12 Resilience and Responsibilities

Normative Resilience for Responsibility Arrangements

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12.1 Introduction

Climate change is one of today's great societal challenges, and it is associated with a multitude of risks and high levels of uncertainty. It is therefore not surprising to see that climate change often serves as a context to illustrate different concepts related to risk. The focus of the current chapter is on resilience.

It is now widely accepted that climate change requires both mitigation actions to reduce climate change and adaptation measures to cope with the effects and increased risks brought about by climate change, such as droughts, heat waves, heavy rainfall, and flooding, among others (IPCC 2022). In recent years, resilience has emerged as one of the leading paradigms for climate adaptation policy (Doorn 2017; Fünfgeld and McEvoy 2012; Twigger-Ross et al. 2011).

After a first wave of enthusiasm in the literature, resilience is increasingly becoming a contested concept. Not only does the concept lack clarity due to theoretical inconsistencies and ambiguity in its use (Deppisch 2017), but definitions of resilience also uniformly portray resilience as a desirable goal, which is problematized by research that questions the distribution of benefits and burdens under different resilience regimes (Meerow, Newell, and Stults 2016). A growing number of scholars now recognize that, for climate adaptation to draw on and benefit in practical ways from a resilience approach, the appropriation and use of resilience to justify policy measures should be critically scrutinized, as it contains particular normative choices that are often not made explicit (Copeland et al. 2020; Cote and Nightingale 2011; McEvoy, Fünfgeld, and Bosomworth 2013; Porter and Davoudi 2012).

Although it is often said that resilience involves new responsibility arrangements between state and local actors (Butler and Pidgeon 2011), with an increasing emphasis on the responsibilities of citizens (Doorn, Brackel, and Vermeulen 2021), the literature has hitherto devoted limited

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attention to the responsibilities that citizens are expected to assume under different resilience regimes (Hegger et al. 2017). A more prominent role for citizens cannot be a simple substitute for responsive and accountable governance (Cretney 2014; Davoudi 2012). In this chapter, we will look at resilience in the context of climate adaptation. In addition to the more general literature on resilience, we will also look specifically at the literature on urban resilience, which highlights two different, but for climate adaptation equally relevant, framings of resilience in relation to either a system or a community. We thereby draw out the implications of implicit normativity in various conceptions and critiques of resilience as a framing concept. The aim of this chapter is to develop an explicitly normative notion of resilience that can account for the responsibilities of different actors in realizing resilience. Our account provides a conceptualization that links the normative aspects of resilience and its application in the context of climate adaptation in a way that makes accompanying responsibility arrangements explicit components of resilient systems.

12.2 Origins of Resilience

Although the term resilience is in itself not new – its early use dates back to the 18th century when it was used to denote the strength of materials (McAslan 2010) – the contemporary use of the term resilience, as a concept that typically applies to *systems* rather than *isolated components*, originates from discussions in system dynamics and ecology in the 1960s (Holling 1973). Holling's paper should be seen in light of the rise of systems thinking (Davoudi 2012). Crucial for systems thinking is that the performance of a complex system comprises more than the performance of the parts or components that make up the system. Analysis of these systems should therefore not focus on the stable performance of the different components, but rather on the relations between these components and how performance emerges from interactions between these components. In ecology, resilience was used as an explanatory concept, highlighting the various processes in dynamic complex systems that produce the high degree of stability and adaptability that we observe in natural ecosystems despite facing a wide range of external perturbations and conditions (e.g., Folke 2006; Walker et al. 2006). After its introduction into ecology in the 1960s and 1970s, the term resilience became popular in other domains as well, entering the domain of safety engineering around 2000 (Woods and Wreathall 2003), psychology (Connor and Davidson 2003; Southwick, Vythilingam, and Charney 2005), disaster management (Adger 2000; Paton and Fohnston 2001), and business (Hamel and Valikangas 2003). With this, a *social* dimensions began to be integrated into resilience thinking as well (Adger et al. 2009;

Davoudi 2012), prompting contemporary approaches to take complex social-technical-environmental systems as their field of application (4TU. Resilience Engineering 2021).

In addition to the question of scope, another ongoing question in the literature is whether resilience should be seen as an outcome or as a process or ability (Cañizares, Copeland, and Doorn 2021). When seen as an outcome, the concept allows us to specify resilient things, but only after disturbance (*ex-post*). However, resilience can sometimes also be seen as an ability that enables things to display desirable response(s) to some disturbance(s). This ability is usually expressed in terms of resilience determinants that characterize resilient things before disturbance (*ex-ante*) and are key for designing or managing resilience.

Additionally, resilience concepts also differ in their normativity. Until the end of the 20th century, resilience was considered a neutral, technical characteristic of a system, which primarily referred to the ability of a system to return to an equilibrium state. However, with the adoption of the resilience paradigm in policy circles, resilience adopted an explicit normative dimension, functioning as an ideal that communities should strive for (Béné et al. 2017). This ideal is generally understood in terms of the capacity of a community to absorb disturbance and re-organize while undergoing change so as to still retain essentially the same functions (Folke et al. 2011), for example, when people support their elderly neighbors to evacuate their house in case of flooding.

12.2.1 Different Frames of Urban Resilience

Unsurprisingly, with the use of the same term in different domains, different definitions and interpretations of resilience emerged emphasizing different aspects of Holling's general idea. This is not problematic per se, as long as this polysemy is recognized, and it is clear how resilience is interpreted. Recent attempts to better articulate the resilience concept in the context of the social processes of climate adaptation have identified three discrete characteristics of resilience that could be usefully applied to adaptation (cf. Adger et al. 2011; Berkes 2017; Folke et al. 2010; Turner 2010; Walker et al. 2006):

- Resilience understood as the ability to maintain functions after disturbance (Walker et al. 2004)
- Resilience understood as a system's capacity to self-organize (Folke et al. 2004)
- Resilience as the capacity to learn and adapt (Folke 2006)

Although these three characteristics provide a distinctly positive way to discuss urban climate adaptation and other urban policy agendas

(McEvoy, Fünfgeld, and Bosomworth 2013), they do not prescribe a particular set of actions or any specific way to measure or evaluate resilience (Meerow, Newell, and Stults 2016).

In the literature on urban resilience, two dominant frames of resilience have emerged, emphasizing different characteristics of resilience (Wardekker 2022). The first is a "system framing" of resilience, which emphasizes its roots in system dynamics and which is also the most common in policy discourse (e.g., Biggs, Schlüter, and Schoon 2015; Eraydin and Taşan-Kok 2013; Martin and Sunley 2015; Sharifi and Yamagata 2016; Shutters, Muneepeerakul, and Lobo 2015). Urban resilience is, for example, "the ability of the city to maintain the functions that support the well-being of its citizens" (Da Silva, Kernaghan, and Luque 2012), conceptualizing cities as systems with components, functions, and flows of, among other things, resources, materials, and people (e.g., Meerow, Newell, and Stults 2016; Wardekker et al. 2010). This framing of resilience is outcome-oriented, with larger stakeholders and authorities often considered the natural key players (Wardekker 2022). A potential blind spot of this "system framing" is that it can fail to take note of disproportionate impacts on specific subsystems or vulnerable subpopulations and of the fact that the role of local actors (most notably, individual citizens) can be hardly accounted for in system-level descriptions (ibid).

The second is a "community framing" of urban resilience, which has its roots in disaster preparedness and psychology, and which focuses on the impact of disturbances on communities (Gunderson 2010; Norris et al. 2008). Local citizens and other small stakeholders are the key players in this framing of urban resilience, emphasizing urban life, community bonds, and self-sufficiency. Typical resilience principles are derived from social science literature, such as social networks, leadership, engagement, information flow, learning, societal partnerships, and societal equity (e.g., Berkes and Ross 2013; Brown and Westaway 2011; Chandra et al. 2010; Leichenko 2011; Zurlini et al. 2013). A potential blind spot of this framing is that it particularly focuses on shocks that directly impact communities, potentially neglecting slower, creeping stresses and interactions with other levels and scales (Wardekker 2022).

Both sub-literatures on urban resilience have thus hitherto devoted limited attention to the responsibilities that private actors are expected to assume under different resilience regimes and how these should be complemented with public actors' responsibilities (Hegger et al. 2017). The system frame focuses primarily on the role of infrastructures and not individual citizens. The community frame pays little attention to the interaction between citizens and actors, except in terms of the community itself. The approach we take in this chapter offers guiding steps (and language) that will enable fruitful deliberation in practice about how to

link the actions and responsibilities of individuals who make up communities to the overall resilience of a system.

12.3 Criticism of Resilience

Before looking at how actors' responsibilities could be incorporated into resilience, let us take a closer look at some of the criticism voiced against the ideal of resilience. We will provide a brief summary of three main points of criticism found in the resilience literature. By elucidating the aspects of resilience concepts that we should avoid in the context of climate adaptation, we seek to avoid the pits into which a naïve conceptualization of resilience might fall.

Bounce back to a state where one doesn't want to be in the first place: Several authors warn against the interpretation of resilience as bounce-back (Jordan and Javernick-Will 2013; Twigger-Ross et al. 2014). Not only can bounce-back be unrealistic, but it may also lead to the reproduction of vulnerabilities and other undesirable situations. If the aim is merely to return to the previous state (what was considered to be "normal") without questioning what such normality entails (Pendall, Foster, and Cowell 2010) or whether that state is desirable, then resilience may run the risk of reproducing undesirable situations (Cannon and Müller-Mahn 2010). Hurricane Katrina is often mentioned as an example of a disaster that revealed social processes that many people did not consider an acceptable, pre-disaster situation to which they wanted to return (Davoudi 2012). Similarly, Barnett argues that recovery is insufficient in the longer term; in a context of uncertainty, a resilient system should not just bounce back but "bounce back in better shape" (Barnett 2001, 984) or "bounce forward" (Shaw and Maythorne 2013), because that will enable the system to better cope with uncertainty and deal with surprises. Ideally, a resilient system should be able to adapt and transform so that it can deal with new situations. Over longer timescales, a resilient system should "encompass the dynamics to accommodate trends and co-evolve" (Wardekker et al. 2010, 988). However, despite an increasing recognition in the academic literature that recovery is not enough, the "engineering" view of resilience as bouncing back dominates policy and resilience practice (Meerow and Stults 2016).

Relation to vulnerability research: The concept of resilience is increasingly replacing vulnerability as the focus of the literature on disaster risk reduction, which prompts questioning the relation between the two notions, as well as what is lost if resilience replaces vulnerability as the dominant paradigm. Although some authors see vulnerability and resilience as flipsides or opposites – which would render the shift from vulnerability to resilience a matter of mere rhetoric – most authors recognize that

the relationship between vulnerability and resilience is more complicated than this and that the terms are used in different ways. Part of this can be traced back to the disciplinary origins of the two concepts with different associated epistemological traditions (Gallopín 2006; Janssen et al. 2006). Originating from the natural (ecological, biophysical) sciences, resilience suggests a strong positivist epistemology with a focus on objective definitions and measurements of relevant phenomena (Miller et al. 2010). Vulnerability research, by contrast, has its origins in the social sciences and has been influenced by a stronger constructivist epistemology in which the very notion of vulnerability is the product of diverse human cultures and agency, where differential vulnerability among individuals and groups may be produced even when confronting seemingly identical risks (McLaughlin and Dietz 2008). In contrast with resilience research, vulnerability research provides a strong critique of the technocratic focus of earlier geophysical approaches (Miller et al. 2010), putting issues of power, inequality, and deprivation center stage (Doorn 2017). Part of the critique of the recent "resilience turn" is that it may indeed involve a shift back to these technocratic approaches.

Relation between the system level and the individuals within that system: The third point of criticism follows from the previous point. What is the position of individuals if resilience is primarily about the functioning of a system as a whole? As noted above, if resilience research covers the same ground as vulnerability research, then talking about resilience would be merely a matter of rhetoric with little added value. However, emphasizing the systemic part of resilience without looking at what this entails for the individual within that system overlooks important normative aspects (Berkes and Ross 2013; Cote and Nightingale 2011). That is, the relationship between the individual and the system in resilience highlights the role of normativity, mentioned in Section 12.2: interpretations of resilience can differ in their normativity. Some interpretations may refer to resilience as purely instrumental to achieving some goal, but other interpretations may refer to resilience as desirable in itself. Moreover, the fact that resilience may lead to undesirable outcomes (e.g., unjust outcomes) does not make the concept itself non-normative (Cañizares, Copeland, and Doorn 2021). These latter issues are often overlooked even in the literature that highlights the normativity of resilience, which is problematic as we will show below.

Most criticisms should not be seen as intractable, but instead as pointers to issues that should be included in a comprehensive conceptualization of resilience. What the points raised in this section highlight are that resilience is inevitably a normative concept or application of a concept, and eliding this normativity means inappropriately conflating resilience and vulnerability and failing to attend to the relationship between the

individual and the system that resilience frameworks imply. Ultimately, what is needed is a conceptualization of resilience that is able to combine both the systematic character of resilience and the social and normative aspects that are part of the community framing. This in turn opens up opportunities to assess both the resilience of a system as well as its value, evaluating both the status quo and the ideal resilient city.

12.4 A Conceptualization

In order to develop a normative notion of resilience that can account for responsibilities, let us explore its different elements by formalizing the concept of resilience based on how the term is used in different disciplines. It goes too far to discuss all the different definitions (for recent overviews, see Béné et al. 2017; Doorn, Gardoni, and Murphy 2019; Meerow and Stults 2016), so we begin instead with a general and often-cited taxonomy that is provided by Folke (2006), who distinguishes between three notions of resilience, ranging from a narrow interpretation[1] of resilience, to ecological/ecosystem and social resilience, to an even broader social-ecological interpretation of resilience. It is generally considered an emergent property, where the system can be considered resilient if the different components can jointly accommodate and recover from shocks and thereby contribute to retaining the functions of the system as a whole (Da Silva, Kernaghan, and Luque 2012; Walker et al. 2006). However, this emergent character is not part of the most basic definition of resilience, which is the ability of a system to maintain its functions after disturbance. Consequently, we begin with a basic concept, closely related to the way Holling described resilience in ecology, as a system's buffer capacity and ability to withstand shocks and maintain its functions. This could be written in the form of a formula as follows:

Resilience$_1$: = the ability of system S to maintain its functions F after disturbance D.

The elements in this formula and the schematic letters used for them are as follows:

S: the entity (system) to which the label resilience applies.
F: the functions that the system should be able to fulfill in order to count as resilient.

The second description of resilience provided by Folke (2006) adds the element of self-organization and, here, the emergent character becomes more important. While self-organization is a difficult concept to formalize,

at a minimum it pre-supposes that there are elements within the system that somehow relate to the overall functioning of the system. In a social context, this would mean that the elements that constitute the system should be able to ensure that the system functions as it should. A richer formalization of resilience therefore reads as follows:

Resilience$_2$: = the ability of system S to maintain its functions F through the actions A of its components C after disturbance D.

The last description provided by Folke defines resilience as the ability to learn and adapt. Here it would be interesting to look at how resilience engineering replaces traditional approaches in risk management that focus on the prevention of failure (Doorn 2021). In this resilience engineering paradigm, a resilient system is a system that is able to show successful behavior in a changing environment, where this changing environment is not necessarily conceived of as one of threats, but rather one of change and surprises. In other words, it is not known what the threats are, how the environment will change, in what direction or at what speed.[2] One way to formalize this is by generalizing the "disturbance D" of Resilience$_2$ to the more open "changing situations." Also the preposition "after" suggests that resilience is limited to reactive recovery after some disturbance. Further, within this formulation, it is implied that the action denoted by A occurs after the disturbance, whereas actions toward resilience occur before and during a disturbance as well. A more general formulation that accommodates all kinds of relevant action, as well as allowing for learning and adaptation, would therefore read as follows:

Resilience$_3$: = the ability of system S to maintain its functions F through the actions A of its components C in changing situations Sc.

Let us now see how we can give substance to the different letters in Resilience$_3$. First, we can think of the system S to which the label applies in terms of, for example, a specific community. In the case of climate adaptation, the community will often be a localized one, for example, within a neighborhood or a city, but in relation to other threats, the community may be much more dispersed geographically (cf. terrorism, virtual threats, migration). The exact demarcation of a community is far from trivial. First, there may be a difference between the community in terms of geographical area and the community in terms of population. The responses to Hurricane Katrina, for example, highlighted these different ways of framing the New Orleans community, with differing actions entailed by each framing, where preserving geographical community boundaries entailed trading off resilience to flooding for resilience to

community dissolution. Second, even if geographical location and population more or less overlap, the question of defining a system's boundary is a very relevant question from the point of view of justice. Drawing the system's boundaries inevitably prompts the distributive question of who is entitled to membership in the community of justice (Dobson 1998). Thus, it seems we cannot give content to S in our formula until we have considered the components of that system, determined which are its key functions to preserve, as well as pinpointed what changing situations will require adaptation.

The crucial first step, then, seems to be to give substance to the functions F and the components C. These variables give answers to the question, "resilience of what." Let us start with the components C. We suggest taking humans as the primary components of the system. True, the people who together constitute the community may need resources and infrastructure, but people are the components of the system who act. Other components of these socio-technical systems can be considered supporting resources that enable or constrain the possible actions that people can take.[3]

The functions F that a community should be able to fulfill is again clearly a normative question. Whereas these functions are used descriptively in the biology and ecology literature and may evolve over time without normative repercussions, at the most basic level, the functions that a community fulfills vis-à-vis its members are inextricably linked to the question of what a good society is. Candidates for functions here are providing a safe, secure, and/or livable place for humans to live in. What the exact function is is context-dependent, but it should probably at least provide a place where people's basic rights are respected. In the scarce literature on resilience ethics specifically devoted to issues of justice, the capability approach has been suggested as a normative theory to give substance to the "functions" that a society should be able to fulfill (Doorn 2019).

Sc stands for the changing situations and is the answer to the question "resilience to what." Named after the publication by Carpenter et al. (2001), a common question formulated in the context of resilience is "resilience from what against what", but the very idea of resilience is exactly that it is often not known what the second "what" (the threats) are. The term "changing situations" allows for some specification without the need to define what the exact changes are. However, if resilience is to make an impact on policy making, it is of course necessary to provide the relevant context—for example, whether resilience is discussed in the context of, say, climate change or an aging society. Thus, we need to answer this question clearly each time we engage resilience as a guide to making policy; when we specify the changing situations that we want to respond to or prepare for, we have to identify the corresponding functions

and components that also determine what actions will be needed to enact the policy that guides response and preparation.

The most difficult part of the formula to translate to the actual context is probably the actions A. Do the actions refer to incidental acts performed by people that happen to be successful or to specific tasks or obligations? To conceive of these actions as specific, maybe even pre-defined obligations or responsibilities, seems to go against the emergent character of resilience; that is, they can only be defined along with determining the content of F and C, who will act and toward the preservation of which functions. However, in the social science literature, resilience is often said to involve an implicit and unacknowledged transfer of responsibility from government toward citizens and other private actors (Hegger et al. 2017). The formula is designed to make these responsibilities more explicit. This in turn prompts the question of how closely related our normative notion of community resilience stays to the original idea of ecosystem resilience?

One way to address this question is by distinguishing between two paradigmatic situations: one where the behavior of the system can be characterized by causality and one where the behavior of the system can be characterized by emergence. In the case of causality, the actions A refer to specific responsibilities that are relatively easy to assign based on some desired outcome. For example, there seems to be a more or less direct causal relation between the amount of unpaved surfaces in a city and the drainage system on the one hand and the occurrence of so-called water nuisance (flooded streets) on the other. Here, citizens could, in principle, be given a responsibility to reduce the size of paved surface in their garden. True, it is the cumulative effect of many paved gardens that will lead to water nuisance (with the risk that a problem of many hands [Van de Poel et al. 2012] occurs), but, in principle, the relation between a citizen acting in a particular way (paving or not paving one's garden) and the outcome (nuisance) is a direct one. If we knew how all actors would act, then we could, in principle, predict the outcome of these joint actions. In those situations, it does seem to make sense to talk about task-responsibilities, and in these cases, the content of F and C will provide the content of A fairly directly.

At the other side of the spectrum, however, we have situations that are fully characterized by emergence. Here, we cannot trace the outcome causally back to the action performed by single individuals. Rather, any changes in Sc will result in changes to F, C, and A: depending on the changing situation, different actors and different functions may become more or less relevant and different actions possible. It is the interaction between different people acting and interacting that leads to some outcome that cannot be predicted. The S in these cases is emergent from the variables, which change along with each other. In such cases, S is emergent and changes

along with the situation itself, and for such systems, it seems problematic to assign specific responsibilities to individual citizens. An example of such emergent behavior is the situation after a natural hazard, for example, flooding. In a case of flooding, mass evacuation often leads to traffic queues that ultimately lead to fewer people being able to escape the dangerous situation. So, here, the "ideal" behavior is probably to be compared with a swarm of sparrows that adapt to the situation. This means that some people make use of "vertical evacuation" (that is, flying to high-rise buildings with sufficient resources to survive some days) and some of "horizontal evacuation" (flying to locations that are not flooded). Additionally, in a flood event, people should not only keep themselves safe, but at least a sufficiently large proportion of people should also be available to support the more vulnerable people. Which citizens should opt for vertical evacuation and which for horizontal evacuation is impossible to predict beforehand as it may depend on contextual factors and it may change over time. In such a situation, assigning citizens a very strict responsibility seems difficult as it is not known beforehand what exactly is needed from each of the citizens. What is needed are the right conditions for this emergent behavior to hold. Instead of talking about citizen responsibilities, it may therefore make more sense to talk of the government or some other public actor as being responsible for creating the conditions so that the acts of the different components are most likely to lead to the desired outcomes. In other words, resilience policy should go hand in hand with active involvement from governments to create the conditions for the desired emergent effect.

Applying the formula that we have proposed, therefore, requires not only answering the questions, resilient of what and to what, but also addressing the relationships between the elements that constitute the relevant system. That is, S cannot be determined until the other elements in the formula have been identified. Therefore, the process of deliberation required to give content to the variables requires *explicit* attention to the normative processes involved in identifying which components have to act in order to preserve which functions in what context of contingency and change. It is the relationships between the elements within the system that constrain and enable actions and, thereby, determine what policy and actions toward resilience of the system at hand are possible. Consequently, responsibilities are part and parcel of the system itself: in defining the system S according to a composition of F, C, and A together, responsibility arrangements become part of the description of that system and thereby an outcome of the process of deliberation itself.

In turn, the formula we have suggested here provides guidance as to when decisions about policy and prescriptions for action need to be reconsidered: that is, whenever one of the variables is altered, the description of

the system itself – and the responsibility arrangements included within that description – needs to be reconfigured.

While our formula does not resolve the critiques above, by eliminating the conflicts identified in the critiques, it does allow us to avoid their problematic implications. For instance, the distinction we draw between causal and emergent situations demonstrates how the formula allows us to build a bridge between individual actions and the normative ideal that shapes the system. By integrating C into the formula as a variable that has a direct impact on S, we provide space for deliberating about that relationship between the individual and the system through addressing how A fits in with C and F in an explicit way. Rather than a technocratic resolution for vulnerabilities, the formula gives us the means to engage in ongoing deliberation about the context of vulnerabilities and the influence of the system on these vulnerabilities without conflating vulnerabilities and resilience. In each instance of using the formula, we call into question the meaning of resilience in relation to the status quo, desirable functions, and components, and, therefore, we avoid slipping into common tropes of resilience without questioning them.

12.5 Concluding Remarks

In this chapter, we developed a formula that allows for a more transparently normative analysis of community resilience. The elements in the formula are not intended as a blueprint for what it is to make something resilient. Rather, they should be seen as elements to consider when assessing the resilience of a community while also attending to issues of normativity, justice, and responsibility arrangements as they emerge in adaptive contexts. We distinguished between two extreme situations. At one end of the extreme, there is a direct causal relation between the actions of the actors in the system and the behavior at the system level. Here, responsibilities are relatively easy to assign. At the other extreme, the behavior of the system is characterized by emergence and it cannot directly be traced back to the behavior of the individual actors in the system. Here, it seems difficult to assign specific responsibilities to individual actors. Instead, it makes more sense to create the conditions that make the desired emergent behavior more likely. This suggests that the use of the term resilience should maybe not be taken too literally, but rather be seen as a metaphor for how society can deal with changing situations.

Notes

1 In most ecological and social science literature on resilience, this narrow interpretation is often referred to as "engineering resilience." We think this is misleading, as this narrow resilience is not the same as the definition of resilience

that is common in the field of engineering. It is also ambiguous in the sense that the term "resilience engineering" refers to a specific approach within safety engineering for dealing with risks. This resilience engineering approach goes exactly against the narrow view that is also being criticized by Holling as not being applicable in the contexts of ecosystems.

2 In fact, transformative approaches to resilience as "bounce-forward" suggest that keeping this open is a necessary implication of resilience as a strategy for changing circumstances. That is, if we interpret all potential changes as threats, then we have assumed that the status quo is sufficiently ideal to preserve (and that transformation is not a suitable goal) and thus failed to motivate support for transformative efforts or other improvements via resilience-based planning. Rather, any potential threat, under an adaptive model, also has the potential to be merely a changing circumstance if, for example, the result is positive for the system and the individuals within it.

3 Note that our focus here on urban resilience allows us to focus on human actors as well; in other contexts, non-human actors may also fit into the responsibility model, but we leave that for further exploration beyond the bounds of this chapter.

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