OVERVIEW

The power to define resilience in social–hydrological systems: Toward a power-sensitive resilience framework

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Abstract
Since the early work on defining and analyzing resilience in domains such as engineering, ecology and psychology, the concept has gained significant traction in many fields of research and practice. It has also become a very powerful justification for various policy goals in the water sector, evident in terms like flood resilience, river resilience, and water resilience. At the same time, a substantial body of literature has developed that questions the resilience concept's systems ontology, natural science roots and alleged conservatism, and criticizes resilience thinking for not addressing power issues. In this study, we review these critiques with the aim to develop a framework for power-sensitive resilience analysis. We build on the three faces of power to conceptualize the power to define resilience. We structure our discussion of the relevant literature into five questions that need to be reflected upon when applying the resilience concept to social–hydrological systems. These questions address: (a) resilience of what, (b) resilience at what scale, (c) resilience to what, (d) resilience for what purpose, and (e) resilience for whom; and the implications of the political choices involved in defining these parameters for resilience building or analysis. Explicitly considering these questions enables making political choices explicit in order to support negotiation or contestation on how resilience is defined and used.

1 | INTRODUCTION

Since the early work on defining and analyzing resilience in domains such as engineering, ecology and psychology, the concept has gained significant traction in many fields of research and practice (Xu & Kajikawa, 2017). The frequency with which it is used, the diversity of definitions it is given and the broad range of purposes for which it is deployed increase the risk that the term will collapse into a rhetorically useful but empirically hollow buzzword (de Bruijn, Buurman, Mens, Dahm, & Klijn, 2017). Resilience has functioned as a cross-cutting concept for connecting insights across different disciplinary approaches, particularly between the natural and social sciences (Scheffer et al., 2012). This study focuses specifically on the water sector, in which resilience has gained a prominent place (see e.g., Booher & Innes, 2010; Hill Clarvis, Allan, & Hannah, 2013; Mao et al., 2017; Rockström, Falkenmark, Allan, et al., 2014; Rockström, Falkenmark, Folke, et al., 2014; Wiering et al., 2015). Concepts like water resilience (Rockström, Falkenmark, Allan, et al., 2014; Rockström, Falkenmark, Folke, et al., 2014; Rodina, 2019), flood resilience (Aerts et al., 2014), drought resilience (de Vries et al., 2012), or river resilience (Biron et al., 2014) have become commonplace. Increasing interest in resilience in the water domain coincides with a broader recognition of the role of ecosystems in water management. Resilience is also recognized as integral to achieve the Sustainable Development Goal on water (SDG 6; Stockholm International Water Institute, 2018; UNESCO, 2018). The rapid rise of resilience has attracted a number of critiques that target the way in which resilience is usually defined and used. These critiques make explicit and question the systems ontology that is most often implied, they trace the constraining effects of the term to its roots in the natural science, and they trace the normative and political implications of how the concept is used (Cote & Nightingale, 2012; Davidson, 2010; Davoudi et al., 2012; Ingalls & Stedman, 2016; Matin, Forrester, & Ensor, 2018; Rigg & Oven, 2015; Walker & Cooper, 2011). In this study, we build on scholars who have raised questions about resilience that aim to unravel the political implications of its use, such as "resilience of what to what" (Lebel et al., 2006), "which resilience, why resilience and whose resilience" (I. White & O'Hare, 2014) or "resilience for who, what, when, where and why" (Meerow & Newell, 2016).

Resilience is never used by itself. It is always part of a conceptual toolbox that is used to understand systems and their behavior. Deploying the construct resilience, be it analytically or practically, consequently requires definitional choices. In each use of the construct key elements are included while others are not. This selection shapes in important ways the unit whose resilience is to be analyzed and/or improved. Our main focus in this study will be on the question of the power to define resilience: who defines resilience for whom, what is being defined when applying the resilience concept, what are the normative choices made when doing so, and what are the implications of those choices for whom? The political nature of these questions becomes clear when one starts reflecting on who defines the answers to these questions in any particular resilience project, and with what consequences for different social groups of privileged or marginalized people. We structure our discussion of the power to define resilience around five questions: (a) resilience of what, (b) resilience at what scale, (c) resilience to what, (d) resilience for what purpose, and (e) resilience for whom. For any application of resilience, the answers to these questions may be openly deliberated, hierarchically dictated, fiercely negotiated, imposed by a dominant coalition, actively contested or passively accepted.

In this study, we engage critiques of resilience with the aim of infusing more awareness of the operation and consequences of power in social–hydrological resilience scholarship (Stone-Jovicich, Goldstein, Brown, Plummer, & Olsson, 2018) that is most directly relevant to the water sector, namely social-ecological resilience (Folke, 2016), disaster resilience (Aldunce, Beilin, Handmer, & Howden, 2014) and climate resilience (Tyler & Moench, 2012). Other relevant literature looks at urban resilience (Meerow, Newell, & Stults, 2016), development resilience (Barrett & Constas, 2014), and community resilience (Patel, Rogers, Amlôt, & Rubin, 2017). These bodies of literature demonstrate the advantages brought through the use of the construct resilience. A key advantage brought by using resilience is that the construct is consistently understood to require an interdisciplinary understanding of social-ecological change. According to a typical and influential definition, social-ecological resilience is "the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain

essentially the same function, structure, and feedbacks, and therefore identity" (Folke, 2016, p. 4). Translated into the water domain, it becomes possible to understand absorptive, adaptive and transformative capacities that can help design strategies to build the resilience of social–hydrological systems in a comprehensive way (Mao et al., 2017). The manner in which resilience is understood implies the possibility of system collapse is always around the corner, which has encouraged researchers to gain a better understanding of how dynamic processes of continuous adaptation to stresses and shocks are needed to keep social–hydrological systems in desirable states (Akamani & Wilson, 2011; Ratner et al., 2013; Zhao, Gao, Kao, Voisin, & Naz, 2018).

We agree with the critical scholarship that current uses of the construct resilience in the description of socio-hydrological systems tend to be silent on the workings of power. We do not agree with critics who therefore consider resilience as a dead end rather than a bridging concept (Davoudi et al., 2012). Rather, we would propose that we retain the productivity found in current uses of the construct and integrate into its use adequate consideration of power. Recent scholarship on resilience and power has brought attention to the subtle ways in which the definition and application of the construct resilience itself is always political. This observation provides a foundation from which it is possible to continue unpacking how resilience outcomes may be conditioned by relations of authority, privilege and/or exclusion (Boonstra, 2016; Cote & Nightingale, 2012; Karpouzoglou, Dewulf, & Clark, 2016). However, there is not only a need to understand how the wider debate on power in resilience thinking relates to the understanding of complex water challenges. We also aim to contribute to formulating concrete and practically useful design principles for dealing with power issues when engaging in resilience research and policy making within social–hydrological systems.

In developing a more power-sensitive approach to resilience, we deliberately create middle ground between fervent advocates and ardent critics of resilience. In our view, resilience represents a valuable strand of scholarship that has focused our attention on deep uncertainties, complex social-ecological system dynamics, slow and fast nonlinear changes, and on the value of flexibility, redundancy, connectedness, and diversity. At the same time, the construct resilience risks being evacuated of all meaning when it is used naively and indiscriminately and it hazards categorical rejection when misguided appropriations of the concept are not contested (Trell, Restemeyer, Melanie, & van Hoven, 2018). By structuring our analysis around the aforementioned five questions, our aim is to overcome the simplistic dichotomy in which resilience is either beatific or evil. It is also our intention to make the discussion less abstract and more tangible for researchers and practitioners engaging with resilience in social–hydrological systems. Hence, our approach is directed at enabling researchers and practitioners to understand and discuss the significance of power in relation to resilience without necessarily being experts on power. Thus we hope to catalyze a discussion on the subject that at least can help make power visible and support those who must make critical choices regarding resilience by providing a vocabulary that makes their deliberation explicit.

2 | THE POWER TO DEFINE RESILIENCE

Power has long been the subject of intense debate in the social sciences. There is no consensus on the precise definition of power. Despite constant disagreement over what power is, scholars agree that power is central to the interactions between humans and their environment. For the remaining of this study we have chosen to work with notions of power that are fairly broadly accepted, to exemplify the sort of contribution power may make when integrated into resilience thinking. At the most fundamental level, power is constituted through the relations and interactions that occur between people, places and the natural resources they depend upon (Paulson, Gezon, & Watts, 2003). Power, continuing in this vein, can manifest in direct and visible ways through force, violence or intimidation but also in less visible forms through shaping knowledge and influencing world views, belief systems, and interests (Boonstra, 2016). We start here from a deliberately broad definition of power as "the ability to influence both conduct and context" (Boonstra, 2016, p. 1), which we will refine building on the three dimensions of power proposed by Lukes (2005).

Our point of departure is that the construct resilience should not be naively deployed. Use of the term, both for research and practical purposes, requires deliberate choices. Those using the term must decide which system is to become resilient, with respect to what threats, at what scale, for what purpose, and for whose benefit. These choices are often not explicitly discussed, they are not neutral technical choices but political ones, and silence on these questions rightly attracts critical attention. Their answers reflect both explicit and implicit power to define resilience. Ultimately, the answers given have the potential to reproduce, aggravate or contest existing unequal power relations, which may be the origin of limited resilience in the first place. The question of who uses the concept of resilience and how is, therefore, is also a question of power. Realizing that definition is an exercise of power may lead resilience scholars and practitioners to reflect on their own rights and responsibilities

in defining and using the construct resilience. It is, precisely, this reflection that we wish to encourage and support with this study.

How do power relations affect the definition of resilience and to what effect? To situate our approach to power among the multiple and competing definitions of power in the literature, we start from a broad conceptualization of power in social-ecological interactions (Boonstra, 2016). Here, power is understood as a social relation, referring to the ability of actors to influence outcomes. This ability consists of "directly shaping conduct … as well as shaping the social and ecological contexts that structure the range of possibilities and abilities of others" (Boonstra, 2016, p. 4).

To further define how the different forms of power intersect with resilience, we draw on Lukes' three-dimensional view of power (Lukes, 1974, 2005), based on three dimensions or faces of power: (a) *direct power*: the ability of actor A, in open conflict with actor B, to make actor B do something that B would otherwise not have done; (b) *indirect power*: the ability of actor A to regulate and control the decision-making agenda, suppressing issues and proposals promoted by actor B; and (3) *ideological power*: the ability of actor A to manipulate actor B's subjective perception of his or her interests, thereby avoiding conflicts altogether (Dewulf & Elbers, 2018; Torfing, Peters, Pierre, & Sorensen, 2012). Lukes' early work focused almost exclusively on domination, according to which A exercises power in a manner contrary to B's interests (Lukes, 1974). Later, he opted for a broader definition of power as A's "ability to bring about significant events, specifically by furthering their own interests and/or affecting the interests of others, whether positively or negatively" (Lukes, 2005, p. 65). The three faces of power are also found in Gaventa's well-known "power cube" (Gaventa, 2006) as visible, hidden, and invisible power.

Each of the three faces of power is potentially relevant to how resilience becomes defined, though not all are equally relevant at all times. The first dimension of power (direct power) focuses on who has the visible upper hand in open conflicts in decision-making. While definition of the parameters of resilience shapes subsequent thought and practice, it is not often that defining these parameters becomes the focus of contention in formal decision-making processes. Even if the definition of resilience is part of a formal policy decision, contention is more likely to focus on costs, priorities or evidence, than about the apparent details of how resilience is defined. Another, probably more important reason is that resilience may very well be defined outside of a formal decision-making process, such as by an NGO professional drafting a project outline, or a bureaucrat implementing a broader policy. Most importantly, resilience is often not defined explicitly at all, but taken for granted as if it were a self-evident shared understanding.

The second dimension of power (indirect power) is about who sets the agenda and makes the rules. Power is exercised here through non-decision-making (Bachrach & Baratz, 1962): controlling the agenda and suppressing unwanted issues and proposals. When certain issues are kept off the table, for example, diffuse water pollution by agriculture or water and sanitation investments in fringe settlements, it is unlikely that resilience projects will be initiated on these topics.

The third dimension of power (ideological power) captures the "normalization" of particular ways of thinking and acting, through which conflicts are preempted. This face of power works through influencing people's subjective understanding of their own interests such that they align with a predefined set of interests. In this way, it is possible to "prevent people … from having grievances by shaping their perceptions, cognitions and preferences in such a way that they accept their role in the existing order of things" (Lukes, 2005, p. 28). This third face of power is particularly relevant for analyzing the power to define resilience as that act influences the context of interaction and decision-making in resilience projects (Boonstra, 2016). The parameters of resilience may be defined such that a set of external interests are unobtrusively imposed upon people. For example, the interests of upstream activities that increase flood risk may be protected by teaching people downstream how to be more resilient to floods, and have them accept occasional floods as normal. Amartya Sen (Sen, 1984, pp. 308–309) wrote that "the most blatant forms of inequalities and exploitations survive in the world through making allies out of the deprived and the exploited, as the underdog learns to bear the burden so well that he or she overlooks the burden itself."

Power is often most effective when invisible so it does not like being talked about. By making power explicit, the pre-existing definitions and uses of resilience can be denaturalized which may open alternative forums for dialogue, negotiation or contestation in a manner that draw in relevant actors who are not usually involved in setting the agenda for resilience research and policy (Leach, 2008). If ideological power can silently impose on a group a definition of resilience that disadvantages them, then a conscious recognition of this power can make it possible to negotiate a definition of resilience whose consequences are more equitable. Recognition of power does not necessarily make the playing field level, but making power explicit may correct information asymmetries. The analysis of power therefore starts from the idea that there is no objective or universal model of resilience. Even when aiming to apply resilience in a descriptive way to social–hydrological systems, normative choices and political implications are always around the corner. For each application, the parameters of resilience have to be defined and this shapes what resilience turns out to be. Resilience, therefore, emerges from power struggles between proponents of multiple and competing definitions and models of resilience.

We structure our discussion on how resilience gets defined, and with what implications, along the lines of five power-sensitive questions: (a) *resilience of what*: what are the power implications of defining which system and what about this system is supposed to become resilient?; (b) *resilience at what scale*: what are the power implications of defining which spatial and temporal scale is considered in strengthening resilience?; (c) *resilience to what*: what are the power implications of defining which slow or abrupt changes the system is supposed to become resilient to?; (d) *resilience for what purpose*: what are the power implications of defining the purpose of resilience projects?; (e) resilience for whom: what are the power implications of defining which social groups are supposed to become resilient? These questions are touched upon in critical approaches to resilience in the literature, but mostly in a fragmented way. In the upcoming sections, we aim to provide a comprehensive and structured discussion of these power-laden questions regarding resilience.

3 | RESILIENCE OF WHAT?

What are the implications for subsequent interaction of identifying, first, the system, and then, those aspects of that system that are to become more resilient? Defining the entity whose resilience is to be analyzed or improved involves a set of choices that will have differential impacts and those choices may be strongly power-laden particularly when there are trade-offs between (investments in) the resilience of different entities (Brown, 2016; Meerow & Newell, 2016). For example, when analyzing the resilience of infrastructure to floods, we may overlook the resilience of surrounding ecosystems or social systems. Likewise, it may be a matter of policy priorities whether to strengthen the resilience of agriculture versus the resilience of aquatic ecosystems. There are more fundamental concerns about defining the entity that is to be resilient as well, particularly with respect to (a) defining the system; (b) focusing on the social and/or hydrological components of the system; and (c) defining key functions and thresholds.

First, as resilience analysis tends to be rooted in systems thinking, a systems rationale prevails in most applications of resilience. This tendency has been critiqued for being too decontextualized, apolitical, and technical (Boonstra, 2016; Gillard, Gouldson, Paavola, & Van Alstine, 2016; Smith & Stirling, 2010; Voß & Bornemann, 2011). While a complex systems approach is well-established in the field of ecology, there are debates over the suitability of such systems ontologies to social phenomena. The ontologies in the social sciences that are compatible with the systems thinking, such as Talcott Parson's social systems theory, are now deeply controversial insofar as they construct boundaries around systems, oversimplify social phenomena in terms of equilibria, thresholds and feedback mechanisms, underestimate the political and institutional forces involved in self-organization (e.g., in markets), and risk bringing back a variety of functionalism that assumes societal consensus and the absence of conflict (Olsson, Jerneck, Thoren, Persson, & O'Byrne, 2015). Others are more positive about the compatibility of resilience theory for the study of social systems, emphasizing the relevance of "conditions that facilitate breakdown and renewal, and dynamic feedback processes that operate at different rates and scales in complex social systems" (Davidson, 2010, p. 1141), provided that the constructed nature of system boundaries is recognized, and that human agency and power can be properly integrated into the framework.

One particularly relevant critique of the use of systems approaches to the study of social systems is that the unit of analysis is the system as a whole. As such, they privilege the whole over the survival of each of its parts (Gillard et al., 2016). A social system can be resilient while (minority) groups within that system suffer. Instead of defining resilience as an abstract characteristic of a formally defined system, it can also be understood to be continuously lived and experienced by different actors in different ways (Cooke, West, & Boonstra, 2016). A pure systems perspective lumps together disparate actors and social groups who may be on different sides of the equation in terms of causing or suffering from threats to the system, or in terms of undermining or strengthening resilience to those threats. So long as individuals are recognized as having rights and obligations prior to those given by the collective, differentiation between system properties and sub-system properties (which may be individual actors or collectives) is necessary in order to "keep alive the crucial question of the moral and the political responsibility of the powerful for what they do and what they fail to do in the past and in the future" (Hayward & Lukes, 2008). The assumption of individualistic holism that is characteristic for the resilience approach (Kirchhoff, Brand, Hoheisel, & Grimm, 2010), according to which every individual is internally related to other individuals with the broader community, warrants proper attention to individuals as part of social–hydrological systems.

Second, given the natural science and interdisciplinary lineage of the construct resilience, important definitional choices concern whether and how to account for the social and the hydrological dimension in defining the system of interest. As has been shown for socio-hydrological resilience (Mao et al., 2017), the system can be defined as (a) *the water system*, subject to anthropogenic threats; (b) *the human system*, subject to natural threats; or (c) *the coupled human–water system*, subject to both anthropogenic and natural threats. When the system is defined in biophysical terms, the importance of the environment,

biodiversity and ecosystem services is privileged, possibly at the expense of human livelihoods (Methmann & Oels, 2015). When the system is defined in social terms, variations in the vulnerability of people and the natural threats to their specific livelihoods are emphasized. Privileging the social runs, the risk of fostering practices that are socially desirable but ecologically harmful, such as over-extracting natural resources to meet current human needs (Davidson, 2010; Duit, Galaz, Eckerberg, & Ebbesson, 2010). When the system is defined as a coupled social–hydrological system, emphasis is put on how people and nature are intimately connected in the challenge of avoiding collapse—people and nature can act as both threats and threatened here.

Third, when the system has been bounded, the next task is to step into that system and decide what needs to become or remain resilient. The seemingly neutral elements of functions, structure, and feedbacks in the definition of resilience (Folke, 2016, p. 4) transform into highly normative and deeply political questions when the challenge is to decide which functions are worth protecting. All social–hydrological systems have multiple functions. While improving resilience may not be a zero-sum exercise, most often it is not possible to strengthen the resilience of all these functions. Once it is accepted that choices must be made, it is even more challenging to define the thresholds for desirable, acceptable and unacceptable levels of functioning, and next, to set the threshold that counts as system collapse. For example, is economically motivated out-migration an adaptation strategy that keeps a system resilient or is it an indicator of system collapse? Or, to provide another example, at what point does flooding become unacceptable? In Bangladesh, for example, different social groups differ in their assessments of whether an ankle-deep flood or a knee-deep flood counts as the threshold for unacceptable flooding (Ahmed, Khan, Warner, Moors, & Terwisscha Van Scheltinga, 2018). Significantly, poor people, those with few fixed valuable assets at ground level, are more tolerant of flooding than are the wealthy. These major discrepancies between local residents' socio-economic status and their willingness to tolerate flooding could, then, be used to divert state resources to protect the wealthy. Different expectations of state support and different experiences in terms of physical structures, social settings and economic conditions produce different tolerance levels to risk, which are important to take into account when planning.

4 | RESILIENCE AT WHAT SCALE?

What are the power implications of defining which spatial and temporal scales for resilience are taken into consideration? Even when the system of interest has been specified, the question remains at which spatial and temporal scales resilience is to be defined. Through defining where and when resilience is to be analyzed or strengthened, boundaries are determined that include and exclude particular issues and actors.

Most analyses and interventions are quite explicit in specifying their spatial scale. While this seems self-evident, specifying spatial scale involves a number of choices. Upfront, there exist at least two options: whether to use the administrative scale or biophysical scale for specifying the scale level for resilience (Cash et al., 2006; Dewulf, Mancero, Cardenas, & Sucozhanay, 2011; Warner, Wesselink, & Geldof, 2018; Warner, Wester, & Hoogesteger, 2014). After this decision, further choices have also to be made about the level, such as community, municipality, province, national or international level in the case of the administrative scale, and water body, sub-catchment, or whole watershed level in the case of the biophysical scales. Scale choices automatically include or exclude spatial entities whose resilience is to be considered or ignored (Ingalls & Stedman, 2016). Since there is no objective way to determine the appropriate scale level for resilience, defining spatial scales involves scale framing (Grainger et al., 2019; Van Lieshout, Dewulf, Aarts, & Termeer, 2017) and politics of scale (Lebel, Garden, & Imamura, 2005). When a national authority frames a problem as local, for example, this can be a way to avoid responsibility or to withhold funding. The gains and losses of resilience interventions are often unevenly distributed across a chosen spatial scale. For example, water harvesting at sub-catchment scale can increase resilience to drought locally, but might decrease resilience to drought in the wider watershed. Since framing that privileges sub-systems may not even be intentional, better recognition and accounting for the effects of scale specification requires ideas and principles akin to polycentric governance and nested system thinking (Andersson & Ostrom, 2008). The main contribution of this line of thought is that, while one can specify the focal scale for resilience analysis and/or intervention, it is important to consider the higher and lower levels on the spatial scale to account for multiscalar feedback mechanisms (Davidson, 2010).

Temporal scale is less often defined than is spatial scale, perhaps because resilience analyses and/or interventions can still be implemented without a clear idea of the focal timeframe. Noticeably, the selection of temporal scale is often informed more by human convenience than system function. For example, temporal scale often matches the timeline of a program or a project; a climate change projection and follow-up impact assessment; or, most simply, the time passed since the most recent hazard (e.g., last extreme flood or damaging drought). The tension between short-term and long-term resilience is particularly thorny. Some have argued that an emphasis on maintaining the resilience of a current set of functions rather than long-term

sustainability (Davoudi, 2018) poses the danger of focusing on short-term strategies in a manner that leads us into a "resilience trap" (Kythreotis & Bristow, 2016). From a climate change perspective, this may translate into focusing on resilience to extreme weather events rather than on longer term adaptation strategies, or on reducing greenhouse gas emissions (Vij, Biesbroek, Groot, & Termeer, 2018). An exclusive focus in the long term can be equally limiting, because urgent issues and day-to-day struggles are ignored. As with spatial scale, the underlying problem is that there are trade-offs, in this case between short-term and long-term approaches to resilience, and that these require difficult and power-laden choices that unequally distribute implications for current and future generations. In the field of disaster studies, approaches like LRRD (Linking Recovery, Rehabilitation and Development) (P. White & Cliffe, 2000) aim to connect short- and long-term resilience. In the field of decision-making about water infrastructure, the concept of forward-looking decisions has been proposed as a way of accounting for long-term developments in present-day decisions (Pot, Dewulf, Biesbroek, van der Vlist, & Termeer, 2018).

5 | RESILIENCE TO WHAT?

Engaging with the concept of resilience implies not only defining which system is to be resilient, and at which spatial and temporal scales, but also to what stresses, shocks, or disturbances. This is, again, a matter of priorities and trade-offs, because social–hydrological systems can be made resilient to a wide range of different phenomena (Meerow & Newell, 2016), including cyclones, floods, droughts, climate change, market fluctuations, changes in water demand, landslides, and terrorist attacks. Making urban water systems more resilient to floods (Aerts et al., 2014) requires different investments compared to making them more resilient to droughts (Zhao et al., 2018), while urban areas may be seasonally affected by both. From a resilience perspective, both slow changes (stresses like, e.g., sea level rise) and abrupt changes (shocks like, e.g., extreme weather events) are relevant, but they may require different approaches. There are also tensions between "maximizing specified resilience to existing threats and general resilience to unanticipated disruptions" (Meerow & Newell, 2016).

These choices have potentially far-reaching consequences, not just in terms of priorities and trade-offs, but also through what is defined as an external stress, shock, or disturbance. Resilience thinking assumes external factors affecting a particular system, and tries to capture the extent and the mechanisms through which external changes can be dealt with. Through defining these changes as external, however, they may become normalized as given elements of the situation, outside the reach of this particular resilience analysis or intervention. For example, when the resilience of farming communities to water scarcity is the focal concern, this may imply that changing precipitation patterns due to climate change, or upstream water extraction will not be considered as issues to be addressed. This creates "a resilience paradox whereby threats are normalized and reacted to" (I. White & O'Hare, 2014). As Phil Loring put it on his blog: "Resilience is great if you are being punched in the face, but it does nothing about the fact that you are being punched in the face" (http://www.conservationofchange.org/resilience). Focusing on strengthening of the resilience of a social–hydrological system thus moves attention away from the causes and causers of the threats to that system, suggests that communities and ecosystems can be made resilient to those threats, and may take away the urgency of more profound changes (e.g., transition to a low-emission society to mitigate climate change, which would imply profound changes in production practices and what is recognized by all, not least the wealthy, of what constitutes a good life.).

It is, therefore, key to be reflective about what is being normalized as external or given. Alternatively, responsibility for resilience can also be seen as shared between those who can cause, control or reduce the shocks and stresses and those who experience them, with the aim of reducing shocks and stresses to "adaptable" levels. Limiting shocks and stresses is therefore as important for achieving resilience as strengthening capacities to deal with them.

6 | RESILIENCE FOR WHAT PURPOSE?

Resilience projects can serve multiple purposes at the same time, and these purposes are evaluated differently by different actors. We discuss three sets of arguments here, which discuss how resilience can be purposed for conservatively maintaining undesirable situations, for normalizing situations of marginalization, poverty or precarity, and for furthering a neoliberal agenda of self-reliance and minimal state intervention.

First, the translation of resilience into "bouncing back," which goes back to the use of resilience in engineering, has been questioned in terms of which state of affairs is desirable to bounce back to. When the focus is on bouncing back, resilience becomes a conservative concept (Olsson et al., 2015) that does not challenge the status quo, which might be socially unjust, environmentally unsustainable, or overly risky (Béné et al., 2018). Particularly in the field of disaster resilience, criticism has

been voiced about the "unquestioned acceptance of recovery and rebuilding policies and activities that re-inscribed pre-existing power structures and gender inequities" (Cox & Perry, 2011, p. 408). One response to this critique has been to emphasize the possibility and desirability of "bouncing forward," implying a view of resilience in terms of "building adaptive capacity for positive change" (de Milliano, Faling, Clark-Ginsberg, Crowley, & Gibbons, 2015, p. 21). Others have gone further by coupling resilience with transformation (Folke et al., 2010; Mao et al., 2017; Pelling & Manuel-Navarrete, 2011), arguing that this "brings issues of people, politics, and power to the fore" (Bahadur & Tanner, 2014, p. 200). While the link between resilience and transformation has also been questioned as logically inconsistent, because a transformation to a different state implies that the previous state was not resilient (Olsson et al., 2015), this critique only holds for equilibrium thinking and not for the models of resilience that hold an evolutionary view (I. White & O'Hare, 2014). From an evolutionary perspective, where the descriptions of how things to which we are habituated are no more than snapshots of constant change, it "is not about bouncing back to where we were, but about the capacity for adaptation and, crucially, for transformation … it is about the capacity to break away from undesirable "normal" (Davoudi, 2018, p. 4).

Second, even more caution is needed when applying resilience to situations characterized by marginalization, poverty, and precarity. The risk here is that a focus on increasing the resilience of vulnerable social groups normalizes their structural marginalization and puts the burden of dealing with that situation on the very same vulnerable social groups. In this way, resilience can be used to stabilize rather than address the factors that lead to marginalization, poverty and precarity in the first place (Ingalls & Stedman, 2016). There are many cities, for example, where floodplains are inhabited by the poor and efforts to improve resilience may not recognize the structural inequalities that led to their vulnerability. From a sustainable livelihoods perspective, it is important here to understand and "change the dominant rules and relationships governing the ways in which resources are controlled, distributed, and transformed into income streams" (Bebbington, 1999, p. 2039). In areas where both development and disaster risk reduction are key concerns, the distinction between humanitarian resilience and development resilience promises to avoid this trap (Barrett & Constas, 2014). Development resilience is defined as "the capacity over time of a person, household or other aggregate unit to avoid poverty in the face of various stressors and in the wake of myriad shocks. If and only if that capacity is and remains high over time, then the unit is resilient" (Barrett & Constas, 2014, p. 14626). Therefore, humanitarian resilience in the sense of dealing with disasters is considered necessary but not sufficient in the absence of development resilience.

Third, considering the broader governance context in which resilience has become prominent, a recurrent critique emphasizes how resilience can be enlisted in a neoliberal agenda, emphasizing self-reliance, individualized responsibility, market-based solutions, and a reduction of public responsibility (Davoudi, 2016; Davoudi & Madanipour, 2015; Gillard, 2016; Rigg & Oven, 2015; Trell et al., 2018). Resilience then becomes "a way in which states have off-loaded their responsibilities to the market on the one hand, and society, from community groups to families and individuals, on the other" (Rigg & Oven, 2015, p. 176). Self-reliance, where (groups of) of people are left to their own means to deal with problems, can be understood as an overly limited translation of the concept of self-organization (Davoudi, 2018). The affinity between self-reliance and the neoliberal emphasis on individual responsibility is considered a driver for the growing influence of resilience policies and programs (Davoudi, 2018; Walker & Cooper, 2011). What is often ignored in the "self-evidently neoliberal framing of critique is a critical analysis of resilience discourses' emphasis on adaptation as a positive agenda and an empowering promise" (Schmidt, 2015, p. 404). While resilience thinking and neoliberal thought share a distrust of certainty, control and top-down intervention, "resilience as a mode of governance … should be understood as a response to the dilemma of neoliberal logics rather than a continuation of its system of rule" (Schmidt, 2015, p. 402).

7 | RESILIENCE FOR WHOM?

Many of the previously discussed definitional choices for resilience have consequences for whose resilience is strengthened, impacted, or undermined. In a social sense, resilience is not uniform across the entire system, but varies between the different social groups within a system. This is recognized in classical social–ecological resilience thinking: "even if a social–ecological system may seem to be on a sustainable biosphere pathway for human well-being, actions to improve resilience on that pathway may benefit resilience of some and undermine resilience and increase vulnerability of others" (Folke, 2016, p. 6). Matters of inclusion and exclusion play an important role here, particularly in situations where the differences between better-off and marginalized sections of the population are pronounced.

The differentiation of resilience between social groups can take different forms. First, levels of resilience prior to a project or intervention may differ significantly, due to disparities in resources people have available to underpin absorptive, adaptive and/or transformative capacity. Even small local communities cannot be considered as homogeneous entities, but are

characterized by local elites and potentially differentiated according to profession, gender, race, class, caste, ethnicity, etc. In the context of poverty, resilience has its limitations (Olsson et al., 2015, p. 6), because "there is no automatic connection between resilience building and poverty reduction; efforts to reduce poverty cannot simply be replaced by building resilience that does not offer any direct road out of poverty; and finally, emphasis on system-level resilience may work against the interests of people who are poor". The aforementioned concept of development resilience (Barrett & Constas, 2014) is also highly relevant here.

Second, a resilience project or intervention is likely to impact the resilience of social groups in different ways. Some groups may remain out of focus and thus excluded from the reach of the project, while others benefit directly from it. It becomes important to consider "whose vision of a desirable resilient future prevails and who benefits or loses as a result of this particular construct?" (Meerow & Newell, 2016, p. 9), as well as "who defines what states/thresholds are desirable, and for whom?" (Cote & Nightingale, 2012, p. 483) or "whose knowledge and resilience is prioritized?" (Davoudi et al., 2012, p. 323). Given that the same marginalized social groups tend to repeatedly lack influence on decision-making over these matters, a bias toward the poor and marginalized in shaping resilience projects seems to be in order.

Third, the resilience of different social groups may also be in direct competition. In cases where resilience for different social groups is a zero-sum game, there are trade-offs where strengthening the resilience of one group implies reducing the resilience of other groups. Here, the question becomes who bears the cost of resilience projects and "at whose expense" resilience is strengthened (Fabinyi, Evans, & Foale, 2014; Izdebski, Mordechai, & White, 2018; O'Brien, Hayward, & Berkes, 2009). For the historical cases of the sixth century Roman Empire, the 10th century Byzantine Empire, and the 16th century Ottoman Empire, adaptive processes at the state level strengthened resilience but resulted in a differentiated burden of resilience for elites and nonelites (Izdebski et al., 2018). Even when enacting positive change, "change can sometimes be a zero-sum game, meaning that certain actors benefit at the expense of others … from a governance perspective, the potentially contentious nature of this change can be disguised by the vagueness of resilience terminology" (de Milliano et al., 2015, p. 21). It has been repeatedly stressed that one person's resilience may be another person's vulnerability (Alexander, 2013; Cote & Nightingale, 2012; Sapountzaki, 2007). Differentiated resilience can present itself even on the microscale:

> In Gorakhpur, the intervention targeted one slum community, representing just one of 70 municipal wards in the city. Even within this tightly defined geographical space, increased resilience for one section of the population living in this area often meant reduced resilience for another section. This was because some wealthier households had built boundary walls around their homes to prevent floodwaters from entering. This led to greater risks to those more vulnerable adjacent households who could not afford boundary walls (Bahadur & Tanner, 2014, p. 205).

A critical assessment of the negative effects on the resilience of other social groups is a precondition to reconsidering resilience projects or at least to take provisions to mitigate these effects.

Fourth, responses to resilience interventions also differ between social groups, as has been shown for dwellers of different neighborhoods in Villahermosa, Mexico (Nygren, 2016). In an attempt to strengthen urban flood resilience, authorities aimed to keep riverine areas clear of developments after a flood event, while both poor and affluent city dwellers had interests to claim this land for housing. Both groups tried to claim this land, but in different ways. Better-off citizens mobilized their connections and obtained official permits through corruption despite the ban on building houses. Poor people claimed plots by depositing construction material, constructing shelters, and taking care of sidewalks and street lighting—in so displaying orderly urban development they hope to increase the chances of successfully claiming basic services for the area. This indicates that in the complex situations where resilience is at stake, final solutions are not to be expected. To increase resilience over the long term, monitoring responses to resilience projects may be as important as designing the projects in the first place.

8 | DISCUSSION AND CONCLUSION: TOWARD POWER-SENSITIVE RESILIENCE

Our literature review has revealed that resilience is not a self-evident goal even if it is sometimes portrayed as such (Davoudi, 2018). Indeed, naive adoption of the notion of resilience as a self-evident course of action, without reflection on the choices involved in defining the parameters or resilience, risks insensitivity to and perhaps exacerbation of power relations in which the poor and marginalized end up yet further deprived. These choices are both substantive and political. Each choice defines who counts, what counts, and who gets what in the application of resilience. The implications of these choices need to be understood in a situated manner, based on an understanding of cultural values, historical context, power relations, and ethical

standpoints of the involved actors (Cote & Nightingale, 2012; Karpouzoglou et al., 2019). This is all the more relevant given the global rise of the concept of resilience in the water domain, where varyingly defined social–hydrological systems are expected to become more resilient to a range of different shocks and stresses (Rodina, 2019). The ways that resilience is applied in the water sector must be critically evaluated, since the choices that implicitly or explicitly define the parameters of social–hydrological resilience are not innocent. In the reviewed literature, the emphasis is on the third face of power (ideological power), less so on the second face of power (indirect power), and hardly on the first face of power (direct power). Indirect power, in the form of regulating the decision-making agenda and suppressing issues and proposals, may result in keeping particular areas, social groups or water problems off the radar for resilience projects. Ideological power, in the form of influencing subjective perceptions of people's interests such that conflict or resistance are avoided, can be exercised through particular definitions of which system is to become resilient, with respect to what threats, at what scale, for what purpose and for whose benefit. The global popularity of the construct of resilience in research, policy and funding circles undoubtedly adds to the potential ideological power of the concept, and is an extra reason to apply the construct in a careful way.

Our review has identified a number of pitfalls in defining the parameters of social–hydrological resilience that may arise when power relations are not considered. We have also discussed alternatives to these power-insensitive uses of resilience, building on the same literature. In Table 1 we have captured the major pitfalls we have identified and formulated a number of principles for power-sensitive resilience in response to these pitfalls. This table does not aim to categorize and contrast two strands of literature, but tries to distinguish between different ways of using or applying the concept of resilience, some of which are more and others less power-sensitive. It is the result of trying to translate critiques of resilience into constructive and workable principles for more power-sensitive applications of resilience in research and policy, rather than using the critiques to dismiss the construct as inadequate.

We have discussed extensively the power to define resilience and its implications, but we have not identified who exactly is in the position to wield this power. A common answer to this question is that external experts are most likely to be in the position to define the parameters of resilience for any particular situation, and that the communities who are supposed to become more resilient are likely to have little say on these matters. While there is undoubtedly much truth to this, we argue that a more nuanced and differentiated analysis is needed here to avoid oversimplification. Who has the power to define resilience is likely to vary across institutional levels. Humanitarian aid organizations, for example, may be struggling to redirect funding from immediate relief to longer term development in a context where international donor funding policies are not conducive to this. The particular forms of governance employed in carrying out resilience projects also make a difference for who ends up in the position to define resilience and its parameters. Monocentric and technocratic forms of governance are likely to lead to more unilateral definitions of resilience, while adaptive, collaborative or polycentric forms of governance provide more room for negotiated definitions of resilience, but these are not magic solutions (Warner et al., 2018). Even when communities are consulted on how a resilience project should be designed, the biases of local elites may influence the project design so as to maintain their privileges. In the end, a broad range of actors across different institutional levels may at some point partly

TABLE 1 Power-insensitive versus power-sensitive uses of resilience

Question	Power-insensitive uses of resilience	Principles for power-sensitive resilience
Resilience of what?	Privileging the survival of the system over the survival of each of its parts	Account for "embodied resilience" of actors/sub-systems as part of a coupled social–hydrological system
Resilience at what scale?	Overlooking trade-offs between local and global, short term and long term	Look for and address trade-offs when defining spatial and temporal scales
Resilience to what?	Diverting attention from causes and causers of threats through normalizing shocks and stressors	Make identification and reduction of shocks and stressors to adaptable levels, a joint responsibility of all those who influence and experience them
Resilience for what purpose?	Normalizing current precarity through an exclusive focus on bouncing back Offloading public responsibility to market and society by narrowing down resilience to self-reliance	Do not take the starting situation as given, but as something to improve (from bouncing back to transformation, from humanitarian resilience to development resilience) Make resilience a governance challenge requiring public, private and societal efforts
Resilience for whom?	Treating regions or communities as homogeneous social entities	Look for and differentiate between social groups when assessing the costs and benefits of resilience projects, and make choices that are biased toward the poor and marginalized

influence how the parameters of resilience get defined, while others may not get that chance for a variety of reasons. The set of questions we have identified provides a framework to find out empirically who shaped the answers to which questions at which point in time, and with what implications.

A better understanding of who has the power to define resilience will likely benefit from an analysis of the closed, invited and created spaces in which this happens (Gaventa, 2006), who has access to these spaces and who is able to shape these spaces. While well-educated and affluent populations are often in the position to reshape or resist projects or interventions in their area, poor and marginalized people's options are much more limited, for example, to passive acceptance or passive resistance. According to one definition the poor are "those human beings who, for one reason or another, almost systematically end up at the losing end of the multiple bargains that are struck around available resources and opportunities" (Bastiaensen, Herdt, & D'Exelle, 2005, p. 981). Impoverished and marginalized people are, therefore, unlikely to have access to closed spaces, or sufficient influence in invited spaces, where resilience projects or interventions are conceived, funded or designed. Of course, they might be represented by other actors who do have access to these spaces, or they may claim or create their own spaces as an act of contestation. Fostering opportunities to negotiate resilience (Harris, Chu, & Ziervogel, 2017) across a broader array of actors and agendas emerges as a crucial step forward. This requires communities and practitioners to interact and negotiate differences about agendas, values and scales in a political arena (Heijmans, 2013). A more negotiated perspective would mean that political choices are placed at the forefront, and are made explicit and accountable. This would expand resilience and allow for forms of resistance and even outright rejection of resilience to have legitimacy in negotiations (Davoudi, 2018). For this to happen, spaces are needed where critical voices can be heard before rushing into any form of consensus (Pereira, Karpouzoglou, Frantzeskaki, & Olsson, 2018). Given the multiscalar properties of power and resilience such spaces are needed across multiple levels, from community spaces to international forums (Gaventa, 2006).

Our analysis has several implications. First of all, if both the social and the hydrological systems are to be taken seriously in social–hydrological resilience, critical reflection is needed about how power relations shape the system at hand, and how political choices are involved in defining the parameters of resilience. Second, discussions of resilience would benefit from explicitly specifying, where possible, at least the resilience of what to what and at what scale. Very often only the entity that is supposed to be resilient is specified (as in river resilience) or only the stress or shock is specified (as in flood resilience). It makes a difference whether flood resilience refers to the resilience of local agricultural communities to yearly river flooding, or to the resilience of a country like the Netherlands to catastrophic coastal floods. Third, in light of the above discussion, we posit that anyone employing the concept of resilience in research, but especially in contexts of policy advice, should be sensitive to and reflexive about the multiple normative and political choices that are implied in the selection of the exact way in which resilience is used and also keep in mind implications of such use. While some of these questions may be openly debated, other questions may be answered routinely on the basis of dominant assumptions, or remain unexamined altogether. Reflexivity about the routinely answered or unexamined questions and the courage to put them on the table in the relevant spaces where resilience projects are forged would be an important step toward avoiding the pitfalls of power-blindness and fostering power-sensitive applications of resilience.

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CONFLICT OF INTEREST

The authors have declared no conflicts of interest for this article.

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