

*Governance systems and institutional arrangements for STE resilience  
Governing Systemic Risks with Morally Sensitive Resilience Strategies*

## The concept of community resilience explored: How to account for responsibilities?

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### Summary

Resilience is often said to involve new responsibility arrangements between state and local actors. However, the literature on resilience has hitherto devoted limited attention to the responsibilities that citizens are expected to assume under different resilience regimes. In this paper, we develop a normative notion of resilience that allows for a more transparently normative analysis of community resilience. The template thereby developed provides a first tool to think about the citizen responsibilities in a more formalized way.

### Keywords

community; ethics; normativity; responsibility; systems thinking

### Introduction

Resilience is often said to involve new responsibility arrangements between state and local actors, with an increasing emphasis on the responsibilities of citizens (Butler and Pidgeon 2011). However, the literature on resilience has hitherto devoted limited attention to the responsibilities that citizens are expected to assume under different resilience regimes (Hegger et al. 2017). In this paper, we will develop a normative notion of resilience that can account for the responsibilities of different actors in realizing resilience.

### Different framings 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). Crucial for systems thinking is that the performance of a complex system is more than the performance of the parts or components that make up the system. After its introduction into ecology in the 1960s and 1970s, the term resilience became popular in other domains as well. With this, also the social dimensions have begun to be integrated in resilience thinking (Adger et al. 2009).

In the literature, two dominant frames of urban resilience have emerged, emphasizing different characteristics of the resilience of urban communities (Wardekker forthcoming). The first is a “system framing” of resilience, which emphasizes its roots in system dynamics and which is also the most common policy discourse. Many approaches to urban resilience are consequently also rooted in this literature (e.g., Biggs et al. 2015). Urban resilience is, e.g. “the ability of the city to maintain the functions that support the well-being of its citizens” (Da Silva et al. 2012), conceptualizing cities as systems with components, functions, and flows of, among other things, resources, materials, and people (e.g. Meerow et al. 2016).

The second is a “community framing” of urban resilience, which has its roots in disaster preparedness and psychology and which focuses on how communities are impacted by disturbances (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 literatures, such as social networks, leadership, engagement, information flow, learning, societal partnerships, societal equity (e.g., Berkes and Ross 2013).

Both sub-literatures on urban resilience have hitherto devoted limited attention to the responsibilities that private actors are expected to assume under different resilience regimes and how this should be complemented with public actors’ responsibilities. The system frame focuses primarily on the role of

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infrastructures and not individual citizens. The community frame pays little attention to the interaction between citizens and actors beyond attending to the community itself.

### **Resilience as a normative notion**

In order to develop a normative notion of resilience that can account for responsibilities, let us explore the different elements in a template of resilience based on how the term is used in different disciplines. The most basic definition of resilience defines resilience as the ability of a system to maintain its functions after disturbance (Walker et al. 2004). This could be written in the form of a template:

Resilience<sup>1</sup> := the ability of system S to maintain its functions F after disturbance D.

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

S: the entity (system) to which the label resilience applies.

F: the functions which the system should be able to fulfil in order to count as resilient.

A second, more advanced, 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 the 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, that would mean that the elements that constitute the system should be able to deliver to the functions of the system. A richer formalization of resilience therefore reads:

Resilience<sup>2</sup> := 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 (2006) defines resilience as the ability to learn and adapt. 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 (Doorn 2021). One way to formalize this is by generalizing the 'disturbance D' of Resilience<sup>2</sup> to the more open 'changing situations'. Also the preposition 'after' suggests that resilience is limited to reactive recovery after some disturbance. A more general formulation that allows for learning and adaptation would therefore read as follows:

Resilience<sup>3</sup> := 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<sup>3</sup>. First the system S to which the label applies, this is usually a specific community. It can be a localized community but this is not necessarily so. In case of climate adaptation, the community will often be a localized one, for example 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, however, is far from trivial.

From an ethics point of view, a crucial next step is to give substance to the functions F and the components C. Let us start with the components C. Since our quest concerns human systems, we suggest to take humans as the primary components of the system. True, the people who together constitute the community may need resources and infrastructure, but in this normative notion of resilience, people make up the components who act. Other components of these socio-technical systems can be considered supporting resources.

The functions F that a community should be able to fulfil is again clearly a normative question. At the most basic level, the functions that a community fulfils vis-a-vis its members is inextricably linked to the question of what a good society is. Candidate 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 fulfil (Doorn 2019).

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Sc stands for the changing situations. 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.

The actions A, lastly, allow for the inclusion of responsibilities. But a question remains: Do the actions refer to coincidental acts performed by people 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. 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. Instead of talking about responsibilities, it may sometimes be more effective to focus on the conditions that make the desired emergent behavior likely rather than focusing on the responsibilities of citizens themselves.

### Conclusion

In this paper, we thus develop a formal template that allows for a normative analysis of community resilience. The elements in the template 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 some community from an ethics point of view. This prompts the question how close a normative notion of resilience for communities should stay to the original idea of ecosystem resilience. The template developed above sketches a tentative approach to think about these responsibilities in a more formalized way.

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