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Climate Resilience: Clarifying its Moral Foundations

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Abstract

In both discourses on resilience and climate, there is an emerging concept, namely climate resilience. This concept is examined from an ethical standpoint, with particular emphasis on its validity claims. A comparison with the more firmly entrenched concept of sustainability reveals that resilience is not a moral but a functional concept, thus lacking the capacity to provide a rationale for ethically sound political decisions on its own. The ambiguity of climate resilience is elucidated by revisiting the distinction between adaptation and mitigation, a common theme in climate policy. The argument is made that a transformative approach to climate resilience must be grounded in an open public debate on the good society.

Keywords climate change, ethics, mitigation, adaption

1. On the Status of Resilience

The theory of resilience has been enjoying increasing popularity for years. The almost unmanageable growth in literature has even led some to speak of a "resilience renaissance" (Bahadur et al., 2010), although this image is flawed in that it refers to an earlier peak phase that did not actually exist. However, the thematization of the resilience boom is part of the rise of this concept as a new guiding principle in social communication, which is characterized by an unusually high degree of connectivity. This is why resilience is sometimes categorized as a boundary object, seen as a buzzword, or regarded as a metaphor (Brand & Jax, 2007). The range of meanings and areas of application is constantly growing. As a result, meta-analyses seek to provide an overview (Bahadur et al., 2010; Brand & Jax, 2007; Keck & Sakdapolrak, 2013; Moser et al., 2019, pp. 33–34; Wardekker, 2021). At the same time, the expansion of approaches to resilience and the concept of resilience itself are being criticized in a variety of ways (Carpenter et al., 2001; Graefe, 2019; Groß, 2021; Höhler, 2016; Moser et al., 2019; Walker & Cooper 2011; Wardekker, 2021, p. 2). In view of this dynamic, resilience can be understood as a discursive framework concept that guides thinking about the relationship between society and nature in a specific way and, in this respect, differs characteristically from other concepts such as sustainability, ecological justice (Leist, 2005), or—in a completely different respect—landscape (Ritter, 1963).

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A central subject of controversy concerns the normative status and content of resilience. The following considerations can help to clarify this debate. As the normative dimension depends largely on the subject area, this analysis focuses on social-ecological systems and examines the concept of climate resilience.

To this end, the ethically better thought-out concept of sustainability is first presented as a comparative foil (2). Against this background, resilience can be categorized as a functional concept (3). In order to classify the specific concept of climate resilience in ethical terms, the developments of the social-ecological resilience discourse in comparison to classic ecological resilience thinking are briefly summarized (4). The goal of stability or persistence takes a back seat to adaptation, learning, and self-transformation. These developments are subject to various objections, some of them methodological and some of them substantive. The methodological concerns are not compelling, at least regarding some resilience approaches. The substantive criticism will be continued in a differentiated manner. From an ethical perspective, it is shown that the decisive aspect of climate protection is that social adaptation to the impacts of climate change and social transformation in order to reduce greenhouse gas emissions (mitigation) are based on different normative claims, each of which has a different basis of validity and binding force. This important distinction is often blurred in the emerging concept of climate resilience (5). Finally, this concept is further developed in terms of transformation policy. The pursuit of climate resilience in the sense of social transformation is dependent on an open discourse on the good society (6).

2. Sustainability: A Normative Concept of Utilizing Nature

To clarify the possible normative orientation of resilience, this concept will first be placed in relation to the older principle of sustainability, which has already been extensively reflected upon ethically. Like resilience, sustainability is a concept that is understood in many ways and is often used merely rhetorically. In sustainability communication, there are two problematic tendencies that cause the term to lose some of its sharpness and meaning. In some cases, *sustainability* takes the place of *good* as the more noble, more reserved, and more demanding predicate. Many claims can resonate with it that do not need to be said explicitly but can always count on general agreement. The result is an overloading of the term with content, which in turn can quickly lead to an excessive demand for those involved. The other tendency manifests itself as a reduction to the future perspective. What is considered sustainable is something that is designed for the long term or is permanently stable. The two tendencies, the unclear breadth of content and the mere future orientation, are often linked. After all, many things are important for a future worth living.

In contrast to the often merely rhetorical use, a meaningful concept of sustainability can be defined by three characteristics starting from a basic text on sustainability, namely the *Sylvicultura oeconomica* by Hans Carl von Carlowitz from 1713 (Carlowitz, 1713/2013; see also Ostheimer, 2013). On the content level, the reference to nature in the sense of regulating the use of nature is constitutive. If it is not in any way about nature, the concept of sustainability is at best meaningful in a derived sense, for the conflicts to which the concept of sustainability responds only arise through certain forms of nature utilization. Methodologically, the perspective on the problems of using natural resources in a globalized society is based on network thinking. This principle of retinity links geographical areas, social spheres of action, environmental media, as well as the present and the future (Korff, 1989; Lienkamp, 2009, pp. 348–358; Vogt, 2009, pp. 144–146, 347–357). The third defining feature is the normative character of sustainability. It sets guidelines for the way in which people, and, above all, society should utilize nature. In this respect, three dimensions can be distinguished (Habermas, 1991). One of the normative dimensions is pragmatic in nature. Sustainability requires the wise use of natural resources so that they are available in the long term. In addition, the concept of sustainability addresses the just distribution of opportunities or benefits as well as burdens or restrictions in the use of resources and defines reciprocal obligations. Finally, the concept of sustainability addresses ideas of the good life (Carlowitz, 1713/2013, pp. 95, 98). It scrutinizes life forms, ideas of the common good, and models of prosperity and opens perspectives for new, nature-compatible forms of a happy life. These three dimensions outline the normative shape of the concept of sustainability. Based on this systematic account, the normative status of resilience in the social-ecological discourse can now be clarified.

3. The Normativity of Resilience: Functional Safeguarding of the Conditions for Stability

Resilience is very different from sustainability. Resilience is not an end in itself but a functional property of social-ecological systems. The functional character is reflected not least in the prevailing system-theoretical terminology, such as complexity, states, regime shifts, transitions, or feedback loops. At the center of the concept is the ability to cope with stress and adverse influences, that is, to return to a previous, stable state that is favorable for the respective human interests. These favorable conditions are sought and not resilience as such. Yet, in many articles this difference is not so clear. To the extent that resilience refers to certain characteristics that enable a social-ecological system to withstand severe stress, it is a functional concept.

The concept of resilience is structurally and psychopolitically very different from sustainability (Ostheimer, 2018). Sustainability is characterized by an enlightened optimism that is unmistakably evident in Carlowitz's *Sylvicultura oeconimica* and is also reflected in *Agenda 21*. The point of reference is the conditions and forms of the good life in a prosperous society. To summarize the trends perhaps somewhat exaggeratedly, from the perspective of the sustainability discourse, the common good can be achieved by preserving the natural processes that are fundamentally considered beneficial and, if necessary, by controlling and improving them a little. The framework for thinking about resilience is the VUCA world: a context of *volatility*, *uncertainty*, *complexity*, and *ambiguity*, an unstable, fragile, complex, and therefore confusing framework for action (Heller, 2019). The resilience concept focuses on existing or impending crises in the relationship between society and nature. In the face of disruptive changes, it emphasizes maintaining stability and preserving the structures and functions of the system. It is less creative and more security-oriented. "Prevention doesn't want to create anything, it wants to avoid" (Bröckling, 2017, p. 77 [transl. J.O.]).

All in all, resilience is a functional concept, and in that, it is similar to the pragmatic dimension of sustainability. However, the other two normative dimensions, justice and the good life, are missing. The strongly solution-oriented perspective easily leads to the analysis of causes and structural conditions falling short ("stress") and consequently to a lack of discussion about responsibility or guilt.

4. Social-Ecological Resilience: Models of Thought and their Criticism

4.1 From Ecological to Social-Ecological Systems

Literally, resilience means bouncing back. This image of restoring a previous state says too little for the current social-ecological situation. The ongoing climate change is irreversible. A return to the pre-industrial age, with stable atmospheric carbon concentrations, is impossible. This diagnosis also applies to the other major natural changes, like biodiversity loss, that add up to the Anthropocene.

However, considerations of resilience in the social-ecological discourse have already clearly moved away from the recovery paradigm. Holling, a pioneer in ecological resilience research, emphasizes that ecological systems are dynamic (Holling, 1996; Walker & Salt, 2006, pp. 5–8). Their form of stability can be characterized as a floating equilibrium. Holling therefore criticizes a simplistic view, which he calls *engineering resilience*. This technical approach is static and attempts to maximize a single target, such as fish or timber yield. According to Holling, this fails to recognize the essential characteristics of ecological systems, particularly the positive role of instability in maintaining diversity, which in turn increases overall robustness and is therefore a favorable condition for the long-term existence of the system. The *ecological resilience* approach, on the other hand, assumes that natural systems have several states of equilibrium. In many cases, they undergo a recurring sequence of change and stabilization processes, for which Gunderson and Holling (2002) have coined the image of panarchy. It is precisely this dynamic of reorganization and adaptation that gives them stability. The ecological resilience approach therefore relies on redundancy, error-friendliness, diversification of opportunities and risks, as well as flexible, adaptive, and participatory management. In this sense, adaptation and transformation are not counter-concepts to, but factors of resilience (Folke et al., 2010; Walker et al., 2004). The resilience concept is thus changing its focus: "The resilience perspective shifts policies from those that aspire to control change in systems assumed to be stable, to managing the capacity of social-ecological systems to cope with, adapt to, and shape change" (Folke, 2006, p. 254; see also Folke et al., 2002; Walker & Salt, 2006, pp. 9–10).

This *ecological* view is often used to analyze so-called social-ecological systems or to operate within them. The concept of the social-ecological system can be defined as follows: "Integrated system of ecosystems and human society with reciprocal feedback and interdependence. The concept emphasizes the humans-in-nature perspective" (Folke et al., 2010, p. 3; see also Berkes & Folke, 1998). Although this definition is illustrative, it presents some theoretical and practical research difficulties. One problem is to clarify what such a system actually is. In the practical examples discussed in the literature, the connections are usually intuitively clear. At the theoretical level, however, there are uncertainties regarding the concept of a system, the types of connection between society and nature, and the definition of the boundaries of such a system. Regarding the specific topic of resilience, it should also be noted that the ecological view cannot be easily transferred methodologically to social processes. While a floodplain landscape that is regularly affected by flooding adapts "naturally" to the "disasters"—which implies, for example, that a number of animals die "naturally"—social resilience efforts require decisions to be made, different impacts, burdens, and costs to be weighed against each other, and priorities to be set for protection and restoration (Folke, 2016; Greiving, 2018, pp. 2068–2070; Nelson et al., 2007, pp. 401, 410–411; Robards et al., 2011). In this respect, it is useful to distinguish between natural resilience *mechanisms* and social resilience *strategies*. This is the only way to recognize and assess the moral dimension of resilience measures.

4.2 Adaptive and Transformative Resilience Strategies: Categorizing the Criticism

Resilience measures that touch on the social side of social-ecological systems are criticized in various ways, both on a fundamental level and in detail. This criticism, which is partly methodological and partly substantive, is summarized and evaluated below. The result will show that an important ethical aspect has not been considered. This will be explained in the following chapter with regard to climate resilience.

One criticism considers the relationship between resilience and adaptation to be insufficiently explicated:

> There remains a lack of conceptual clarity on the relationship between adaptation, adaptive capacity and resilience. This results in a lack of understanding of the additional benefit that taking a resilience approach brings to adaptation, whether resilience pertains to an idealised form of adaptation or whether the terms can be used interchangeably. (Bahadur et al., 2010, p. 19)

With regard to this criticism, however, the system-theoretical framework of many resilience approaches must be considered. Social, ecological, and social-ecological systems are dynamic, self-organizing, and adaptive (Berkes, 2007, pp. 290–291; Carpenter et al., 2001; Folke, 2006; Folke et al., 2010; Holling, 1996; Luhmann, 1984; Walker et al., 2004). As a result, resilience measures inevitably have an adaptive thrust. They support the system's self-adaptation to changing conditions.

> Disturbance events and spatial heterogeneity cause each recovery trajectory to be unique and the complexity of the system combined with unanticipated compounded effects can make recovery trajectories difficult or impossible to predict … . The system may look similar but it is not the same system, because like any living system it is continuously developing. For reasons like these, scholars involved with resilience in relation to complex adaptive systems increasingly avoid the use of recovery and prefer the concepts renewal, regeneration and re-organization following disturbance. (Folke, 2006, p. 257)

In such a system-theoretical context, the close connection between resilience and adaptation is obvious. Resilience promotes adaptability, which promotes the resilience or continued existence of a system—"the two interacting sides of resilience as both sustaining and developing" (Folke, 2006, p. 254; see also Intergovernmental Panel of Climate Change [IPCC], 2023, p. 128). In addition, from a systems theory perspective, the transition between adaptation and self-change is fluid. "This is why the concept of resilience in relation to social-ecological systems incorporates the idea of adaptation, learning and self-organization in addition to the general ability to persist disturbance" (Folke, 2006, p. 259; see also Carpenter et al., 2001; Resilient Cities Network, 2021).

Two further controversies revolve around the alleged conservative character of resilience in social systems or in the social components of social-ecological systems. Many resilience measures are stability-oriented and thus have a tendency to preserve the existing

structures of the social system in question. The two common procedures, namely increasing robustness (absorption) and strengthening adaptive capacity, enable the system to respond to external changes in such a way that it does not exceed critical thresholds and thus remains in its current regime (Folke et al., 2010; Walker et al., 2004). This preserving, structurally conservative tendency is sometimes criticized. On the one hand, it is noted that the interpretation of resilience as adaptation originates from ecology and that transferring it to social processes easily leads to their naturalization. As a result, power relations are not taken into account, and measures are justified on the basis of so-called factual constraints. Overall, this tends to reinforce the prevailing social structures without discussing their moral quality (Cannon & Müller-Mahn, 2010, p. 623; Fainstein, 2015; Hornborg, 2017; MacKinnon & Derrickson, 2013, p. 258; Mikulewicz, 2019; for a rejection or relativization of such accusations see Gleich et al., 2010, pp. 18–19, 23–26; Olsson et al., 2014; Staab, 2022, pp. 91–98). On the other hand, the adaptation paradigm has been accused of being modernist in a bad sense. It views perturbations to social conditions as external and thus fails to recognize the sociogenic nature of environmental degradation (Groß, 2021, pp. 24–25; Walker & Cooper, 2011). Such a view is said to be misleading and should therefore be replaced by a focus on transformation (Bauriedl, 2022, p. 66; Chandler, 2019, p. 305). Turning away from preservationist approaches, the aim is to keep options open or create new ones. "Transformability is about shifting development into new pathways and even creating novel ones" (Folke, 2010, p. 4). In both critical perspectives, it becomes clear that the criticized stability-oriented resilience measures pursue certain social goals that do not derive from the concept of resilience but would have to be justified in their own right. This shows, as argued above, that resilience is a functional concept and is dependent on explicit value judgments for its implementation. The question of whether a system should be preserved or not cannot be answered by referring to the category of resilience. It requires an independent ethical reflection on its value.

Despite proposals to move from adaptation to transformation, the transformative interpretation has not gone unchallenged either. Some approaches, including those associated with the Resilience Alliance, object to a blanket preference for transformative measures, arguing that there are fluid transitions between the strategies of adaptation, learning, and self-organization and that it depends on the situation which approach makes sense (Folke et al., 2010; G7, 2022, p. 4; Greiving, 2018, p. 2065; Kuhlicke et al., 2018; Nelson et al., 2007; Rink et al., 2024, pp. 8–10; UN-Habitat, 2022, p. 37). In their view, transformation is linked to specific conditions. As they state, transformability is "the capacity to create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable" (Walker et al., 2004, p. 3; see also Nelson et al., 2007, p. 397). Furthermore, with regard to climate protection, there are complaints that mitigation, which requires far-reaching social change, is favored at the expense of adaptation (Morchain, 2018, p. 60). Last but not least, some consider the interpretation of resilience as transformation, as demanded for political reasons, to be contradictory, as resilience in the original sense means a return to the initial state (Groß, 2021). All in all, however, there is no fundamental reason why the concept of resilience should not be developed further. Insofar as climate change is a crisis in the truest sense of the word, that is, a time when the future shape of global social-ecological systems is at stake through the determination of emission pathways, the discussion is always about transformation (German Advisory Council on Global Change, 2011; Schneidewind, 2018).

5. Climate Resilience

A number of objections to resilience have a moral dimension. However, the validity claims are not differentiated in more detail, which represents a considerable gap from an ethical perspective. The consequences that such a distinction can have are demonstrated below using the case of climate resilience. The term climate resilience is a relatively recent addition to the discourse on climate change, which is part of the resilience boom mentioned at the beginning. It exhibits a certain degree of imprecision that has significant ramifications for political decision-making and moral justification.

5.1 Paths in Climate Protection

The ambiguity of the term climate resilience becomes clear when it is related to the current approaches to climate protection, which have different logics of action and different ratios of advantages and disadvantages, thus different moral bearings. Climate protection in the proper sense encompasses all measures that reduce greenhouse gas emissions (mitigation).

They lead to social burdens in two ways. On the one hand, they cause costs, for example, through the construction of new wind turbines and power lines or the development of new drive systems. However, some of these costs merely represent upfront investments or long-term profitable business expenditures on research and development. On the other hand, they impair individual options for action, for example, in the form of speed limits on the motorway, entrepreneurial business models, and profit opportunities, as well as the welfare prospects of society as a whole. Insofar as prosperity is causally linked to emissions in the current economic model, climate protection means material losses, at least in the short term. A particular moral and political difficulty lies in the fact that the bearers of the burdens and the beneficiaries do not coincide. The climate is global, and it does not matter where greenhouse gas emissions are reduced. Climate protection measures always benefit humanity as a whole, and future generations more than people living today. This results in controversies about the just distribution of advantages and disadvantages, which in practical terms manifest themselves as motivational problems and blockades in diplomatic negotiations.

A secondary approach involves adapting society to the altered environmental conditions that have arisen as a result of climate change. This includes protecting settlements and infrastructure from extreme weather events (for example, through dykes and floodplains), changes in agriculture and forestry, as well as public green spaces (for example heat- and drought-resistant plants, changes in irrigation) or reforms in urban planning (for example, windbreaks, shading). Adaptation measures vary in cost. In some cases, they can be integrated into already planned renewal cycles; in others, they bring additional benefits. The benefits accrue predominantly in the country where the costs are incurred, so that there is a high degree of sovereignty. In contrast to mitigation, the success of adaptation measures is not contingent upon decisions made by third countries.

A third approach is discussed in the context of climate negotiations, namely the transfer of financial resources and technology (equipment, procedures, knowledge). The richer countries should support the poorer ones. This approach is distinct from the first two in that it is related to them and only aims to enable mitigation and adaptation measures in the Global South.

Finally, some large-scale climate engineering approaches are regarded as methods of climate protection (Ostheimer, 2020). Some measures are aimed at reducing the carbon content in the atmosphere (carbon dioxide removal). These include various forms of air filters, reforestation, the renaturation of peatlands, or the fertilization of marine plankton, which increases the ability of soils and organisms to absorb carbon. These measures vary in complexity and cost and can have different positive and/or negative side effects. Alternative approaches attempt to reduce solar radiation or the absorption of incoming solar energy (solar radiation management). The proposals vary greatly: painting houses and streets white, stretching a light-colored film over darker landscapes, artificially creating clouds, or installing mirrors in space. In many cases, climate engineering will create a considerable risk of conflict.

5.2 The Ambiguity of Climate Resilience and Its Validity Claims

For some time now, there has been increasing talk of climate resilience. In most cases, this does not represent a new approach but is merely a new, fashionable term for the well-known task of climate protection. However, it is subject to the ambiguity that it is sometimes understood as mitigation and sometimes as adaptation of society to the impacts of climate change (climate engineering can be ignored at this point). If climate resilience is understood as adaptation, then the guiding principle is to raise the dams. If, on the other hand, resilience means mitigation, the social consequences are much more far-reaching. This is because the reduction of greenhouse gas emissions can only be achieved through a fundamental and multilayered reorganization of society, which encompasses not only forms of production, transport, infrastructure, and settlement structures but also lifestyles and cultural patterns. In the nomenclature of systems theory, this is a regime shift.

Adaptation and mitigation strategies include different measures, and each involves different distributions of burdens and benefits. From an ethical perspective, they have different obligation profiles. Under the methodological restriction to the state level, as is customary in climate ethics and climate politics, adaptation measures, like other efforts to build and maintain infrastructure and institutions, are an investment in the future. Consequently, they fall within the domain

of collective prudence, as the bearers of the burden and the beneficiaries largely coincide (within the state conceived as a unit), and only a limited number of measures also benefit third countries. Climate protection in the narrow sense, on the other hand, is a strict legal obligation that affects the primary perpetrators of climate change. Adaptation efforts cannot therefore be offset against mitigation duties. Seen in this light, the term climate resilience is anything but harmless. It blurs the clear distinction between mitigation and adaptation and thus their different moral obligations. The most recent IPCC report avoids—or magnifies—this problem by using the term climate resilience to encompass adaptation and mitigation and at the same time linking it to sustainable development: "Climate resilient development integrates adaptation and mitigation to advance sustainable development for all" (IPCC, 2023, p. 24).

6. The Transformational Impetus of Resilience

The distinction between adaptive and transformative measures, which is blurred in the term climate resilience, has a second side that can be characterized as socio-political. Both above (in Chapter 4) mentioned resilience strategies, adaptive and transformative, are likely to provoke social debates and controversies. In the case of adaptation, they are usually locally or thematically limited, such as when a settlement is not rebuilt (in the same place) after a flood disaster, when property owners face rising insurance premiums, or when forest owners have to reorganize their tree stock as a precautionary measure. In a similar manner, the designation of floodplains or the creation of heat concepts for urban areas can cause public controversies. Adaptive measures lead to higher costs or restrictions for some groups. However, they do not question the foundations of society. In principle, they can be managed within the framework of existing institutions. They are a matter of prudence and are worthwhile for society in any case.

The situation is different when it comes to transformative resilience strategies, which are a practical consequence of the understanding of climate resilience as mitigation. To achieve the goal of climate neutrality, societies must be comprehensively and profoundly reorganized. A climate-compatible society will be different in many ways. There will be several one-sided burdens. Three pathways to a zero-emission society can be delineated: efficiency, consistency, and sufficiency. Measures directed towards enhancing the efficiency of devices, for example, of notebooks or mobile phones, and processes, like district heating, are largely conflict-free. This is due to the fact that they are usually carried out in the background and do not interfere with everyday activities (the energy insulation of buildings is an exception). However, they are limited in their scope and will not solve the problem. In contrast, consistency, that is the integration of energy production within natural processes, and sufficiency, that is the reduction of energy consumption through a thrifty lifestyle on the individual level and, for example, a degrowth economy on the social level, lead to changes and restrictions that are often perceived as a loss of freedom, although this is usually a conceptual misinterpretation, and are therefore highly controversial.

Furthermore, there is a second perspective in social discourse. The transformation of society, forced as it were by climate emergency, is seen as a unique opportunity. A virtue is to be made of necessity. This perspective is evident in various contemporary discourses, including ecomodernism (Asafu-Adjaye et al., 2015), which conceptualizes the integration of effective conservation measures for wild nature with the acceleration of technological progress as a means to address pressing ecological challenges. It is also discernible in various climate movements, such as Fridays for Future and Extinction Rebellion, which hope that the reorganization of society will also contribute to promoting general participation, reducing social inequality, and improving social cohesion (Extinction Rebellion, n.d.; Neubauer, 2023).

Social transformation is a collective learning process that is diverse in terms of both content and procedure. It touches on cognitive aspects, techniques, habits, social and communication forms, education, power structures, values, and self-images. Transformative climate resilience is a cultural task (Ostheimer, 2018; Schneidewind, 2018; Welzer, 2013; Wuppertal Institut, 2020). It requires pioneers who lead the way, who try things out and thus initiate change (Geels, 2011; Geels & Schot, 2007; Ostheimer & Blanc, 2021, pp. 5–11; Westley et al., 2013). Equally important is the willingness of the general public to engage in reforms and to allow their own everyday lives to change in a mediopassive attitude. A good prerequisite for this is the combination of the virtue of illusionlessness, "which enables sober realism and opens up the space for analysis" (Reckwitz, 2019, p. 15 [transl. J.O.]), with

the virtue of hope, which protects against resignation, fatalism, or cynicism. In this way, the public trust that Holling calls for can emerge as a prerequisite for resilience.

> The key features are integration of knowledge at a range of scales, engagement of the public in exploring alternative potential futures, adaptive designs that acknowledge and test the unknown, and involvement of citizens in monitoring and understanding outcomes. That is only possible in situations where ecological resilience and public trust have not been degraded. If they have, as in many situations, then the initial goal has to be the restoration of both resilience and trust. (Holling, 1996, p. 42; see also Bonß, 2015, p. 29; Kabisch et al., 2024; Walker et al., 2004, p. 6)

To summarize, resilience efforts require a socio-cultural basis in order to be successful.

The focus of transformative resilience strategies is not on individual disruptive events but on undesirable structural developments that need to be recognized and redirected at an early stage. Judging social developments as wrong always has a moral side to it. It is not derived from the concept of resilience but must be justified independently. In a democratic constitutional state, justification must take place in an open social dialogue, as already mentioned by Holling. By focusing on the necessary or, in some cases, desirable social reforms, resilience takes on a socio-political dimension. With regard to the procedures, there needs to be a public debate on how participatory decisions on resilience strategies should be made and what weight should be given to expert knowledge. This could be done in participatory scenario visioning workshops, for example (Cook et al., 2021; Iwaniec et al., 2021). In terms of content, a discussion about the good society is necessary.

In this way, the resilience discourse could provide productive impetus for the social struggle for a common good life in times of climate change (Folke, 2016, p. 12). A transformative interpretation of resilience as a future competence refers to the values or goals that the reorganized social development should strive for. In this respect, resilience is a challenging concept. It implies an active social public sphere that is oriented to reaching understanding and has the common good in mind.

7. Conclusion

The concept of climate resilience is a relatively recent addition to the discourse on climate change. With regard to the various strategies for climate protection, it is sometimes interpreted as mitigation and sometimes as social adaptation to the consequences of climate change. Often, the precise meaning remains unclear. From an ethical perspective, this ambiguity is problematic, as both ways to respond to the challenges of climate change bear different moral signatures and lead to different policies, which need to be made explicit. In the context of states or societies, adaptation measures pay off because the costs and benefits fall on the same collective actor. They are an investment in the future. Therefore, they are a matter of collective or social prudence. Conversely, the main beneficiaries of mitigation are other people: in other countries and particularly in the future. The reduction of greenhouse gases prevents harm to third parties. With regard to its normative status, it is a strict obligation. Because of these not only practical but also moral differences, both approaches cannot and should not replace each other. Especially, mitigation should not be neglected in favor of adaptation, as is sometimes argued for in political debates.

Most adaptive measures can be achieved within the existing basic structures of society. Interpreting climate resilience as adaptation to the impacts of climate change, resilience would mean promoting the robustness of a given social system to withstand changes in its environment, and/or strengthening its capacity to manage minor adaptive changes in its superficial structure in order to preserve its basic structure. By these procedures, it can maintain its current regime. On the contrary, in the context of global warming, mitigation requires fundamental changes to these structures, encompassing material infrastructure and cultural patterns. As in their current state, they are causally linked to an intolerably high level of emissions, climate resilience in the sense of mitigation would mean social transformation.

While increasing infrastructure robustness usually requires expert knowledge, issues of social transformation should not be the exclusive domain of experts in a democratic society. Instead, the design of the future society should be a subject of open public discourse as a matter of the common good.

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