*ibid.*, p. 31). Projects carrying out transformational research design and test solution options using a variety of methods. A transformational methodology thus has to provide clear guidelines for the selection, combination and application of the different methods involved in a particular project (*ibid.*, p. 33). Relying on a detailed analysis of four different transformational frameworks⁹, Wiek and Lang propose a fifth framework that synthesizes key features of the ones that were analyzed. The general structure of the TRANSFORM framework is the combination of foresight and backcasting. Within this general structure, researchers first “analyze and assess past and current states” of the sustainability problem under investigation and “project the problem into the future” in order to depict several plausible future states (*ibid.*, p. 38). In a second step, researchers “construct and assess sustainable future visions” and trace them back to the current state of the problem. The last step is the design and testing of “transition and intervention strategies” that contribute to solve the problem, attain the visions depicted and avoid undesirable scenarios (*ibid.*).

⁸ Jahn also defines transformation knowledge through the question “what can be done”, as contrasted to the question of the two other levels: the normative “what should be done” and the descriptive “what is the case” (Jahn 2013, p. 53–54).

⁹ Complex problem-handling, transition management and governance, backcasting and integrated planning research. See Wiek and Lang (2016, 35–37); an overview of all four methodological frameworks is offered on p. 35.

3.2 Contestation and Engagement as Transformative Forces

As the study of protest, contestation practices and political engagement shows, transformation can be the goal of intentional actions that result from being affected by persistent problems or perceiving a situation as potentially harmful.¹⁰ When we speak of transformation, we are dealing with a greater level of complexity: we observe that actors are seeking to change a problematic situation, rather than just solve a particular problem. The agency-aspect of transformation appears more clearly from the perspective of actors, both individual and collective. From a systemic point of view, agency appears as one of several factors that play a role in transformation processes. The report of the expert from the German Advisory Council on Global Change (WBGU 2011) analyzes several historical transformation processes and highlights the role of non-institutional actors in two respects: as precursors and supporters of the processes. The second role is even more stressed as a decisive factor in a change-dynamic's development, because historical cases show how the lack of acceptance and support can block transformation processes initiated by some precursors (*ibid.*, p. 108–109). Besides agency, transformation processes require the emergence of a dynamic in the desired direction and the establishment of firm structures that hold up the dynamic in the long term. The activities of some precursors can themselves be consolidated as transformational dynamics (*ibid.* p. 115). One important implication of the role of actors as supporters is their engagement at the level of problem identification. The WBGU report stresses this engagement as a factor that can positively influence the acceptance and legitimacy of transformation processes (*ibid.* p. 68). Democratic legitimation also plays a central role at one of the first steps of transformation, i.e. the determination of criteria and thresholds that, in their turn, establish the frame of possible and desirable transformation paths (*ibid.*, p. 34 and 114).

A pressing question arises when we contrast this analysis of the role of the actors in transformation and the way actors perceive their agency, especially from the perspective of protest. Their active role is perhaps akin to the role as precursors that the WBGU report points out. However, how can we integrate agency in the study of transformation processes towards sustainability when this agency is directed against structures that are needed to foster transformation in the first place? In these cases, actors are not just playing a role in identifying problems, and so delivering an input for transformation processes. In some cases, they are

¹⁰ Protest can also be analyzed from a system perspective (see Luhmann 1996), but this does not deny the fact that transformation can be the goal of intentional actions, both individual and collective.

even trying to transform the structures before they can serve as a basis for stabilizing dynamics of change.¹¹ Hence, the interesting question is how to do justice to this dimension of agency in the methodological framework chosen for sustainability research, i.e. what can we learn from this kind of critical engagement for a better research design and transformation management.

4 Two Challenges and How to Face them in Transformational Frameworks

So far, I have presented the design of a sustainability research project, the specific content of its study cases, and some methodological and theoretical guidelines concerning a transformational framework. In the foregoing section, I outlined the tension that emerges when we consider transformation from the point of view of processes and try to integrate the role of agency at other points different than preparing the way (actors as “precursors”) and accepting the directions taken or envisaged by others (actors as “supporters”). In the remainder of this section, I relate the above observations to the methodological aspects of the research, departing from our concrete study cases.

First challenge: when sustainability is contested. As our third research project shows, sustainability is sometimes put into question as an overarching goal. The first alternative for facing this challenge is to interpret the contestation mainly as an instance of a problem of scale, i.e. sustainability policy being formulated at national and supranational levels in a way detached from the situations (necessities, values, experiences, preferences) of the local level. A straightforward response consists in stressing the necessity of a greater inclusion or participation in policy-making and a research approach that focuses the problems and takes them as necessary input for the formulation and assessment of strategies and policies. However, this would mean just stressing again the suitability of a transdisciplinary rather than a traditional disciplinary perspective for sustainability, which would just remain in the sustainability research modus, which is already known. Instead, a more fundamental way of

¹¹ Peattie notes the risk involved in this kind of engagement, i.e. not being recognized as an input to transformation processes managed at a different scale than that of the civil engagements. Cf. Peattie 2011, p. 30: “Policy-makers also tend to view politics as the ‘art of the possible’ and will tend to label any initiatives that move too far from the status quo as unworkable or unrealistic”. On the other hand, this view of politics is a generalization, and there may be cases different from this. For those cases that do fall under this view, one can still respond by stressing the necessity of integrating knowledge from such diverse sources as possible, and not only from policymakers.

coping with the challenge would be to incorporate the contestation as a *critical component* in a transformational framework, specifically on those steps that rely mainly on descriptive-analytical methods in general and, in particular, problem analyses.¹² This incorporation can be done in a similar way to that in ISOE's model (Jahn 2013, p. 51–52): as a systematic questioning of how all different social actors produce and use knowledge when they are pursuing their agendas, including research itself. This “self-reflexive and methodical test” (ibid. p. 52) weighs the different interests and goals set in a particular pursuit.

Second challenge: when stabilizing structures are contested. All three research projects focus on some aspect of transformation processes. While the first one focuses on individual processes of transformation, explaining the determinants of perception and consequent engagements when facing problematic situations, the second one focuses on historical processes of value transformation that can be identified in the development of debates, protests and civil actions. The third project, finally, focuses on the questioning, at a given level, of concrete plans conceived with the aim of contributing to, or realizing, transformation at another level. Thus, they all focus ongoing transformation processes, yet the transformational methodologies not only grasp ongoing transformation; they also take transformation as the guiding principle of research design, because the goal is the generation of solution options and of “evidence for the effectiveness of the solutions options generated” (Wiek and Lang 2016, p. 34). They thus take for granted the necessity of transformations in order to attain sustainable practices and structures.

Transformational frameworks assume the necessity of transformations as a departing point for developing methodological guidelines on very good grounds¹³, and my aim is not to put into question this necessity. However, the research of agency towards transformation shows what appears to be a paradoxical dynamic in transformations towards sustainability: the goal of sustaining the states, structures or practices envisaged as the aim of transformations seems to preclude further transformations. An alternative to this seeming paradox can be formulated on the basis of certain elements offered by the approach on social-ecological transformation research. When describing some key features of the ISOE approach,

¹² Cf. Wiek and Lang 2016, p. 35; there, table 3.1 shows 4 different transformational frameworks and their respective steps in a systematic manner.

¹³ Cf. WBGU 2011, p. 34: when describing the concept of “Leitplanken”, the report explicitly affirms the necessity of preventing the earth system from entering certain states. In order to avoid certain pathways that can straightforwardly crash against these “barrier points”, the report insists on the necessity of striving, in due time, for changes in the dangerous or risky paths. Transformation processes are thus stressed as necessary. They seek to avoid short-term drastic measures that would not only be too expensive, but also trigger social crises and upheaval.

Jahn (2013, p. 52) firstly warns about understanding sustainability in the sense of “stable end-states” and points out that sustainability instead refers to maintaining the capacity of processes to be continued. Considered in this sense, an important dimension of sustainability research becomes clear, i.e. the identification of those dynamics that can and should be maintained, and of those that should not. From this point of view, the continuity of a system’s capacity for further development rather than the continuation of given states is the key feature of the sustainability model (ibid. p. 60).

The third research project, on historical processes of value change, offers some insights for developing further the ISOE guidelines. Values provide a very good example for grasping the idea of dynamic continuity, i.e. continuity open to further transformation, yet capable of being pursued in a normative manner. Values can be transmitted through practices when they are considered worthy of being transmitted (cf. Norton 2005, p. 356 ff.). At the same time, since practices can and do change –e.g., when they are reflected, criticized, etc.– values realized through practices can also and are also transformed accordingly. The preservation of values over time is both a systemic effect and an agency-driven process. Hence, contestation events do not necessarily represent a challenge or create a paradox for the aim of fostering and managing transformation guided by the principle of sustainability. However, since they are a part of the dynamics of social processes, they should be incorporated in transformational methodologies.

With regard to the TRANSFORM framework, the incorporation of critical and dynamic elements can be accomplished precisely through the synthesis of backcasting and foresight as proposed by TRANSFORM. According to this framework, the evidence-based projection of a problem’s plausible development is combined with envisioning desirable paths and states that are, in turn, contrasted with the present state of the problem. The key point is the iteration of this dynamic research strategy, for it can guarantee that both continuation (of the plausible and desired pathways), as well as change (in problems’ configurations or in path’s or development route’s plausibility), are part of the research and solution design, i.e. of the transformation strategy thus produced.

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