

Environment

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Abstract: This essay highlights some of the theoretical debates in German-language sociology, for instance, metamorphosis and emancipatory catastrophism, social ecology, and the politics of unsustainability. The macro perspective is complemented by approaches that draw on environmental behavior and real-world laboratories as a way to promote environmental transformations. Three prominent topics of recent years (energy transitions, climate change, and sustainability) are discussed at some length before the conclusion suggests that the specific contribution of sociology would lie in a sober and unsparing analysis of the complex societal preconditions for transformational changes, which would involve highlighting piecemeal, incremental, slow, and unplanned changes, unintended consequences, and the role of conflicts and tensions.

Keywords: Climate change, energy transitions, sustainability, crisis, conflict

1 Introduction: Environmental Crisis and Environmental Sociology

It is a well-researched phenomenon that the general public in Germany shows high environmental concern in opinion polls and other surveys. The state of the environment became a mainstream issue following the nuclear accident in Chernobyl in 1986 and has remained a surprisingly consistent concern among the German population throughout economic crises and in spite of our ongoing love for meat, cars, and air travel. Even so, German-language sociology has been relatively reluctant to fully embrace the ecological challenge. In recent years, some topics have gained moderate currency, such as the energy transition in Germany, climate change, and sustainability. The concept of risk (risk society, risk governance) has inspired many important contributions (e.g., Renn, 2017). In German-language sociology, Ulrich Beck was obviously the scholar who went furthest to develop an inclusive theory of risk in modern society, and his untimely death in early 2015 has left a yet unfilled void. Beyond that, many social theories “writ large” still thrive without perceiving the need to integrate society’s ecological relations or without taking into account the increasing pressure on material resources (Schimank, SOCIETY, this volume). Hartmut Rosa and Stephan Lessenich are among the few who have sought to acknowledge that current ecological changes, anthropogenic climate change in particular, might transform the very fabric of contemporary society.

Within environmental sociology, a huge diversity of approaches coexists. Useful overviews are presented in volumes by Brand (2014), Besio and Romano (2016), and Groß (2011). For a long time, environmental sociology has been preoccupied with a

number of paradigmatic debates, for instance, on the extent to which social theory must include the non-social (material, physical, ecological) or which position to adopt in the realist–constructivist debate. In light of these debates, no one wants to fall short of basic insights from science and technology studies (STS). Yet growing environmental pressures and the sense of “real” crisis defy any relativistic standpoint (Kraemer, 2008).

This essay will highlight some of the theoretical debates in German-language sociology as to which approach is most appropriate to develop the field of environmental sociology in the face of growing environmental crises, which might become the dominant field of conflict and dominant driving force for social change in the near future. This review essay is organized into five sections. It will start with Beck’s late work on the concepts of metamorphosis and emancipatory catastrophism, and how his work might be discussed in light of two other theoretical directions: social ecology and the politics of unsustainability (section 2). Section 3 will provide a selective overview of competing approaches to understand environmental behavior, followed by section 4, which will focus on the specificity of experiments, both in terms of unintended large-scale experiments outside the laboratory and in terms of new methodological ways to promote change through real-world laboratories. Section 5 will highlight the three topics that have received the most attention in recent years: energy transitions, climate change, and sustainability. The final section 6 will provide a brief outlook on the future of environmental sociology.

2 Is the World Metamorphosing, and How Can We Theorize about It?

The late Ulrich Beck left an unfinished book manuscript in which he tried to grasp the full consequences that global climate change will unleash on society. The manuscript was finalized by his wife and long-term co-author, Elisabeth Beck-Gernsheim, as well as his two colleagues John Thompson and Albert Gröber. It appeared posthumously in 2015 as *The Metamorphosis of the World*. The book contains Beck’s conceptual and theoretical suggestions to understand and anticipate the changing modes of human existence and what these imply for political action and the fate of humanity. The term *metamorphosis* is meant to designate epochal changes and transformations of a new quality that bring about a different mode of being in the world, even a different mode of human existence. In a nutshell, the book suggests three interrelated hypotheses: First, the experience of global catastrophic events (e.g., the Chernobyl accident, the September 11 attacks, global climate change) equates to a violation of unwritten norms of human existence and civilization. Second, the anticipation of such types of catastrophes leads to an anthropological shock, which might, third, harbor the possibility of social catharsis. Beck’s analysis of these changes unfolds around the notion of positive side effects of bads, which create a new normative horizon of common

goods. Threats like climate change also contain the seeds of hope, especially as a new global horizon emerges: the experience of a worldwide failure to address these threats and the anticipation of global catastrophe can motivate and mobilize cosmopolitan spaces of action. Beck calls this possibility “emancipatory catastrophism,” but throughout the book he remains firm in keeping the outcome of these metamorphoses open and ambivalent: success is not guaranteed, but at least there is a chance of reinventing democracy along cosmopolitan lines. His account is neither pessimistic nor optimistic, but it highlights the significance of political decisions. The most important characteristics of the metamorphoses relate to the nation state and its polity, and how it is increasingly superimposed by emerging cosmopolitan risk communities. According to Beck, this has important implications for how to think about social change. He suggests switching the perspective from considering the United Nations as the central space of global action to “united cities” precisely because (united) nations are no longer the main driving force of change. Increasingly, the “world” is the new unit of communication—not as a willful act of choice on the part of politicians and citizens but as an unavoidable outcome of global connectedness. I will take this book as a starting point to discuss two different strands of literature that have gained prominence in the German-speaking sociological world, both of which have their roots in political science. In this discussion, I will look at Beck’s emancipatory catastrophism through the lens of the politics of unsustainability and at his assumption of a cosmopolitized physical reality of side effects and inseparable connections between physical and social processes through the lens of social ecology.

Let us start with the latter. Social ecology was adopted in Germany as a new approach in research in late 1987. Its institutional origin was in Frankfurt, with some historical roots in the Frankfurt school of critical theory, and the founders tried to combine this tradition of critical analysis of relations of power and authority with critical feminist approaches to gender relations and critical analyses of society’s relations to nature. In *Soziale Ökologie. Grundzüge einer Wissenschaft von den gesellschaftlichen Naturverhältnissen* (2006; *Social Ecology. Features of a Science of Societal Relationships with Nature*), Egon Becker and Thomas Jahn compiled a comprehensive volume on this influential school in Germany. It not only resulted in the creation of a research institute but also in the formulation of a framework program for research funding that has guided state-funded research programs on environmental problems since 2000. This school rejects the methodological dualism inherent in environmental sociology, which stays on the social side of things, so to speak, and looks at the physical environment if and in as much as it is included in societal discourses or other societal dynamics. Social ecology is the attempt to integrate the social and the ecological into one coherent framework that allows us to analyze how society and nature are mutually constitutive and how these interdependencies have entered into a permanent crisis mode. One could say that this school is the German reaction to Catton and Dunlap’s call for introducing the new environmental paradigm into sociology (Catton and Dunlap, 1978). The social-ecology approach is embedded in the history of science, the history of society, and the history of science–society relations.

Becker and Jahn's book develops the theoretical outlines of social ecology and describes its implications for research. At the core of this approach is a commitment to analyze individuals, society, and nature together and to focus on the crisis of these socio-ecological relations. This also demands a new research practice, one that is highly inter- and transdisciplinary and solution-oriented, with a basic topical reference to ecological crises and a basic theoretical reference to societal relationships with nature. The social-ecology approach has since inspired many research projects and publications.

If the social-ecology approach is used here to make suggestions on how to understand Beck's cosmopolitized reality, the *politics of unsustainability* are a way to look (with notable skepticism) at his hope for emancipatory catastrophism and the social catharsis that may result from it. Ingolfur Blühdorn, a political scientist and sociologist, combines his analysis of the changing democratic forms in Western consumer societies with social theories on subjectification and the ecological paradigm. He has spelled out this program in several articles, books, and collections, among them *Post-Ecologist Politics: Social Theory and the Abdication of the Ecologist Paradigm* (2000) and, in a very condensed version, *Nicht-Nachhaltigkeit auf der Suche nach einer politischen Form. Konturen der demokratischen Postwachstumsgesellschaft* (2018; *Non-Sustainability in Search of a New Political Form. Contours of a Democratic Post-Growth Society*). In the latter, his analysis begins with the marked loss of credibility of three narratives that have accompanied green movements over the past decades: that green growth continuously creates new jobs, that democratic capitalism (or specifically the German version of a social market economy) secures legitimate forms of wealth accumulation and redistribution, and that the emancipation of subjugated individuals will accord with ecologically sustainable forms of subjectification. In direct opposition to scholars who are normatively oriented towards transitions, transformations, and a sustainable post-growth vision, Blühdorn insists on an unsparing analysis of actual societal processes. He argues that an actual (but involuntary) post-growth society is currently unfolding, one in which growth can only be achieved at diminishing rates. At the same time, it becomes increasingly obvious that liberal democracies are in tight complicity with unsustainable consumption patterns exactly because they privilege personal liberties over collective programs. The authentic self is predominantly stabilized by short-term material satisfaction—the once-predicted broad embrace of post-material values is empirically nonexistent. Together with other systemic phenomena of democratic crisis (democracy produces increasingly precarious, marginalized ways of life at the bottom of the economic pyramid and, at the same time, skeptical reassessments of the merits of equal voting rights and inclusive political participation in the wealthy middle), current democratic forms reveal dysfunctionality in at least two interrelated ways: decreasing problem-solving capacities in the face of complex sustainability problems, and a diminishing guarantee of liberal self-fulfillment of the individual. As a result, we are witnessing a transformation towards a new democratic form that—under actual (not normatively desirable) post-growth conditions—actively

protects non-sustainable lifestyles and, in order to do so, creates sharp forms of exclusion while giving up on what was once the democratic promise of inclusion.

Metamorphosis, social ecology, and the politics of unsustainability are concepts that offer explanations of the changing relations between contemporary society and its “natural” environment. They all emphasize crises, and they try to capture macro processes. Complementary to this perspective, many sociological contributions focus on environmental behavior and offer competing explanations of individual behavior, a perspective to which we will now turn in the next section.

3 How Can Environmental Behavior Be Conceptualized?

Environmental behavior is a fascinating sociological puzzle, as we have to acknowledge the persistence of environmentally damaging behavior despite growing environmental awareness and concern. The macro level provides some insights into structural barriers, but what about the individual level? In the German-speaking sociological community, some authors have positioned themselves in the tradition of rational-choice explanations, albeit in a critical reformulation, whereas others have developed a differentiated set of contextual, habitual, cultural, and lifestyle approaches.

The critical refinement of rational-choice explanations was most prominently advanced by Andreas Diekmann and Peter Preisendörfer, who inquired into factors that might explain the inconsistencies between environmental attitudes and (reported) environmental behavior. In their already classical study (1992), the authors distinguished between high-cost and low-cost contexts of environmental behavior. In many cases, environmental behavior refers to collective goods. In a very basic rational-choice mindset, solutions to these problems of collective goods are difficult to achieve because individuals weigh their personal costs of contributing to collective goods against the anticipation that the effects of their contribution might be counterbalanced by others’ free-riding behavior or that their own contribution might even motivate free-riding behavior in others. Even if individuals were to score highly in terms of their pro-environmental attitudes or were to perceive themselves as being concerned about environmental issues, the theory would not expect these attitudes to overcome the collective-goods dilemma. However, Diekmann and Preisendörfer showed—initially through a large quantitative phone survey in Switzerland—that environmental attitudes provide some explanatory value for environmental behavior at least in low-cost situations (Diekmann and Preisendörfer, 1992). Drawing on a phone survey conducted in Germany a decade later, the same authors showed convincingly that comfort and convenience privilege short-term-oriented and context-specific forms of rationality (*Green and Greenback: The Behavioral Effects of Environmental Attitudes in Low-Cost and High-Cost Situations*, 2003). Diekmann and Preisendörfer emphasized

the general limits of attitude research and of rational-choice theory. In light of their findings, they developed a number of practical and policy-minded conclusions: As many environmental problems actually have a low-cost character, they maintain that it would still make sense to promote pro-environmental attitudes because “small contributions of many people would have substantial effects in aggregate” (ibid.: 467). They also suggest that political action might aim more systematically at transforming high-cost situations into low-cost ones to achieve more efficacy in environmental matters.

In another attempt to modify and broaden basic rational-choice frameworks, Ulf Liebe contributed an insightful experimental study on the willingness to pay for biodiversity protection in a nature-protection area in Northern Germany. This was published as a monograph titled *Zahlungsbereitschaft für kollektive Umweltgüter. Soziologische und ökonomische Analysen* (2007; *The Willingness to Pay for Collective Environmental Goods. Sociological and Economic Analyses*). Dealing with willingness to pay in sociological perspectives allows one to modify and broaden the economic framework of rational choice or the psychological framework of planned behavior. Liebe demonstrated that moral motivations do have considerable explanatory power. Some open questions in the economic framework can be answered much better if altruistic behavior, or other attitudes, are systematically included in the explanatory framework. Liebe also suggested that willingness to pay should not be conceptualized as a hypothetical payment for buying a share of a common good but as a hypothetical contribution to the common good. This would imply a conceptual shift in terms of conceiving of the actors not as buyers but as active contributors.

Whereas Liebe, Diekmann, and Preisendörfer sought to modify and broaden the economic or psychological models of environmental behavior as an outcome of choice or planning, many other authors have emphasized alternative explanations that focus more on routines, culture, structural context, and lifestyles. Blättel-Mink, for example, summarized her own and others' works on consumption, including sustainable consumption, by emphasizing that a perspective centered on the individual will always fall short in light of complex decision architectures that are the dynamic outcome of structures and institutions (Blättel-Mink, 2019).

Among these alternative explanations, practice theories have gained prominence in the German-speaking sociological community. As was proposed by Elizabeth Shove (2010), a practice view of “consumption” offers a much-improved understanding of the complexities of behavioral patterns, their stability over time, and the (extremely limited) options to incite behavioral changes through information, education, and moral obligation (Jaeger-Erben, 2010). The combination of practice and social-innovation theories has opened particularly insightful perspectives on how new forms of sustainable consumption emerge in society. In *Sustainable Consumption through Social Innovation: A Typology of Innovations for Sustainable Consumption Practices* (2015), Melanie Jaeger-Erben, Jana Rückert-John, and Martina Schäfer suggested that sustainable consumption practices are actively developed as social innovations by consumers themselves and that learning from these innovations might identify new

ways of promoting sustainable consumption and increasing their sustainability effects. Drawing on interviews and guided by a modified grounded-theory approach, the authors show the dynamics through which concrete social innovations in the field of sustainable consumption emerge from challenges or dissatisfaction with established practices, are tried out as alternatives (e.g., in niches), and then become stabilized. The examples they analyze vary across four dimensions: innovativeness, formality, communality, and personal engagement. The authors deduce a typology of five different forms of innovation: do-it-together, strategic consumption, sharing communities, do-it-yourself, and utility-enhancing consumption, each of which comes with a specific set of challenges and opportunities. The authors emphasize the importance of bottom-up innovation processes for larger-scale sustainability transformations, and they shift the focus away from specific actor groups to the processes of problematization, experimentation, and re-stabilization through which new practices can gain ground.

In contrast to this rather optimistic tone, Armin Grunwald clearly warns against the expectation that sustainable practices could have the necessary structural macro effects. In *Wider die Privatisierung der Nachhaltigkeit—Warum ökologisch korrekter Konsum die Umwelt nicht retten kann* (2010; *Against the Privatization of Sustainability—Why Ecologically Correct Consumption Will Not Save the Environment*), Grunwald argued that sustainability is the responsibility of the political system. Nonetheless, a standard observation is that wide-ranging expectations are attached to individuals' environmentally sound behavior, especially as consumers. They are held increasingly responsible for switching to sustainable consumption and sustainable lifestyles. However, according to Grunwald, this expectation is misleading for at least three reasons: First, for an assessment of how sustainable products really are, one would have to conduct complex life-cycle analyses. Consumers typically lack this information and are therefore unable to make informed choices between more or less sustainable product alternatives. Second, there is no direct link between individual acts of consumption and the systemic level, as many intermediary levels influence the cumulative effects in often unintended ways. Third, modern liberal statehood rests on the separation of public and private spheres, which forms a difficult framework for a moralization of private affairs and the instrumentalization of environmentally sound private consumption behavior to achieve the political goal of sustainability transformations. To transfer responsibility to the sphere of private consumers is thus simply an illusionary solution. Broadly speaking, environmental behavior, or behavior that aims to contribute to a more sustainable society, should be understood as a political act that shifts the focus from understanding consumer choices to analyzing political power relations. Here, the analysis of the preconditions for individual sustainable behavior intersect with the macro-level contributions discussed in the previous chapter.

In light of the obvious persistence and structural inertia of environmentally damaging societal forms and behavioral patterns, much attention has been given to experiments as a way out of the stalemate. This is the focus of next section.

4 How Can Real-World Laboratories Serve as Analytical and Practical Tools of Ecological Transformation?

Throughout the history of science, laboratory experiments have been developed as an important mode of doing research, developing theories, and innovating under controlled conditions. With the advent of our current knowledge society, however, the boundaries of the lab would seem to have opened up, and the experimental mode has become more generalized—both accidentally and deliberately. This expansion of the lab is often discussed together with ecological risks and with ecological transformations. Embedded in a macro analysis of the knowledge society, the authors Matthias Groß, Holger Hoffmann-Riem, and Wolfgang Krohn issued a book in which real-world experiments are portrayed as a new type of experimentation that serves as a novel response to the ubiquitous experience of (ecological) risks and non-knowledge: *Realexperimente. Ökologische Gestaltungsprozesse in der Wissensgesellschaft* (2005; *Real-World Experiments. Processes of Ecological Design in the Knowledge Society*). Especially in the context of highly complex ecological challenges, the concept of real-world experiments can be used to understand how the experimental mode of learning and innovating can create more robust solutions that can accommodate the unexpected. In four detailed case studies on ecological experiments (i.e., the ecological redesign of a peninsula, changes to cattle farming, ecological cleanup of a lake, and the installment of a new system of waste treatment), the authors demonstrate that this new experimental mode should not be seen as a second-best scientific approach compared to properly controlled lab experiments but instead as a promising mode to deal with growing complexities under conditions of systematic non-knowledge.

This analysis has been broadened in theoretical and conceptual terms and has also inspired regional and national programs of research funding in environmental and sustainability fields. In *Experimentelle Gesellschaft: Das Experiment als wissenschaftliches Dispositiv* (2017; *Experimental Society: The Experiment as a Dispositive of the Knowledge Society*), Stefan Bösch, Matthias Groß, and Wolfgang Krohn assembled fifteen contributions to spell out the experimental mode as an encompassing dispositive in the Foucauldian sense. The dispositive refers to material settings, ways of dealing with non-knowledge, learning environments, expectations toward new findings, forms of participation, conditions of legitimation and acceptance, the processing of results, and responses to errors and failures. The experimental dispositive maintains that privileging knowledge (or knowing) is replaced by privileging research (the generalized mode to deal with the new, the unknown, the surprises), and that society at large has switched to accepting an experimental mode.

Empirical examples of this are increasingly found in large and small cities across Germany. They call themselves urban labs, urban transformation labs, living laboratories, or similar and are increasingly promoted by state-funded research programs.

Felix Wagner and Armin Grunwald reflected on the paradoxical effects of the new requirements of real-world laboratories in their paper *Reallabore als Forschungs- und Transformationsinstrument. Die Quadratur des hermeneutischen Zirkels* (2015; *Real-World Laboratories. The Conundrum of Being an Instrument of Both Research and Societal Transition*). The dual goal of designing transformations and doing research on them at first glance promises to highlight new paths from knowledge to action. Their illustrative nature can promote participation, provide a source of inspiration, and generally support a culture of sustainability. Pioneers who are involved in them can gain an external perspective that might drive a more critical self-evaluation. Through their limited scope and at least partial reversibility, such interventions may be met with greater openness, can function as a space for system innovation, and can potentially be expected to be better received by civil society. However, Wagner and Grunwald listed a number of conceptual and practical problems in their paper. Considering some of these problems, they suggested the need for a more systematic reflection on the modes of governance in these projects, as they often involve complex constellations of various actors (see also Engels and Walz, 2018). They also advocated for a better epistemological foundation to this new experimental and transdisciplinary mode of research.

The experimental turn in German policy and in research funding will be an interesting future object of research with particular relevance in the field of ecological transformations. For readers interested in project presentations as well as more theoretical reflections on this new type of research, the journal *GAIA* is, incidentally, a very rich source of information and a platform for the German-speaking academic community that is interested in these issues.

5 How Does Sociology Contribute to Understanding the Most Pressing Environmental Challenges?

In close connection to public debates and academic developments within sociology, three topics have gained some prominence in research over the past decade and have attracted an increasing number of scholars in the German-speaking sociological community: anthropogenic climate change, the German energy transition (*Energiewende*), and sustainability.

Climate change

Anthropogenic climate change has gained some weight as a topic in the sociological community in recent years (Reusswig and Engels, 2018; Engels, 2016). While the topic often serves as the ultimate example of and reference point for global ecological crises, its repercussions have been detailed for a huge variety of societal fields (Besio and Romano, 2016).

One important aspect of the broader topic of climate change has always been the negotiations to achieve global agreements as well as questions of global governance. While many important contributions in this field have come from political science, which typically focuses on concepts such as power, hegemony, and interest formation, Stefan C. Aykut has taken a different approach and offered an innovative view on negotiations, climate politics, and governance (Aykut and Dahan, 2015). As a longtime observer of the global dynamics of climate negotiations, he analyzed in several collaborative projects how climate governance is produced. He and his colleagues call the process “schizophrenic,” because at the same time as ever more areas in society are being associated with climate change and are being drawn into negotiations accordingly, some areas have remained strictly dissociated from any such connection and excluded from negotiations. Global energy markets and world trade are two areas in particular that remain unconnected to climate change and ignored in the negotiation process, with wide-ranging effects on the possibility of moving towards a low-carbon society. In an edited volume, Stefan C. Aykut, Jean Foyer, and Edouard Morena present the outcomes of a collaborative ethnographic observation of COP 21 in Paris in 2015 (*Globalising the Climate. COP 21 and the Climatisation of Global Debates*, 2017). This particular conference, which led to the so-called Paris Agreement on Climate Change, has been assessed by many commentators as a breakthrough in climate-change negotiations and as having brought about a paradigm shift. The contributions in this book take a more distanced view on this latter assumption. Using a collaborative methodology, they look at the global negotiations through the lens of a transnational mega-event and suggest that COP 21 could be seen as a total event in which various discourses, practices, and actor networks came together to result in a “climatisation of the world” (ibid: 5). In his own contribution, Aykut looks particularly at the practice of negotiating (e.g., how the order of climate conferences is negotiated), including its specific choreography and rhythm. It is interesting to see not only how the social sides of the negotiations—with thousands of people coming together for up to two weeks, some of whom have become negotiation aficionados—play their part but also the very technicized process of the actual negotiations. Aykut concludes, first, that COP 21 was of singular symbolic importance as it created the impression that there is an international community in charge of global problems; second, that the process of producing a text together was of central importance, more so than the actual outcome of the text; and third, that the event really marked a shift from governance through rule-making to governance by signaling.

Energy transition

The energy transition in Germany is a long-term process that dates back to the early 1970s and envisions a gradual replacement of coal and nuclear energy with renewable energy sources, in particular wind, solar, and biomass (Neukirch, 2013; 2018). Germany as a case study has attracted considerable attention in international debates on energy transitions because it is an example of a wealthy economy with high techno-

logical production standards and strong technological innovation capacities, all of which are embedded in a fairly well-developed welfare state, but represents a country that lacks a clear renewable replacement domestically (there is neither an abundance of hydropower options, nor of sun for solar panels, nor of vast open landscapes for windfarms). On the basis of a broadly shared risk assessment and given the unavailability of storage sites for nuclear waste, a phase-out of nuclear energy was decided as early as 2000, and this commitment was renewed after the Fukushima accident in 2011. In the context of Germany's climate goals, the phase-out of coal production has been discussed with increasing frequency in recent years and is now being decided with an official phase-out date.

An earlier study by Rüdiger Mautz, Andreas Byzio, and Wolf Rosenbaum analyzed the different historical phases through the lens of the sociology of technology (*Auf dem Weg zur Energiewende: Die Entwicklung der Stromproduktion aus erneuerbaren Energien in Deutschland*, 2008 [*On the Path towards the Energy Transition: The Development of Energy Production from Renewable Energy Sources in Germany*]). According to the authors, the history of the energy transition unfolded in three phases. From the mid-1970s to the mid-1980s, a utopian vision of a soft energy path emerged. This was characterized by a decentralized system of provisioning renewable energy. In the following decade, some funding programs were established and the first viable forms of implementing and institutionalizing decentralized systems of provision were created. The third phase was characterized in part by a successful continuation and even expansion of the path toward renewable energy. At the time the study was conducted, however, the authors identified two paradigms that were in direct opposition: the old, centralized, fossil-fuel- and nuclear-based oligopolistic energy world and the new, decentralized, renewable energy world. They emphasize that the difference between the two is not just in terms of technological options but that a transition from one to the other would also involve a massive socio-cultural paradigm shift. The authors recognize that the energy transition had gained ground to a degree that entire landscapes had been transformed by wind turbines in Northern Germany, millions of solar panels had been installed on rooftops in the sunnier parts of Germany, and agricultural bioenergy production sites had diffused throughout the country. They saw the German energy transition at a critical juncture in the mid-2000s at which the path would either continue towards decentralization or energy provision would be re-centralized and again dominated by the large economic players.

Complementary perspectives to such a broad and historical view can be found in detailed case studies on local energy-transition projects. Such case studies include the dissertation by Angela Pohlmann, published in English, titled *Situating Social Practices in Community Energy Projects: Three Case Studies about the Contextuality of Renewable Energy Production* (2018). After the 2011 accident at the nuclear power plant in Fukushima, Japan, the German *Energiewende* received a boost in support as an important national technological and cultural mega-project. Many local initiatives emerged and tested new forms of organization and new business models. Pohlmann's study analyzes civil engagement in the actual process of energy production for

heating. She develops an innovative version of practice theory in which Theodore Schatzki's thinking is combined with Adele Clarke's situational analysis. Pohlmann compares three case studies in which non-state actors tried to combine renewable energy and cultural projects, two of them in metropolitan settings in Germany and the third in a rural area in Scotland. The study shows how people make sense of energy in an open-ended negotiated process resulting in only temporary fixes and thus in a situation that is always susceptible to new instabilities. These insights are important contributions to our understanding of transformative processes on the local scale. Energy derives its meaning not directly from some set of material technological features but always in combination with complex arrangements of other elements. Community development, the political fight against large corporate actors, or cultural activities can all be enmeshed in the material settings of energy production, with widely varying outcomes.

Sustainability

While energy transitions offer one way to look at concrete socio-technical changes, the recent debates on the UN Sustainable Development Goals widen the view to account for the connectedness between all kinds of problem perspectives and normative dimensions—from the local to the global scale. But how can a normative concept such as sustainability serve as a starting point for theorizing about contemporary society? Sighard Neckel et al. recently presented a programmatic collection titled *Die Gesellschaft der Nachhaltigkeit. Umriss eines Forschungsprogramms* (2018; *The Sustainability Society. Outlines of a Research Program*). In their sociological perspective, sustainability is not employed as a normative guiding idea that motivates optimistic transformative research but rather as an analytical category that guides a problem-oriented and reflexive observation of ongoing processes that are full of contradictions, dilemmas, and paradoxical outcomes. As we apply this category, we should place special emphasis on new lines of conflict, new formations of societal inequality, and hierarchies along with (obviously) the tight connection with power relations. Sustainability is thus considered a contested category in society, and in order to fully grasp the depth of these conflicts and contestations, it is necessary to situate any analysis of sustainable society in the context of theories of capitalism, as these conflicts and contestations are expressions of a renewal of the capitalist economy under dramatically changing conditions. The leitmotif for these conflicts is how to secure the regenerativity of ecological, economic, social, and subjective resources that are necessary for the reproduction of central institutions and functional spheres of society and how to keep future opportunities for development open. The different contributions in this small volume offer a selection of interesting topics that will no doubt be covered in the coming years, ranging from financial markets, certificates and labels, and practices and artifacts to the analysis of sustainability as an endeavor geared towards transcaptialism.

With some overlap but less emphasis on the capitalist framework, Anna Henkel and colleagues have suggested a research program that includes modes of reflexive responses to the multiplicities inherent in thinking about and acting on sustainability in contemporary society. The establishment of a network among the German-speaking community was accompanied by publishing several programmatic articles, such as *Soziologie der Nachhaltigkeit. Herausforderungen und Perspektiven* (2017; *The Sociology of Sustainability. Challenges and Perspectives*). The creation of this network is a promising sign for a growing sociological engagement with the topic of sustainability based on deep theoretical foundations. It is exactly sociology's richness in different perspectives that enables an adequate reflexive mode vis-à-vis current ideas of sustainable development. In addition to environmental sociology, this reflection can draw from the sociology of knowledge and STS, as well as from the rich diverse theoretical traditions of critical theory, systems theory, practice theory, and the program of social-ecological research mentioned above.

By turning the often criticized multi-paradigmatic character of the sociological discipline into a virtue, Henkel et al. suggest five tentative approaches: a “doing sustainability” perspective that looks at practices of cooperation and mutual care, a field-theoretical analysis of knowledge regimes, research that proceeds from the changing role of science as a core institution of society, an approach of epistemic governance, and macro-theoretical reflection at the level of society. Many of these conceptual and theoretical debates are taking place in the recently founded German-language journal *Soziologie und Nachhaltigkeit—Beiträge zur sozial-ökologischen Transformationsforschung* (*Sociology and Sustainability—Contributions to Social-Ecological Transformation Research*).

6 Current Challenges

This essay has shown the extent to which “the environment” has become a topic in the German-speaking sociological community. The specific contribution of sociology to contemporary normative debates about necessary ecological transformations could be a sober and unsparing analysis of the complex societal preconditions for such changes. Sociology is well prepared for this task, as many authors are interested in social theory and a good theoretical understanding of societal macro processes, and many contributions are built on fundamental insights from STS and political sociology. This helps to keep an open eye on piecemeal, incremental, slow, and unplanned changes instead of just assuming sweeping coherent transformations towards sustainability goals. A sociological perspective will, moreover, always focus on unintended side effects and consequences of willful interventions, on ambivalences and tensions, and on conflicts as a central driving mode of social change.

The field also co-develops with societal debates on environmental crises. Enlivened by Fridays for Future and other recent social movements, the current political conflicts about the right approach to climate change call for a broad sociological

engagement, even though the German-speaking community has not yet achieved a state of saturated debate comparable to the United States (see Dunlap and Brulle, 2015). However, environmental policies seem to be once more at a critical juncture. Typical debates in Germany are centered around the question of costs and market-based pricing solutions. This pairs with a passive conception of “public acceptance.” In this specific situation, sociology can emphasize the productive role of conflicts and the need to combine passive acceptance with manifold options for active engagement (Aykut et al., 2019).

References

- Aykut, S. C.; Dahan, A. *Gouverner le climat? 20 ans de négociations internationales*; Presses de Sciences Po: Paris, 2015.
- Aykut, S. C.; Foyer, J.; Morena, E., Eds. *Globalising the Climate. COP21 and the Climatisation of Global Debates*; Routledge Earthscan: London, 2017.
- Aykut, S. C.; Neukirch, M.; Zengerling, C.; Engels, A.; Suhari, M.; Pohlmann, A. Energiewende ohne gesellschaftlichen Wandel? Der blinde Fleck in der aktuellen Debatte zur “Sektorkopplung”. *Energiewirtschaftliche Tagesfragen* **2019**, *69*, 20–24.
- Beck, U. *The Metamorphosis of the World*; Polity Press: Cambridge, 2015.
- Becker, E.; Jahn, T. *Soziale Ökologie. Grundzüge einer Wissenschaft von den gesellschaftlichen Naturverhältnissen*; Campus: Frankfurt a.M./New York, 2006.
- Besio, C.; Romano, G. *Zum gesellschaftlichen Umgang mit dem Klimawandel. Kooperationen und Kollisionen*; Nomos: Baden-Baden, 2016.
- Blättel-Mink, B. Paradoxien des Verbraucherverhaltens und Konsequenzen für die Verbraucherforschung. In *Paradoxien des Verbraucherverhaltens*; Kenning, P., Ed.; Springer VS: Wiesbaden, 2019; pp 135–140.
- Blühdorn, I. Nicht-Nachhaltigkeit auf der Suche nach einer politischen Form. Konturen der demokratischen Postwachstumsgesellschaft. *Berliner Journal für Soziologie* **2018**, *28*, 151–180.
- Blühdorn, I. *Post-Ecologist Politics: Social Theory and the Abdication of the Ecologist Paradigm*; Routledge: London, 2000.
- Bösch, S.; Groß, M.; Krohn, W., Eds. *Experimentelle Gesellschaft. Das Experiment als wissenschaftsgesellschaftliches Dispositiv*; Nomos: Baden-Baden, 2017.
- Brand, K.-W. *Umweltsoziologie. Entwicklungslinien, Basiskonzepte und Erklärungsmodelle*. Beltz Juventa: Weinheim/Basel, 2014.
- Catton, W. R.; Dunlap, R. E. Environmental Sociology: A New Paradigm. *The American Sociologist* **1978**, *13*, 41–49.
- Diekmann, A.; Preisendörfer, P. Persönliches Umweltverhalten: Diskrepanzen zwischen Anspruch und Wirklichkeit. *Kölner Zeitschrift für Soziologie und Sozialpsychologie* **1992**, *44*, 226–251.
- Diekmann, A.; Preisendörfer, P. Green and Greenback: The Behavioral Effects of Environmental Attitudes in Low-Cost and High-Cost Situations. *Rationality and Society* **2003**, *15*, 441–472.
- Dunlap, R. E.; Brulle, R. J., Eds. *Climate Change and Society. Sociological Perspectives. Report of the American Sociological Association’s Task Force on Sociology and Global Climate Change*; Oxford University Press: Oxford, 2015.
- Engels, A. Anthropogenic Climate Change: How to Understand the Weak Links Between Scientific Evidence, Public Perception, and Low-Carbon Practices. *Energy and Emission Control Technologies* **2016**, *4*, 17–26.

- Engels, A.; Walz, K. Dealing with Multiperspectivity in Real-World Laboratories. Experiences from the Transdisciplinary Research Project Urban Transformation Laboratories. *Gaia* **2018**, *27*, 39–45.
- Groß, M., Ed. *Handbuch Umweltsoziologie*; VS: Wiesbaden, 2011.
- Groß, M.; Hoffmann-Riem, H.; Krohn, W. *Realexperimente. Ökologische Gestaltungsprozesse in der Wissensgesellschaft*; transcript: Bielefeld, 2005.
- Grunwald, A. Wider die Privatisierung der Nachhaltigkeit – Warum ökologisch korrekter Konsum die Umwelt nicht retten kann. *GAIA-Ecological Perspectives for Science and Society* **2010**, *19*, 178–182.
- Henkel, A.; Bösch, S.; Drews, N.; Firnenburg, L.; Görgen, B.; Grundmann, M.; Lüdtke, N.; Pfister, T.; Rödder, S.; Wendt, B. Soziologie der Nachhaltigkeit – Herausforderungen und Perspektiven. *Soziologie und Nachhaltigkeit* **2017**, *Sonderband 1*, 1–30.
- Jaeger-Erben, M. *Zwischen Routine, Reflektion und Transformation – die Veränderung von alltäglichem Konsum durch Lebensereignisse und die Rolle von Nachhaltigkeit. Eine empirische Untersuchung unter Berücksichtigung praxistheoretischer Konzepte*, 2010; <https://d-nb.info/101004978X/34> (Retrieved Apr 07.2020).
- Jaeger-Erben, M.; Rückert-John, J.; Schäfer, M. Sustainable Consumption through Social Innovation: A Typology of Innovations for Sustainable Consumption Practices. *Journal of Cleaner Production*, **2015**, *108*, 784–798.
- Kraemer, K. *Die soziale Konstitution von Umwelt*; VS: Wiesbaden, 2008.
- Liebe, U. *Zahlungsbereitschaft für kollektive Umweltgüter. Soziologische und ökonomische Analysen*; VS: Wiesbaden, 2007.
- Mautz, R.; Byzio, A.; Rosenbaum, W. *Auf dem Weg zur Energiewende: Die Entwicklung der Stromproduktion aus erneuerbaren Energien in Deutschland; eine Studie aus dem Soziologischen Forschungsinstitut Göttingen (SOFI)*; Universitätsverlag Göttingen: Göttingen, 2008.
- Neckel, S.; Besedovsky, N.; Boddenberg, M.; Hasenfratz, M.; Pritz, S. M.; Wiegand, T. *Die Gesellschaft der Nachhaltigkeit. Umriss eines Forschungsprogramms*; transcript: Bielefeld, 2018.
- Neukirch, M. Ausbau der Stromnetze – Konflikte und Perspektiven der deutschen Energiewende. Extension of Power Grids – A Contested Area in the German Energy Transition. *GAIA-Ecological Perspectives for Science and Society* **2013**, *22*, 138–139.
- Neukirch, M. Die Energiewende in der Bundesrepublik Deutschland (1974–2017) – Reform, Revolution, oder Restauration? *Sozialpolitik* **2018**, *1*, 1–3.
- Pohlmann, A. *Situating Social Practices in Community Energy Projects: Three Case Studies about the Contextuality of Renewable Energy Production*. Springer: Wiesbaden, 2018.
- Renn, O. *Risk Governance: Coping with Uncertainty in a Complex World*; Earthscan: London, 2008.
- Renn, O. Risk Governance. In *Risk Conundrums. Solving Unsolvable Problems*; Kaspersen, R. E., Ed.; Routledge: Abingdon/New York, 2017; pp. 243–259.
- Reusswig, F.; Engels, A. Klimawandel in der soziologischen Diskussion. *Soziologische Revue* **2018**, *41*, 33–48.
- Shove, E. Beyond the ABC: Climate Change Policy and Theories of Social Change. *Environment and Planning* **2010**, *42*, 1273–1285.
- Wagner, F.; Grunwald, A. Reallabore als Forschungs- und Transformationsinstrument. Die Quadratur des hermeneutischen Zirkels. *GAIA-Ecological Perspectives for Science and Society* **2015**, *24*, 26–31.

