Practitioner Perspectives, Equity, and Tradeoffs:

A Critical Look at Urban Resiliency

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ABSTRACT

Urban resilience is becoming increasingly relevant for urban planners due to the rising impacts of extreme weather events and climate change. Planners' and practitioners' conceptions of urban resilience have powerful effects on adaptation to climate change, actions to build resilience of urban systems, and the operationalization of resilience. The academic literature conceptualizes urban resilience as a characteristic of an urban system that maintains its intended functions and allows it to adapt to change or transform to a better state in the face of an event. In contrast, practitioners often apply a conceptualization of urban resilience that imagines the system bouncing back to its previous state after an event rather than transforming to an improved state. As a result, current approaches to urban resilience have tradeoffs, often with unintended consequences for communities on the margins. Planners and practitioners must critically evaluate how they conceptualize and actualize urban resilience; otherwise they may continue to perpetuate systems that cause inequities and undermine long-term resilience. They must frame and apply a conceptualization of urban resilience that focuses on bouncing forward, seeks to minimize or at least acknowledge tradeoffs, and considers questions of power and equity.

CLIMATE CHANGE AND URBAN RESILIENCE

Climate change has emerged as one of the biggest challenges to human well-being and progress in the 21st century. While the relationship between climate change and extreme weather events may not be causal, the intensity of extreme weather is increasing as global temperatures rise.[1] In 2017, insurers covered $135 billion in losses of public and private property due to natural disasters, the second-highest payout amount in history.[2] Planning for resiliency is a necessary lever to mitigate the impacts of climate change and extreme weather events on cities and communities. Planners can focus, and are focusing on, resilience planning so that cities suffer fewer losses and start recovering faster after extreme weather events. Examples of building urban resilience include investing in green infrastructure, such as bioswales to reduce runoff, or constructing dykes to prevent flooding. These efforts seek to redefine and reimagine how cities respond to extreme weather events in terms of the built environment, but they often fail to incorporate social promoters of urban resilience.

In this paper, I argue that practitioners should conceptualize planning for resilience in terms of bouncing forward as opposed to bouncing back. I also argue that planners need to consider how interventions to improve resilience cause tradeoffs with development goals and resilience in the long term. Without such a conceptualization and consideration of tradeoffs, resiliency planning may lead to inequitable outcomes. To illustrate these points, the paper will begin with a discussion of the components of resilience and the common conceptualizations of the term. It will then describe how our conceptualization of resilience has implications for equity and power relations in a community, and tradeoffs with

development and long-term resilience. It will conclude with recommendations for practitioners seeking to reduce the vulnerability and increase the adaptive capacity of their communities in the most equitable way.

URBAN RESILIENCE AND ITS CONCEPTUAL UNDERPINNINGS

In their work summarizing the academic literature on urban resilience, Meerow, Stults, and Newell (2016) define urban resilience as "the ability of an urban system to maintain or rapidly return to intended functions in the face of disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity."[3] Planning for urban resilience not only means recovering from events, but also means that urban systems can adapt, change, and transform after events. Examining the mutual determinants of resilience can guide planners to refine their focus from the narrow, environmental lens to a more holistic view of resilience. Planners can then incorporate interventions that may be often considered beyond the scope of resiliency but nonetheless influence a community's ability to recover from events and transform into stronger systems. Outlined below is a theoretical snapshot of these mutual determinants.

Vulnerability and Adaptive Capacity

Two factors are related to resilience: vulnerability and adaptive capacity. Vulnerability is a system's susceptibility to harm and is composed of two mutual determinants, exposure and sensitivity.

Exposure refers to how likely the system is to encounter a specific hazard or event. Sensitivity, on the other hand, refers to how responsive systems are to a specific hazard or event. For example, communities located near a river and at a lower elevation are more exposed to flooding than communities farther away from the river. However, communities near the river may have concrete houses, which reduces their sensitivity, while those living farther away might live in temporary structures that can easily be washed away during a flood. Therefore, even though the communities near the river are more exposed, they might be less sensitive to flooding than the communities farther away. Exposure and sensitivity are interdependent and compound to determine vulnerability. Therefore, a system's vulnerability can be reduced, and its resilience increased, via a reduction in its exposure or sensitivity.[4,5,6,7]

Adaptive capacity describes the capacities of a system to respond to events and transform into an improved and resilient state. It can be further subdivided into two types: specific capacities and generic capacities. Specific capacities are related to specific risks. An example of building a specific capacity would be equipping communities with information about flood risks and teaching members how to use this information to make decisions. Generic capacities are centered on the development level of a community. Examples of generic capacities are the income levels, health, or education levels of community residents. [8,9,10,11]

Building either type of these adaptive capacities can help a system improve its resilience, but not necessarily to every event. A generic capacity is useful across different types of risks and contexts. A

specific capacity is usually useful only for one specific risk. Moreover, restrictions may prevent use of either of these capacities.[12]

For example, a household with higher disposable income (generic capacity) can act upon the flood risk information (specific capacity) provided to make the decision to move to a safer location. The adaptive capacity is only observed when the household indeed acts upon the generic capacity (income) using the specific capacities (flood risk information). However, poorer households may not have the income to act upon the flood risk information provided to them. Therefore, they cannot act on the specific capacity, and the effectiveness of providing the specific capacity is not observed. Perhaps providing them with additional income may help them to relocate and thereby act on both generic and specific capacities. However, the movement of wealthier households into safer locations may drive up housing prices, further restricting lower-income households' capacities to move into safer areas. This example illustrates that different system actors' actions to build capacities interact dynamically and influence the overall capacities a system needs to undergo transformation.

By reducing a system's vulnerability or improving its adaptive capacity, we act on strategies to improve a system's resilience. To reduce vulnerability, planners must focus on reducing the system's exposure and sensitivity. To improve the system's adaptive capacity, planners must focus on equipping the system with generic and specific capacities, which will enable it to respond or transform after an event. The following section will use the components of resilience covered so far to understand the points of contention that arise between

how resilience is defined in this paper and how it might be applied in practice, the concerns of equity that arise from that contention, and the tradeoffs that occur between desires for development and long-term resilience.

POINTS OF CONTENTION, EQUITY, AND TRADEOFFS

Bouncing Back vs. Bouncing Forward

Comparing how academics and local practitioners typically think about urban resilience in the context of climate change, Meerow and Stults (2016) outline certain points of contention. Only some of these points are explored here. Of the 134 practitioners they surveyed, a majority favored, implicitly or explicitly, notions of "bouncing back" after an event in their conceptualizations around urban resilience. Bouncing back means returning to the system's previous state after an event has occurred.

In contrast to popular thought among practitioners, the academic literature tends to focus on "bouncing forward." Bouncing forward means moving to a better system state after an event, as it might not be possible or even ideal to return to the system's previous state. Continuing in the same vein of bouncing forward, the academic literature gives less importance to robustness, while practitioners emphasize it. Robustness is a system's ability to return to its previous state and functionality after the occurrence of an event.

Why do academics not emphasize robustness? Robustness itself is not inherently good and may involve the

persistence of undesirable states. Poverty is a robust state of a system, one that is undesirable, and one that persists very strongly after events like flooding. Similarly, structural racism might be a robust state of a system, persisting even after system shocks. To bounce forward, adaptive capacity is needed. However, practitioners did not explicitly mention adaptive capacity in their conceptualization of urban resilience: only 21 alluded to it.[13]

Practitioners would benefit from approaching resilience from a "bouncing forward" mentality. For example, providing insurance to rebuild flooded houses in the same location may not be ideal, if future flooding conditions are likely to be similar, if not worse. A framework of urban resilience aimed at bouncing forward would not put these homes back where they were; it would actively seek out and employ context-specific, diverse solutions, including relocation of communities or more protective zoning regulations in problem areas. Doing so could prevent future harm to the community, increasing long-term resiliency.

Equity

Actions to improve urban resilience are embedded in relations of power and equity. Some questions planners must think about include: For whom are we building urban resilience? What are we defining as improvements in urban resilience? What are the actions we are proposing? Who is deciding what actions to take? Whom are we affecting with these actions?[14] Planners must contend with these questions as they plan for urban resilience, or they risk causing unintended harm to communities on the margins. And they must also situate these questions in a conceptualization that

emphasizes bouncing forward not only for new development, but also for broader market structures and processes.

Issues of power and equity frequently conflict with sustainability goals in planning. This is best illustrated by an example. Suppose that insurance contracts include clauses that state that individuals or businesses cannot use insurance payments to rebuild in the same location if houses are in flood-prone areas. With these policies, households and businesses will have to relocate. Without an adequate amount of land and affordable housing to accommodate this displaced population, the price of existing housing may go up. Those who can afford the housing will move, thereby realizing their adaptive capacity and reducing their vulnerability. To move, others may need higher adaptive capacities (in the form of additional funds). They may have received insurance payments, but if the amounts are not enough to purchase housing at the elevated prices, their vulnerability may not be explicitly reduced. Those without property rights or perhaps insurance, such as tenants and informal settlers, will be unable to reduce their vulnerabilities and will struggle to realize their adaptive capacities. The broader structures that perpetuate a lack of property rights, such as a lack of unaffordable housing or tenure systems, have still not bounced forward and continue to be situated in a bouncing back conceptualization.

A concrete illustration of the interaction between property rights, market systems, and resiliency is observed in Manila, Philippines. Here, informal settlers in the city typically live in the locations most exposed to flooding. Green infrastructure projects, such as the creation of additional

green space, are underway in the city to reduce runoff and improve urban resilience. These projects are targeting, among others, areas where these informal settlers live. Since informal settlers do not have property rights, these projects forcibly displace them, leaving them vulnerable to future hazards. Their future is uncertain without any compensation, and their vulnerabilities may not be explicitly reduced.[15] Additionally, increased green space can increase surrounding property values. These rising housing costs can, in turn, cause further displacement, as people are priced out of property markets.[16]

Safe Development Paradox

Practitioners must be aware that their efforts to increase or maintain development in hazardous areas by increasing their resilience to present threats, without care, can forsake resilience in the long run. This contradiction is known as the "safe development paradox."[17] This paradox becomes especially important considering the increasing intensity of extreme weather events. Infrastructure designed to reduce vulnerabilities may seem to make a place safe for habitation and development in the short run. However, sometimes infrastructure requires continuous upgrading and regulation to prevent the dynamic nature of extreme weather events from undermining effectiveness in providing a system with resilience.

We see the "safe development paradox" in the example of building dykes to prevent vulnerability to flooding. In New Orleans, dykes were built to allow urban expansion into low-lying, previously flood-prone areas. With the new dykes, these areas were, at first, safer from flooding. While these actions were appropriate when urban expansion was undertaken, dykes are designed for specific flooding levels. With increasing intensity of extreme weather events, the flood protection dykes provided decreased over time. Perhaps the dykes that once provided adequate protection also provided a false sense of security regarding future flooding. Developments in these previously flood-prone areas become increasingly vulnerable as the dykes were not upgraded. When New Orleans was hit by Hurricane Katrina in 2005, this situation unintentionally led to excess damage in the flood-prone areas thought to be protected by the dykes.

CONCLUSION

Practitioners must consider which components of resilience of an urban system their interventions focus on and ensure that their approach is holistic. Planners can inform their efforts by thinking about what is it that they want the urban system to be resilient to. However, it is not enough to focus only on reducing vulnerability or adaptive capacity. Planners must work to conceptualize interventions to improve resilience after an event within a frame of bouncing forward to a better state, rather than bouncing back to the pre-existing state that had permitted failure. Additionally, practitioners should think about how their interventions result in tradeoffs between current or future development goals and resilience in the long run, seeking to minimize them whenever possible.

More importantly, actions to improve urban resilience do not occur in isolation from relations of power and equity. Planners must question whose resilience they are working to build, and who is benefitting

from interventions. They need to explicitly consider the processes and structures that result in differential vulnerability to events, and the differing capabilities of marginalized groups to participate in the conversations and influence the discourse around resilience that ultimately impact the resilience policies that emerge. The current narrative of resilience in practice, without adequate critical examination, threatens to maintain efforts to bounce back to earlier inequitable states of processes and structures, such as a lack of property rights or affordable housing. To leave this narrative unexamined can perpetuate injustices as populations suffer disproportionate impacts and do not have the capacity to respond. Interventions to build urban resilience should strive, as one of their primary objectives, to break cycles of dispossession and exclusion.[18] Without this focus, actions taken in the name of urban resilience are incomplete and do not accomplish their task. ∎

ENDNOTES

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