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Revisiting the promise of eco-political experimentation: an introduction to the Special Issue

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ABSTRACT

In light of pressing challenges such as climate change, real-life, participatory, adaptive, and reflexive experimental interventions have been framed as indispensable incubators for transformative change toward greater sustainability. Yet, to what extent are the promises that were attached to eco-political experimentation around the turn to the 21st Century still plausible today? In this introduction to this Special Issue on eco-political experimentation we first map the alternative that experimentation sought to be in the fields of knowledge production, governance, and civic activism and how critics responded to this agenda. We then make the case for reassessing the promises of experimentation against the backdrop of *current* societal constellations. These constellations include the renewed invocation of climate science as an authority that demands political action (an authority experimental knowledge production sought to decenter) and de facto return of the state and more centralized forms of governing (which experimental governance sought to go beyond). They also include the return of forms of activism that stress the importance of urgent and decisive action (which experimental action is in part an opposite to) as well as the emergence of civil society experiments in the service of exclusion if not authoritarianism (in contrast to values inclusivity and democracy that are usually attached to eco-political experimentation). The objective of this introduction, and the articles comprising this Special Issue, is to establish a sensorium for ambiguities which we regard as a precondition for experimental action that might actually *achieve* transformative change as opposed to merely generating *hope* for it.

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Introduction

“The promise of experimentation” (Evans, Karvonen, and Raven 2016, 1) has been looming large in sustainability research, governance, and activism over the last couple of decades. Real-life, participatory, adaptive, and reflexive experiments in more sustainable ways of living, producing, and consuming are commonly framed as exciting and indispensable incubators for urgently needed transformative change due to pressing challenges such as climate change. Cities, in particular, have turned into a fermenting ground for the “rise of experimentation” (Bulkeley 2021, 272). Urban living labs, real-world laboratories, and niche and grassroots experiments are just a few prominent forms for currently proliferating experimental interventions. Albeit diverse with a view to meaning and scope, key characteristics of current socio-ecological experiments include the following: being rooted in real-life

environs as opposed to being limited to the confines of a laboratory; being shaped and co-created by multiple stakeholders in contrast to political and scientific experts only; allowing for “learning by surprise” (Gross 2010, 1) instead of serving and confirming predefined interests, beliefs, and trajectories; and being dedicated to resonating with citizens as opposed to alienating them given the engagement of the experiments with everyday life concerns (Meyer 2020). When looking at research calls, social innovation and transformation discourse and practices, and governance strategies committed to sustainability in general or tackling climate change more specifically, an emphasis on transformative change by experimentation has become prominent. Experimental interventions, it is commonly argued, are our best – and perhaps only – bet for coming to terms with the complex, uncertain, contingent, context-specific, and multiform nature of socio-ecological challenges (Ansell and Bartenberger

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2016; Antikainen et al. 2017; Bulkeley 2010, 2021; Caniglia et al. 2017; Schöpke et al. 2018; Seyfang and Haxeltine 2012).

Clearly and importantly, the “rise of experimentation” in eco-politics in recent years seeks to break with the often still dominant assumption of scientific certainty and the related idea that scientific expert knowledge ought to precede and inform political action. It takes issue with the belief that public authorities such as the (local) state hold the primary if not ultimate authority to govern pressing socio-ecological challenges. And it regards local, hands-on, civil society-driven interventions that seek to remake everyday life in a tangible and concrete manner as an alternative, or at least a supplement, to collective action in the form of oppositional social and environmental movements. Experimenting with co-housing, growing, and distributing food locally and organically, or sharing and repairing platforms are just a few cases in point. To begin with, the hopes attached to “the experimental turn” (Overdeest, Bleicher, and Gross 2010, 279) were high. Experiments in socio-ecological change, some have suggested, will deliver “richer information” that is more likely to “disentrench actors from their routines of habit and mind” (Overdeest, Bleicher, and Gross 2010, 293). They represent, others have suggested with a view to governing climate change, “the best hope for effectively responding to the climate crisis” after decades of global climate-governance efforts shaped by “difficult multilateral negotiations” (Hoffmann 2011, 5). Civil society-driven experiments in particular, yet others claimed, function as “pioneers of change” (Schneidewind 2018, 452) that bring to the fore urgently needed, new “radical imaginaries” (Asara 2020, 1) that pave the way toward new, more promising nature-society relations indebted to “sustainable materialism” (Schlosberg and Craven 2019, 1) or “community resilience” (Hopkins 2011, 15). However, is the euphoria that has accompanied the rise of experimentation still justified today? To what extent, if at all, can we still trust in and build on the “promise of experimentation”, the promise of radically changing unsustainable nature-society relations through pragmatic, embedded, reflexive, adaptive, participatory, co-creative and transdisciplinary interventions?

Recent developments with a view to sustainability- and climate-related science, governance, and civic activism suggest the need for a critical reassessment of the transformative hopes that were once attached to experimental interventions. Concerning climate science, for instance, the recent report of the Intergovernmental Panel on Climate Change (IPCC 2023) has publicized the existence of an

emissions gap (UNEP 2022), that is, a disparity between internationally agreed goals for reducing greenhouse-gas emissions (GHG) to keep global warming to 1.5°C and de facto GHG-emissions which has widened to such an extent that scientists regard the goal itself as increasingly unattainable if not void *despite* various efforts to mitigate climate change. As regards climate change, we appear to have “passed the point of no return” (Guterres 2022). This finding suggests that unsustainable nature-society relations seem to remain firmly in place *despite*, among others, the increase in experimental interventions and the often-related hope to change nature-society relations more effectively toward more sustainable ones.

It is against this backdrop that we ask whether we can still trust in the belief that experimental approaches and responses to pressing socio-ecological challenges are a key lever for bringing about much needed transformative change. While seeking to avoid the trap of binary thinking – of being for or against experimental interventions – this framing article and, more generally, this Special Issue, puts to a test the initial hopes and promises attached to the eco-political “rise of experimentation” (Bulkeley 2021, 272). We engage with the potentials but also with the risks, unintended side-effects, and ambiguities of experimentation – how it is realized and conceptualized in given contexts. Our main goal is to critically challenge a prominent eco-political hope. In doing so, our objective is not to bust hope for transformation and give in to the status quo. But we aim to contribute to a better understanding of why – despite widespread talk of and practices indebted to transformative change – “sustaining the unsustainable” (Blühdorn 2007, 251) continues to be the norm rather than the exception. Furthermore, we also aim to sensitize the proponents of experimental politics for ambiguities that, we believe, need to be flagged up and strategically navigated rather than downplayed for the benefit of eco-political hope that is unwarranted. In the next section, we provide an overview of diverse meanings of eco-political experimentation and the fields in which it has become prominent. We then map some of the existing critiques of the experimental turn, critiques that this Special Issue develops but also seeks to go beyond given current societal challenges. We conclude by providing an overview of the articles making up this Special Issue.

Three dimensions of experimentation: knowledge production, governance, and civic activism

Experiments for exploring, probing, and developing possible answers to diagnosed problems have a long

history, one that precedes the current rise of experimentation in the context of sustainability research and practice. While certainly not new, in the sustainability context experiments come in specific forms and with specific logics. The forms encompass testbeds and demonstration pilots (see Ryghaug et al. 2019); urban living labs (see von Wirth et al. 2019); real-world laboratories (see Schöpke et al. 2018); niche experiments (see Smith and Raven 2012); grassroots initiatives and innovations (see Smith et al. 2017); and experiments dedicated to exploring the possible in the real – to concrete utopias (see Kallis and March 2015). Specific forms of experimentation tend to go hand in hand with specific experimental logics (Ansell and Bartenberger 2016). These logics include the idea of scientists having control over the experimental situation. It also includes Darwinian logics, that is, logics of variation, selection, retention as well as logics indebted to open, generative outcomes, an ideal that underpins real-world laboratories no less than experiments in the service of utopian explorations (Ansell and Bartenberger 2016). What is typical of sustainability experiments regardless of their specific form and their specific logic is, as has been mentioned above, the following: their unfolding in real-world settings, the close relationship between knowledge and practice, the involvement of multiple agents and stakeholders, adaptivity, reflexivity, and a commitment to learning by doing. From an epistemological point of view, pragmatism looms large in current experimental intervention. It emphasizes inquiry as a key mode of change, one that pays particular attention to context, historicity, learning by doing, and experience (Dewey 1986, 2016; Schmidt 2017).

Experimentation has become prominent in sustainability research and practice in general and, as we argue in what follows, in three particular fields: knowledge production, climate governance, and civic activism. In practice, these fields are, of course, interconnected. For this article we do, however, keep them analytically distinct so as to extrapolate (1) what the rise of experimentation seeks to be a response and alternative to, (2) what “going experimental” implies in the specific fields, and (3) the promises attached to experimentation. By this “systematization,” we seek to bring clarity to an eco-political phenomenon that has been on the rise over the last 15 years and that has been associated with the hope for transformative change. It also provides the basis for our mapping of hitherto existing critical engagements with experimentation and our expansion on these engagements considering current societal developments and constellations.

Experimental knowledge production

Due to the uncertainty, complexity, and wickedness of socio-ecological problems and responses to them, sustainability research has gone “post-normal” (Ravetz 1999) and beyond “traditional” knowledge production (Caniglia et al. 2017). The delivery of robust knowledge, it is argued, in times when “facts [are] uncertain, values in dispute, stakes high and decisions urgent” (Ravetz 1999, 649) hinges on going beyond key characteristics of “normal” or “traditional” science in modern Western societies (Caniglia et al. 2017; Lang et al. 2012; Ravetz 1999). These characteristics include, first, *disciplinary knowledge production*, that is, a type of knowledge production informed by the primacy of a given scientific field at a distance to real-world contexts (Lang et al. 2012). Second, these features entail the attribution of a pre-eminent role to *scientific experts* with a view to speaking truth to power (Foucault 1980), that is, with a view to advising policymakers on what is to be done in light of given challenges. A final dimension is an idea(l) of the *value neutrality* of knowledge production, that is, the assumption that “true” scientific knowledge is produced in a linear way under controlled conditions in a scientific laboratory setting (Bergmann et al. 2021; Caniglia et al. 2017; Lang et al. 2012; Ravetz 1999; Schmidt 2017).

By contrast, “post-normal” and “non-traditional” knowledge production in sustainability research, typically equated with transdisciplinary knowledge production, emphasizes the importance of integrating different types of knowledge in real-world – as opposed to laboratory – settings. Scientific knowledge alone, some argue, is insufficient for tackling pressing challenges.¹ What is needed instead, proponents of post-normal and non-traditional science suggest, is the integration of different types of knowledge, namely *scientific knowledge* (of different disciplines), *political knowledge* (knowledge of power relations and political processes); and *lay knowledge* (the knowledge of those affected by a given sustainability challenge) (Brown, Russell, and Harris 2010; Jahn, Bergmann, and Keil 2012; Lang et al. 2012). Problem definitions themselves, as well as solutions to them, are the result of a co-creative process among different stakeholders. Apart from the emphasis on co-producing knowledge in real-world settings such as in urban living labs or real-world laboratories, post-normal and transdisciplinary knowledge production also implies clear normative commitments: a normative commitment toward knowledge production in the service of sustainability. This explicit normative commitment is an effect of the by now well-established insight that scientific

knowledge production is de facto always enmeshed with power relations and politics (Foucault 1980). It is also an effect of the insight that value neutrality in light of pressing challenges such as climate change runs the risk of sustaining the unsustainable status quo and, relatedly, of digressing from the “solution or transition of societal problems” – first and foremost of “the sustainability problem” (Lang et al. 2012, 27).

Proponents of real-world, collaborative settings combined with a normative commitment to more sustainable nature-society relations conceive of such settings as ideal ground for delivering robust knowledge – a delivery that is, in addition, shaped by a commitment to iterative adaptation, continuous evaluation, and reflexivity (Loorbach, Frantzeskaki, and Avelino 2017). They also emphasize the importance of continuous evaluation and “learning by doing, doing by learning” (Brown, Russell, and Harris 2010, 292). Narrowing the gap between science and society by going toward experimental knowledge production, so the hope increases mutual understanding and learning. Experimental, co-productive knowledge production is also regarded as beneficial to the transparency and legitimacy of problem framings and solutions to them (Bergmann et al. 2021; Lang et al. 2012). The main goal of the experiment in *sustainability research* is to deliver evidence (Caniglia et al. 2017), evidence informed by and relevant to actual practices. This characteristic allows for distinguishing the role of experiments in scientific knowledge production from other experimental interventions such as experimental governance (which focuses on politically enabling and “shaping” transitions and, ideally, transformations), or grassroots initiatives or innovations (i.e., whose main purpose is to bring about and prefigure more sustainable nature-society relations).

Experimental governance

The perception that societal challenges and their “solutions” are uncertain and complex (if not wicked) has played a central role in the shift away from traditional forms of knowledge production toward more experimental ones. A similar shift away from “the traditional” toward the more experimental has occurred in the field of governance. In this field, the term “traditional” stands for a hierarchical, state-centric and government-driven, bureaucratic, command-and-control type of governing. This type of governing had become prominent in the post-World War II era. Over the last decades, however, it has been increasingly perceived as insufficient, if not as a failure, with a view to tackling societal challenges (Sabel and Zeitlin 2012). “In a

rapidly changing world,” as Kevin Morgan (2018, 8) argues, “where fixed rules written by a hierarchical authority are quickly rendered obsolete on the ground,” an alternative is needed, namely a governance setting that allows “front line actors...to find joint solutions to common problems through experimental trial and error processes.”

Thus, experimental governance embodies an alternative to “traditional,” state-centric governance, one alternative among others.² At the global level, and as concerns the governing of climate change, it also embodies an alternative to multilateral “negotiationism” and treaty-making at United Nations conventions. Given the limited headway being made by the latter, some authors have come to endorse a more experimental approach to governing climate change against this backdrop. This approach includes trans-jurisdictional networks and co-operations (Hoffmann 2011). Experimental governance has also been heavily endorsed at the urban level especially with a view to socio-technical challenges such as transforming energy or mobility infrastructures toward more sustainable ones (Evans, Karvonen, and Raven 2016). Experimental (urban) governance is driven by a critical perspective on “traditional” governance but also by the more recent phenomenon of de facto weak (public) authority due to the neoliberal depletion of (local) states (Bulkeley 2010; Castán Broto and Bulkeley 2013). Traditional forms of governing, tiresome multilateralism, and weak (local) authority are to be worked around, it is suggested, by enabling and facilitating a multitude of local and translocal experiments that are expected to boost a transition toward more sustainable nature-society relations and socio-technical systems.

Experimental governance differs from traditional post-World War II forms of governing because of its emphasis on trial-and-error processes and on learning from these processes. This emphasis, as Harriet Bulkeley (2023) argues in her article in this Special Issue, allows for dealing with the changed nature of climate change. Climate change, she asserts, represents no longer a single issue but an issue that affects all areas of social life. The latter comes with indeterminacies, to which no clear, unequivocal answers can be given. Experimental governance also differs from traditional forms of governing because of its emphasis on collaboration between multiple actors from the public, private, and non-governmental sectors as well as from civil society. Governments, as Sabel and Zeitlin (2012) contend, are no longer in a position to give detailed instructions to subordinate agents about how to realize set goals. Instead, they have to rely on the experience and knowledge of a multiplicity of agents, which makes policymaking

itself a collaborative, iterative, and reflexive process. Yet granting agents greater autonomy in addressing the question of how set goals are implemented in given contexts, does not forcibly mean giving up on general rule-setting by governments (Eckert and Börzel 2012).

While Bulkeley (2023) (as well Meyer 2023 in this Special Issue) conceive of experimental climate governance primarily as the most promising way of engaging with the multiform and indeterminate nature of climate change, others are explicit about conceiving of experimental governance as a lever for transformative change. Hoffmann (2011), for instance, believes in change by emergent, large groups of experimentation. By contrast, academics working in the wide field of transition studies (Geels 2019, Köhler et al. 2019) tend to emphasize the need for managerial interventions such as strategic niche management and transition management (Hoogma et al. 2002). In contrast to change by emergence, these managerial interventions imply the active fostering and nurturing of socio-technical innovations in protected niches such as urban living labs and the active upscaling of promising learnings from the niche to the mainstream (Sengers et al. 2021).

Experimental civil society

Given the complexity, uncertainty, if not indeterminacy, of socio-ecological challenges, both experimental knowledge production and governance rely on collaboration with civil society. Iterative learning, developing solutions, and coming to decisions, which are for many common sense by now, cannot occur at a distance to the lifeworld of citizens but only in their midst. Yet not only are knowledge production and governance dependent on experimental practices in and with civil society. Experimental practices in civil society have also occurred “from the bottom up.” In recent years, urban gardening initiatives, eco-villages, clothing-swap platforms, repair cafés, community-supported agriculture, food cooperatives, and co-housing projects have risen to (renewed) prominence. In contrast to interventions in the status quo via protest and advocacy, these types of civil society experiments seek to make change with their own hands in the here and now by building alternative infrastructures and systems of provision (Frantzeskaki et al. 2016; Pellizzoni 2021; Butzlaff and Deflorian 2021). To be sure, these bottom-up types of experiments have been a part of the repertoire of action in civil society and of environmental movements for a long time (Doherty 2002). For this reason, one can hardly speak of a new phenomenon. But what has been observable over the last years, is

a renewed commitment to building more sustainable forms of living, producing, and consuming from the bottom-up, particularly in times of spiraling crises (Bosi and Zamponi 2020).

In general, some academics praise civil society experiments for their pragmatic and interventionist character, their embeddedness in specific communities and the latter’s real-world challenges and needs (Meyer 2015; Schlosberg and Craven 2019) as well as their ability to enable iterative learning processes for greater sustainability (Seyfang and Smith 2007). Dependent on the specific academic angle from that they are looked at – transition studies, social movement, or resilience – researchers describe them as seedbeds of (social) innovation, as key loci for prefiguration or, alternatively, for the building of resilience. In transition studies, some stress that promising innovations are not only invented and tested in market niches, governance, and research contexts but also in grassroots experiments (Smith et al. 2017). Seyfang and Haxeltine (2012), for instance argue, that identifying and responding to challenges and needs in everyday-life contexts is a precondition for feasible and robust solutions. Yet, for realizing greater sustainability beyond local contexts and life worlds, some scholars also argue for finding ways to upscale and diffuse grassroots innovations (see also Smith et al. 2017).

Without suggesting firm boundaries between academic angles, social movement scholars tend to frame civil society experiments more as an expression of collective action, solidarity, self-efficacy or as a prefiguration of more sustainable forms of social organization (Asara and Kallis 2023; Monticelli 2018, 2021). The often horizontal and less hierarchical character of civil society-driven experimentation, they argue, fosters the empowerment of engaged citizens, reintegrating them into democratic decision-making processes and ultimately leading to democratization and sustainability (Brand et al. 2021). Civil society experiments, some suggest, have a positive politicizing effect: they disrupt and contest unsustainable routines and structures and demonstrate that another, sustainable world is possible (MacGregor 2021). In addition, the often-enormous commitment of people involved in civil society experiments to act in accordance with sustainable values, raises the hope for change by example and “moral legitimacy” (Yates 2021, 1034).

Due to the intensification of socio-ecological crises, advocates of experimentation in civil society not only emphasize its innovative and prefigurative character but also its function to develop coping mechanisms for expected social-ecological catastrophe. Especially experimental practices in

self-sufficiency, subsistence, and simplicity are seen as essential for post-apocalyptic times (Hopkins 2011; Paech 2012; Servigne and Stevens 2020). Given that mainstream political parties and democratic majorities tend to be unwilling or unable to break with unsustainable ways of living, producing, and consuming, some make the case for going beyond (the belief in) change by party politics, protest, and advocacy and for moving toward the cultivation of practices of resilience and adaptation in civil society instead (Paech 2012; see also Cassegård 2023).

Questioning experimentation: existing critiques and going beyond them

Experimental knowledge production, governance, and civic activism have come to embody alternatives to hitherto dominant ways of knowing, governing, and becoming active on socio-ecological challenges. And yet, experimentation is neither always good nor always transformative (Savini and Bertolini 2019). This applies to all three fields of experimentation – critiques some of which we map in this section and seek to go beyond in this Special Issue given current societal conditions.

Concerning experimental knowledge production, examples of hitherto existing critiques are as follows. First, while bridging the gap between science and society has been a declared goal of experimental knowledge production (e.g., in real-world laboratories), empirical evidence suggests that the primacy of science often continues to reign supreme. This is the case because research institutions such as universities often still operate on incentive structures that impel researchers to be primarily productive in terms of customary academic publications and the acquisition of funds. Establishing the societal relevance and impact of research has, undoubtedly, become regarded as desirable. Yet to succeed in academia it is still treated as a *complementary* activity, an activity in which “those who feel the need to do so” (Sigl, Felt, and Fochler 2020, 1589) can engage. Second, even in contexts that explicitly call for the integration of different types of knowledge (lay, expert, and political knowledge), more often than not one type of knowledge continues to be particularly prevalent: knowledge in the service of techno-scientific innovation and green growth (see Exner and Strüver (2023) in this Special Issue). One explanation for this outcome is that the evolutionary presumptions – “Darwinian logics” (Ansell and Bartenberger 2016, 68) – that tend to underpin experimental knowledge production align particularly well with economic entrepreneurialism and

therefore the maintenance of capitalism (Alvedalen and Boschma 2017; Savini and Bertolini 2019). Another explanation for this outcome is insensitivity to power relations within knowledge-production processes, power relations that make some types of knowledge more relevant and valid than others (Geels 2019). Third, although learning – reflexive, hands-on, open to surprise – plays a prominent role in experimental knowledge production and is regarded as key to transformative change, project logics such as limited time frames and limited resources that often underpin experimental interventions is in tension with the long-term building of stocks of knowledge and knowledge-exchange networks (Torrens and von Wirth 2021). Re-inventing-the-wheel processes, as opposed to building, variegating, and expanding experience, are common outcomes of experimental interventions. Finally, some have taken issue with focusing experimental knowledge production on solving *societal* challenges, a solutionism that may not only be read as important bridge-building between science and society but also as a problematic undermining of the autonomy of science from society (see Wehling 2022).

Also experimental climate governance has been subject to various critiques. First, although it is widely recognized that efforts by, for instance, municipal governments to expand their transformative powers through experimental interventions and trans-jurisdictional networks (such as smart or sustainable cities networks), celebrations of thus enhanced city power do not seem to acknowledge the full scope of the *de facto constitutional* powerlessness of urban centers (Hirschl 2020). Related dangers are particularism and incrementalism (Weibust 2016). Second, some have argued that researchers pay too little attention to how trends and hypes such as “going experimental” transform traditional institutions such as city governments and governance processes. Such trends may, among others, lead to a lack of understanding that horizontal and participatory governance is not always preferable to top-down and more centralized governance. In fact, in some contexts more centralized modes of organization may usher in more coordinated and decisive political interventions (Bailey 2019). Third, akin to experimental knowledge production, experimental climate governance is shaped by project logics. Although experimental interventions may serve as sites that generate proof-of-concept needed for an idea to gain legitimacy, short-term funding is often at odds with producing lasting commitments and frequently does not allow for scaling up and

institutionalization of promising ideas (Munck and Rosenschöld 2019).

Also the rise of civil society-driven experimentation has been critiqued in similar, *inter alia* for “being politically naïve, ineffective, apolitical or non-strategic” (Yates 2021, 1034). Relatedly, some argue that the localism that underpins civil society experiments is often accompanied by an idealization of community that “rules out the – realistic – possibility of creating backward, close-minded and repressive communities which, in the attempt to defend their autonomy and identity, may exclude everything and anyone that does not conform to the dominant *doxa*” (Mocca 2020, 89). Third, scholars and activists also criticize the *complementary* character of experimentation in civil society. The retreat from more contentious strategies addressing power relations is made, on one hand, responsible for depoliticizing effects of experimentation (Kenis and Mathijs 2014) and, on the other hand, for the easy cooptation by neoliberal strategies that might lead to a form of community capitalism (van Dyk 2018, see also Rosol 2012). Fourth, similar to critiques of project logics in experimental knowledge production and governance, skeptics highlight the short-term commitments of flexibilized late-modern subjects leading to high volatility of participation in experimental initiatives, which constrain their transformative potentials (Deflorian 2021). This leads Blühdorn to suggest that experimentation in civil society is – irrespective of the activists’ self-perceptions and self-descriptions – primarily concerned with self-expression and simulates a frenzy of activity “building social resilience to sustained unsustainability” (Blühdorn 2017, 58) rather than actually contesting and transforming it.

What becomes clear in light of existing critiques of the rise of experimentation in eco-politics is that eco-political experimentation, as any trend, comes with limits. There is no doubt that in many respects, the experimental turn embodies an emancipation from more traditional approaches to knowledge production, governing, and being civically engaged. Yet, as is the case with any innovation, it may also entail unintended side-effects and consequences that necessitate attention. This is particularly true when the larger societal contexts in which eco-political experimentation occurs undergoes major changes. And major changes at the societal level have occurred in recent years, changes that necessitate a revisiting of the promises of experimentation after the latter’s rise to prominence fifteen years ago. The changes include:

- Appeals to politics to finally “listen to the science” (Soßdorf and Burgi 2022) which imply reestablishing the authority of climate research

that experimental knowledge production sought to decenter. This begs the question of the role that experimental knowledge production can play in increasingly polarized societies. In these societies, climate movements insist on evidence-based, transformative politics, which experimental knowledge production has, in part, itself taken a critical stance toward. This occurs also in a setting in which those who trivialize climate change, take recourse to framing climate science as politics – and thus capitalize on a framing that experimental intervention has been critically confronted with since its inception: the blurring of boundaries between science and politics. And yet others continue to call for transformative science, yet fund and support science in the service of reform: ecological modernism.

- The de facto return of the state as a result of the COVID-19 pandemic (Patrick 2021), which has elicited hopes for climate protection by some and, at the same time, spurred intense fears of top-down interventions by others, top-down interventions from which experimental governance has sought to maintain a critical distance.
- The restrengthening of oppositional forms of civic activism such as mass protests and acts of civil disobedience in response to the increased urgency and scope of the climate crisis, an urgency and scope experimental interventions are often unable to address (Moor and Marquardt 2023).
- The emergence of experimental interventions in the service of moral righteousness, acquiescence, and exclusion as opposed to inclusion, experimental interventions that are squarely embedded in the ongoing normalization and mainstreaming of authoritarianism (Fielitz and Wallmeier 2019; Machin and Ruser 2023; Taylor 2019).

Although we are fully convinced that often there is no alternative to experimental interventions given the complex, uncertain, contingent, context-specific, and multiform nature of socio-ecological relations (see also Bulkeley 2023 and Meyer 2023 in this Special Issue), we are also persuaded that engaging with the promises of experimentation given current societal conditions pushes us beyond being for or against experimentation and toward a more active engagement with ambiguities: the ambiguities of blurred boundaries between science and politics; of science that “talks transformation” but “walks” green growth; of the return of the state, an institution

toward which experimental governance took a critical stance; the return of forms of protest that get impatient with the pace of change through experimental interventions and that pursue an interruption of daily routines of a different sort – civil disobedience – or a remaking of daily routines in the service of far-right ideologies. Such an engagement strikes us as key if a transformative change in light of climate change, change that breaks with “sustaining the unsustainable” (Blühdorn 2007) at others’ expense remains the goal. In the remainder of this article, we introduce the “architecture” of this Special Issue and provide brief summaries of the contributions that follow.

The architecture and building blocks of this Special Issue

The first two articles of this Special Issue map where experimentation comes from and what it is an alternative to. Harriet Bulkeley – herself a leading author in and driving force of the rise of experimentation in eco-politics – tends to the first question and John Meyer to the second. Bulkeley argues that because ecological modernism, which has been the basis for environmental policy for the past three decades, has been unable to successfully tackle pressing socio-ecological crises, a breeding ground for the emergence of experimental environmental policy has been created. She further illustrates that experimentation represents a significant break with established norms and practices regarding the nature of the climate problem and how to deal with it. In response to critics of experimentation, she stresses that experimentation continues to be in a position to reorder situations and find answers to indeterminacy. She also stresses that thereby new situations and new uncertainties are created. For this reason, Bulkeley makes the case for conceiving of experimentation as a permanent – as opposed to temporarily limited – mode of governing. From her perspective, this approach to governing clearly has a future (Bulkeley 2023).

In his contribution, John Meyer explains what experimentalism is an alternative to. From his perspective, understanding where experimentalism comes from is a precondition for answering to what extent, if it all, experimentalism is still a plausible engagement with pressing and polarized socio-ecological challenges such as climate change. The alternatives to experimentalist approaches to socio-ecological challenges are, he argues, “absolutist” ones. The latter are reflected by elite-driven, top-down approaches to address the climate crisis. While, according to Meyer, absolutism is unable to

fulfill its promise in terms of effective action, experimentalism represents a contested, yet potentially fruitful, terrain where promising forms of action and change can emerge. From his pragmatism-informed perspective, experimentalism is to be understood as a specific logic and method that encompasses more than individualized or depoliticized projects. Similar to Bulkeley, Meyer makes the case for continuing to conceive of experimentalism as a highly viable strategy to pursuing the changes needed to address the climate crisis (Meyer 2023).

In the following article, Andreas Exner and Anke Strüver conceive of experimentalism as an important and potentially transformative means to explore possible alternatives, especially with respect to knowledge production. Yet, in the real world, they suggest, this possibility is severely hampered by progressive neoliberalism and its rigid scripts shaped by notions of efficiency and techno-scientific innovation. Experimentation promises to go beyond eco-modernization but more often than not remains stuck in it. Against this backdrop, Exner and Strüver make the case for *glitches*, a term they borrow from feminist theory which refers to the hijacking of routines to break free from neoliberal logics. Experimentation, they argue, may be in the service of a greater acceptance of failure, dysfunctionality, and randomness, which may, in fact, lead to creative outcomes. This, however, requires courage and creativity on behalf of those who appropriate and twist “experimentation talk.” The authors illustrate the glitching of experimentation talk by means of a case study titled Smart Sharing Graz, a research project in which they themselves appropriated and twisted the experimentation discourse of the Austrian Climate and Energy Funds (Exner and Strüver 2023).

Margaret Haderer’s contribution focuses on urban experimental climate governance and makes herself, to a certain extent, the case for a “return of the state.” Although she acknowledges that experimental governance embodies an important emancipation from modernist and sovereigntist approaches to governing, she argues that experimental governance also entails risks: the sidelining of public authority as a specific and key agent of change; the discrediting of top-down governance as undemocratic, if not authoritarian; and the sidestepping of societal change through collectively binding political decisions. By combining empirical and theoretical insights, Haderer makes the case for revamping “governing (also) through government.” She offers ways of rethinking public authority, top-down governance, and change by political decision *without* reasserting what experimentation seeks to transcend: state- and

expert-centric, undemocratic, and sovereigntist forms of governing. This, she asserts, may embody an alternative to what experimental climate governance boils down to in the city of Vienna, namely “organized irresponsibility” (Haderer 2023).

Urban experimental governance, specifically in the form of building resilience by design, is also the focus of the contribution by Kevin Grove, Lauren Rickards, and Stephanie Wakefield. Drawing on a concrete case, the Rebuild by Design (RBD) program implemented in New York City after Superstorm Sandy in 2012, they underscore that experimental governance, which is often understood as an alternative to modernist forms of governing (see also the contributions by Bulkeley, Meyer, and Haderer to this Special Issue), may in fact also operate squarely within modernism and actually develop this paradigm, which was thought to be out of date, to new dimensions. Design-based experiments in post-disaster reconstruction and urban resilience planning, they argue, are shaped by logics and practices of cybernetic control and regulation – logics and practices that deny the existence of forms of knowledge that are qualitatively different. In this context, the above-mentioned “listen to the science” is turned into “listen to the experts” not at a distance from but *within* experimental settings (Grove, Rickards, and Wakefield 2023).

To contribute to a more differentiated picture of the transformation potential of local experiments, Hauke Dannemann’s article deals with the ideologies behind them. He illustrates that civil-society driven, experimental practices are not forcibly operating in the service of emancipatory, sustainable futures, as is commonly assumed. Rather, local experiments might also take place in far-right-oriented parts of society, illustrated by the example of *völkisch* settlers in Germany. These activities replaced the vision of inclusive inter- and intragenerational justice and equality of sustainability with an agenda of exclusive authoritarian sustainability that strives for ethno-security. Moreover, Dannemann illustrates that far-right environmental and climate politics are not restricted to anti-environmentalism and climate-change denial (Dannemann 2023).

Finally, Ingolfur Blühdorn also engages with civil society-driven, experimental interventions. He zooms out from particular experimental interventions to analyze, from a macro-perspective, the scope and limits of civil-society driven, experimental politics against the backdrop of late modern societal constellations. Looking from a socio-cultural rather than biophysical perspective, he argues that the sustainability crisis is, essentially, a crisis of the ideal and self-understanding of modern societies of the global North as liberal,

democratic, and open societies. Since the idea of experimental politics itself reproduces core elements of this ideal and self-understanding, Blühdorn considers it unlikely that late modern society can experiment its way out of the sustainability crisis. However, experimental politics can assume, he suggests, the function of a coping strategy by providing social spaces for dealing with the traumatic experiences of the transition of late modern societies into social order and phase of modernity beyond the ideal of the open society. This is to say that from Blühdorn’s perspective, it is not the re-appeal to science, the de facto return of the state and changed forms of civic activism that warrant revisiting the experimentation. Revisiting experimentation is, from his point of view warranted if reconfigurations of modernity are to be understood (Blühdorn 2023).

What we collate in this Special Issue is an account of promises, achievements, limits, and lingering ambiguities, an account that is ultimately not exhaustive. As long as experimentation remains a prominent pathway toward tackling climate change, we will need to pay attention to what happens in the interstices between promises and realities to be able to make informed judgements on which pathways to pursue and which ones to let go.

Notes

1. By “scientific knowledge” we mean academic knowledge and not only natural science knowledge.
2. Apart from experimental governance, there are, of course, other forms of governance that have challenged traditional, top-down governance such as network or multistakeholder governance. In fact, the very term governance may imply the weakening of the state and the public sector in favor of non-state actors, and private companies in particular. Our focus is on environmental politics and a specific governance trend in this field. We are also fully aware of the fact that the line between forms and motivations for a given type of governing may also be fluid.

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