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Dark side of resilience: systemic unsustainability

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Resilience is often presented as a championing solution for tackling the multi-level environmental, security, health, and financial threats facing the whole humanity or specific ecosystems, communities, institutions, or individuals. However, the popularity of the concept is not proof of its usefulness. Perhaps the greatest problem is that many of the current socio-ecological systems are operating in both resilient and unsustainable ways. The problem turns into a tragedy if resources are used to maintain or advance such unsustainable resilience. We provide a concise review of the use of the concept of resilience in multiple fields. We highlight the dominance of positive connotations of resilience, originating both from theoretical considerations and practice-oriented applications. This optimistic bias masks the fact that unsustainable systems and practices may be highly resilient. In turn, this can lead to poor understanding and inadequate management of risks related to the attempts to create sustainability innovations. We discuss how path-dependencies and shifting baselines can complicate sustainability initiatives. Managing resilience for sustainability involves defining which system states are desirable and managing the pressures that maintain desired and undesired system states. Our conclusion is that active efforts aimed for maintaining resilience should be initiated only if a thorough assessment has shown that the system under consideration can function in a sustainable way.

KEYWORDS

framings, policy, resilience, socio-ecological systems, sustainability, systemic change

1. Introduction: resilience as a buzzword

Resilience is one of the buzzwords in sustainability science. The number of articles found from the Clarivate Web of Science with the terms “resilience” and “sustainability” in the title, abstract or keywords increased from less than ten per year until 2001 to about 1,000 in 2022. These studies often analyze the dynamics and interactions of socio-ecological systems facing internal disruptions or external stress (Derissen et al., 2011; Marchese et al., 2018; Dragicevic and Shogren, 2021). Many studies have been motivated by the need to find possibilities to prevent the deterioration of ecosystems facing pressures such as climate change, resource overuse, urbanization, or biodiversity loss (Walker et al., 2004; Folke et al., 2016). In ecology, resilience has partially replaced robustness to analyze the ability of a system to continue functioning and recover from a disturbance (Walker et al., 2004; Dragicevic, 2020).

However, resilience is not reserved only for environmental research or sustainability science. It has been a frequently addressed concept in social sciences, safety science and organizational and work studies analyzing community and individual level capacities to cope with stressful situations and sudden, unexpected events (Weick and Sutcliffe, 2001; Hollnagel et al., 2006).

The turbulent times and crisis situations tend to increase scholarly, policy and public attention toward resilience, sometimes in indirect and unexpected ways. The COVID-19 pandemic raised discussion not only about the resilience or carrying capacity of health systems but also about the resilience of economic systems relying on a just-on-time efficiency paradigm and undisturbed international trade (Galaitsi et al., 2021; Negri et al., 2021).

Another example is the Russian invasion of Ukraine in 2022, which has given a brutal reminder of the controversial or even inconvenient role of military force as a fundament of national resilience. This has sparked interest toward a more comprehensive security paradigm that would move away from short term-solutions and also consider resilience against humanitarian crises and future challenges. Such a paradigm would combine analysis of national defense policies with considerations of, for example, global energy, food security, and soft issues such as societal trust.

2. If it doesn't kill you...

A common feature across studies in different fields is the comprehension of resilience as something positive and desirable. Already the original use of the concept as a property of materials to withstand severe conditions carries meanings of desired resistance against changes (Annarelli and Nonino, 2016). Positive connotations have strengthened as the use of the concept has passed from the mechanics to social and behavioral sciences, ecology, and sustainability science (Alexander, 2013; Shaw et al., 2016; Thoren, 2021). The current scholarly debate often highlights resilience as a normative goal, characterized by dynamic and context-specific performance that should be maintained or advanced (Leveson, 2020; Nemeth and Hollnagel, 2021).

The positive stance is even more evident in public and policy domains. A resilient person can cope with stress, adapt to arising difficulties and bounce back even stronger than before (Poijula, 2018). A resilient firm is ready to meet market disturbances, a resilient community can quickly reorganize itself after social disorder or natural disaster (Hall et al., 2016). A resilient political system responds effectively to internal or external threats (Dewaele and Lucas, 2022).

As a positively loaded concept, resilience answers to the calls for hope and meaningful action aiming to manage multiple systemic risks and uncertainties, address personal-level anxiety, and counterbalance the doom-and-gloom framings frequently highlighted by the media headlines. A partial explanation of the popularity of the concept lies in its inherent malleability and multiple meanings allowing wide use. Much like the concept of sustainable development, resilience can be criticized as an oxymoron combining contradictory notions of stability and transformation or homeostasis and evolution (Alexander, 2013). This conceptual obscurity is a brainteaser for theory-oriented scholars, but a more troubling challenge for sustainability science

and policy lies with the widely shared uncritically positive connotations of resilience (Reid, 2012).

3. Illusions of good systems

There is an obvious but largely unspoken danger with positive connotations. Resilience is a worthwhile cause only if the system under consideration is sustainable and well-operating in the first place. The problem is that many of the current socio-ecological systems are unsustainable. In such cases, resilience of a system serves as a buffer against perturbations that could shift the structures and functions of a system toward different and perhaps more sustainable modes. This has been characterized as “undesirable”, “perverse” or even “schizophrenic” resilience (Blühdorn, 2007; Dornelles et al., 2020; Kokorsch, 2022). The problem of unsustainability turns into a tragedy if resources are used and technologies or practices developed to maintain, restore, or strengthen the resilience of such systems. Resilience of a system does not necessarily sustain human wellbeing and wellbeing does not always sustain systemic resilience. Indeed, in the field of psychology, there have been calls for a nuanced approach and for more precise and consistent definitions and measures for resilience (Harvey and Delfabbro, 2004).

Plentiful examples of environmentally harmful resilience exist. They range from socio-technical lock-in to a carbon-intensive economies intensifying global climate change (Unruh, 2000) to a regional-level vicious cycles of internal nutrient loading from seabed maintaining eutrophication and poor condition of a water ecosystem (Bonsdorff, 2021) and habitat changes affecting metapopulation dynamics and eventually leading to local species extinctions (Hanski and Ovaskainen, 2002). From a social science perspective, Mattioli et al. (2020) identify several systemic characteristics maintaining car-dependent transport systems, including industrial agendas strengthened by the opportunistic use of contradictory economic arguments, apolitical façades hiding pro-car decision-making and incapability of the state and transport planning to break from ole dependencies and the integrated socio-technical aspects of provision. Importantly, environmentally harmful resilience does not need to be produced intentionally. It is typically maintained through unintended systemic effects and the countless (non-)actions that reproduce an unsustainable system (Lyytimäki, 2015; Ekberg et al., 2022).

4. Lure of innovations for resilience

A high number of potential solutions for unsustainability have been suggested, including technological improvements and social reorganizations, voluntary compensation schemes, transparent production and consumption chains, more stringent regulations, and internalization of external costs (Cross and Guyer, 1980; Negri et al., 2021). Different proposals to orchestrate the potential solutions have also been presented, ranging from conventional integrative policies such as the 2030 Agenda and Sustainable Development Goals negotiated under the United Nations to more specific initiatives aiming for comprehensive “Green Deals” in the EU and the US and various national level transition management

schemes or transformative innovation policies. Generation of new knowledge and rapid diffusion of innovations are included in almost all proposed solutions. This fits well with the fundamental ethos of science to produce new knowledge and with the business logic seeking new market opportunities. Trust in future innovations and promises of win-win solutions are also convenient for policymakers juggling with different demands from diverse stakeholder groups, including those who want to maintain the current systems as well as those who demand rapid mitigation solutions (e.g., [Marquardt and Nasiritousi, 2022](#)).

However, new knowledge and innovations may not be the most efficient way to induce societal transformation. The adoption of innovations is always uncertain and often slow. Existing structures are strong and current practices are deeply rooted while innovation policies are often weak ([Kivimaa and Kern, 2016](#)). Importantly, innovations carry risks of rebound effects when more efficient technologies enable dismissing the risks of our current unsustainable system and even feed additional consumption. Adoption of innovations may also involve unexpected side effects or lead to potentially irreversible cascading effects. Innovations are needed, but the current predicament of humankind calls also for more certain, fast and effective measures helping to remove, restructure, or remobilize systems that are currently operating in unsustainable ways ([Anderson and Peters, 2016](#); [Ekberg et al., 2022](#); [Marquardt and Nasiritousi, 2022](#)).

Even if innovations are truly beneficial and they are adopted swiftly and widely, they will still be competing with well-established existing unsustainable systems and will at most, become additions rather than substitutes to existing unsustainable systems. As reminded by [Christophers \(2022\)](#) based on the analysis of the business logic of major oil companies: the difficulty is that the energy transition is as much about the winding down of fossil fuels as it is the ramping up of renewables. More fundamentally, the energy transition is not only about energy production, but also about energy savings and the need to reduce energy consumption. Here, anticipatory assessments such as scenario analysis, participatory modeling, and future policy exercises are key in recognizing unsustainable resilience and gaining insights into undesirable path-dependencies and lock-ins.

5. Raising above the convenient amnesia

Perhaps one of the most promising accelerators of sustainability transition is seemingly a simple one: the removal of those practices or structures that are already identified as harmful. Instead of making an unsustainable economy more resilient, what is required is mechanisms of politically induced creative destruction and exnovation that rapidly phase out unsustainable components of the system ([David, 2017](#); [Turnheim, 2022](#)). However, the political willingness to utilize this accelerator has been insufficient, as shown by the lack of efficient enforcement of environmental policy goals. Conspicuous examples include the EU 8th Environmental Action Programme aiming to put an end to environmentally harmful subsidies, the International Convention on Biological Diversity aiming for cancellation, phasing out or the renewal of subsidies harmful to biodiversity, or the Agenda 2030 Sustainable

Development Goals aiming e.g., to eliminate subsidies for fossil fuels (SDG 12c).

Relevant knowledge of many unsustainable systems already exists, and clear advice has been given to policymakers, leading to some frustrated climate scientists to demand a moratorium for new knowledge generation until the scientific advice is followed ([Glavovic et al., 2022](#)). Eradication of resilient unsustainability requires science-based advice but the reasons for the current predicament run deeper than plain lack of data or indicators convincingly showing the critical trends or boundaries for sustainability. Abundant information may even be counterproductive: it allows cherry-picking only such information that supports the status quo and manipulations through overemphasizing uncertainties, as well as purposeful, accidental or non-recognized non-use of information ([Lyytimäki et al., 2011](#)). Sorting out information is a key cognitive human capacity and sorting out unpleasant information is both common and infamously easy ([Kunda, 1990](#)).

Better understanding is needed of the individual, group, organization and system-level contributing factors that inhibit us from acting based on the known data and facts. Several forms of defenses such as denial and rationalization create change resistance especially if a change is considered costly or inconvenient ([Ekberg et al., 2022](#)). Experiential shifting baselines and generational or institutional amnesia provide additional explanations for the lack of action ([Soga and Gaston, 2018](#)). Because of mindsets anchored to present situations and practices, individuals and institutions may lack the capabilities to imagine how a sustainable system should look like. Therefore, it may be considered acceptable or even advantageous to maintain the current systemic state, even if it is poorly functioning or degraded compared with certain previous or potential future states. In this case the perceived costs or challenges associated with transitioning to a different state may outweigh the potential benefits, leading to a preference for maintaining the status quo despite its shortcomings.

6. Discussion: just let it go!

A key conclusion is that resilience is not a universal goal. Active efforts aimed at maintaining resilience should be initiated only if a thorough assessment has shown that the system under consideration can function in an environmentally sustainable way. Under the general setting of the Anthropocene, we should not assume that the operation of any current socio-ecological system is a priori sustainable. Furthermore, we should not assume that resilience at the individual, community or system level is a priori beneficial.

A communication culture of openness and fairness encouraging self-reflection is needed to bring forth the different framings of resilience. Such a discourse should highlight what components of resilient but unsustainable systems need to be retained and what needs to go. It should also instruct how people should be assisted in coping with the transformation and how the opportunities arising from it can be embraced, as well as risks and losses endured.

Essentially, sustainability transformation is about our ability to deconstruct existing power structures, social imaginaries,

institutions, and practices (Reid, 2012; Feola et al., 2021). Therefore, instead of taking stronger resilience as a starting point, the key question should be whether to allow or even accelerate creative destruction that may give room for the emergence of different types of resilience. The core challenge is about embracing the change, despite all the personal defenses, power games and political barriers.

The critique challenging the positive connotations of resilience may sound depressing and discouraging, but there is a highly hopeful silver lining: endeavors toward a sustainable future is not principally about a desperate fight against unsurmountable grand challenges, nor it is a daunting task of inventing something completely new and trying to control the consequences of it. Purposefully letting go of the harmful resilience and being open to the already existing better solutions and emerging alternatives may be just enough to induce the sustainability transition.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

JL and A-MT contributed to conception and design of the study. JL wrote the first draft of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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Conflict of interest

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