Article

What Can We Learn from Urban Crisis?

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Abstract: The irreversible transition towards urban living entails complex challenges and vulnerabilities for citizens, civic authorities, and the management of global commons. Many cities remain beset by political, infrastructural, social, or economic fragility, with crisis arguably becoming an increasingly present condition of urban life. While acknowledging the intense vulnerabilities that cities can face, this article contends that innovative, flexible, and often ground-breaking policies, practices, and activities designed to manage and overcome fragility can emerge in cities beset by crisis. We argue that a deeper understanding of such practices and the knowledge emerging from contexts of urban crisis may offer important insights to support urban resilience and sustainable development. We outline a simple conceptual representation of the interrelationships between urban crisis and knowledge production, situate this in the context of literature on resilience, sustainability, and crisis, and present illustrative examples of real-world practices. In discussing these perspectives, we reflect on how we may better value, use, and exchange knowledge and practice in order to address current and future urban challenges.

Keywords: urban development; sustainability; urban resilience; crisis; flexibility; innovation; knowledge production

1. Introduction

The irreversible transition towards urban living entails complex challenges and vulnerabilities for citizens, civic authorities, and the management of global commons. By and large, these challenges are diverse and well known. Political and institutional fragmentation and rising inequality and austerity are changing the structural conditions for cities and citizens. Population growth and migration are challenging how cities are planned and governed, affecting their ability to provide basic services, housing, mobility, and infrastructure needs [1,2]. The growth and diversification of urban populations and the spatial expansion of cities strains the bureaucratic and technical capacities of how cities can plan and govern territories, provide services to citizens, and manage the competing needs and demands of growing urban constituencies [3,4]. Moreover, as cities become larger, more complex, diverse, and contested, addressing issues of inequality and exclusion and managing crime and security become more challenging [5].

Overarching these, environmental change and the disruptive nature of global health crises and pandemics also loom as specters threatening cities. Unmanaged and unregulated spatial and land-use plans contribute to urban areas becoming vulnerable to climate change impacts [6], and the sudden-onset and long-term impacts of climate change represent existential ecological threats [7,8]. Moreover, the COVID-19 pandemic has illustrated cities' political, economic, and social vulnerability caused by health emergencies that are unlikely to abate in the coming decades. All of these changes have fundamental implications for the

resilience and vulnerability of societies and how cities are planned, governed, and lived in [9,10].

These brief examples are neither an exhaustive nor new set of challenges. Yet they are increasingly recognized and framed through a lens of multidimensional global crisis and systemic risk [11,12] with an explicitly urban characteristic [13,14]. Moreover, while rapidly urbanizing cities of the Global South are often pointed to as facing some of the most severe challenges or possessing less capacity to manage them [15–18], highly developed and urbanized countries also face increasingly fragile urban systems [19]. This has led to the widespread embrace of urban resilience perspectives [20], with cities becoming central to achieving sustainable development agendas. Yet the scale, pace, intensity, and complexity of challenges cities will face in the coming decades may render more established approaches to urban resilience and sustainability thinking insufficient. Pelling, for instance, has noted how common framings of resilience may tend to reproduce the status quo [21] rather than encourage transformative or transformational urban change that encompasses potentially radical shifts in structures, institutions, cultures, and practices in urban systems that may facilitate more resilient and sustainable cities [22–24]. While more transformational approaches to resilience are emerging in areas of reflexive governance [25–28] and urban experimentation and innovation [29], there are still mixed results regarding how more 'transformational' insights are integrated into broader urban policy and practice [30].

In light of this, this article offers a conceptual reflection with illustrative empirical examples on how urban crisis may shape how knowledge is produced, used, and shared to support urban resilience. This perspective is anchored in the idea that crises have the potential to represent periods of reflection and possibility that may necessitate or encourage new or novel practices to contend with social, political, economic, and environmental challenges. This is broadly informed by the idea of reflexivity and its considerations of how to support responsive change to address socio-ecological challenges while also maintaining a sufficient degree of systemic stability and integrity [31,32]. Here reflexivity is seen as "the capacity of an agent, structure, process or set of ideas to change in the light of reflection on its performance" [25] (p.942).

We contend that cities experiencing crises can be places where such 'reflexive' knowledge and practices may emerge. Our central assertion is that cities beset by fragility, crisis, and vulnerability—be it political, infrastructural, social, economic, or otherwise—can and do constitute important sites of knowledge production for urban resilience practices, and that they produce insights that we should pay greater attention to. This reflection is based on two premises. First, practices emerging in 'crisis cities' that are institutionally constrained or resource-limited may represent new or flexible models of resilience. Crisis can often represent a juncture where 'ideal' solutions are not possible, traditional approaches are no longer effective, or the consequences of delayed action are punitive. In these contexts, more transformative actions that are outside the scope of the 'conventional' may become permissible or necessary, opening space for new and potentially insightful knowledge and practices to emerge. Second, like other recent contributions [33], we maintain that ideas surrounding the production and use of knowledge for urban resilience must broaden to recognize and acknowledge alternative perspectives and practices. Doing so challenges dominant framings or established pathways of knowledge distribution of how urban resilience should be practiced or enacted [34] and where knowledge or expertise should emerge from [35–37]. Moreover, as cities across the globe will increasingly face vulnerabilities in the coming decades, it is imperative that we more thoughtfully consider how knowledge emerging from crises can inform how we act to address future crises in other contexts [38,39]. In light of this, we outline in Figure 1 a representation of how urban crisis may shape processes of knowledge production.
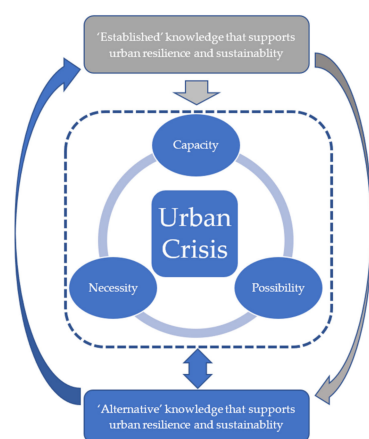
Figure 1. A conceptual representation of urban crisis and knowledge production.

In this representation, where "resilience continues to be mainly externally defined by expert knowledge from academia, international organization and governmental agencies" [40] (p. 257), 'established' forms of knowledge and practice tend to flow unidirectionally toward contexts of urban crisis. Yet as crisis impacts institutions, markets, and urban systems, these contexts are variously characterized by (i) constraints on resources and capacity; (ii) the necessity or urgency of action to address crisis; and (iii) a greater possibility for alternative actions [41]. Due to these conditions, established forms of knowledge that may support resilience may be resisted, ineffective, or inadequate to address the challenges at hand [42]. Yet, in parallel, alternative forms of knowledge iteratively emerge from local constellations of crisis as shaped by the nature of capacity, necessity, and possibility. Here, these alternative knowledges and practices are both grounded in local characteristics and influenced by established knowledge and practice and may constitute new or novel forms of resilience [43]. We argue that greater attention should be paid to how the dynamics of urban crisis shape such forms of new knowledge and practices to address vulnerabilities and how these could be integrated and shared to inform broader resilience and sustainability practices.

Having outlined the contours of our position, the article proceeds as follows. The next section briefly reviews selected insights from the sustainability, resilience, and crisis literatures and considers how crises may present opportunities for innovative or alternative knowledge and practice to emerge. Section 3 considers how cities in crisis may represent new sites of practice and their place in the processes of knowledge production and learning and anchor our reflections in illustrative examples from Medellín, Colombia, and Detroit, USA. Section 4 discusses broader implications and Section 5 concludes.

2. Crisis, Sustainability, and Resilience

The recognition of the challenges that cities face has shaped the evolving conception of 'urban crisis'. Emerging out of the confluence of racial tensions and neoliberal austerity in the US in the 1960s and 1970s, 'urban crisis' was deployed as a device to both describe the impacts of these forces and justify interventions to counteract them [44]. Yet the notion of urban crisis is diffuse and deployed to various ends. Often, crisis is viewed as an aberration from a prevailing 'normal', an interruption of the status quo, or a disruption of an otherwise 'acceptable' state of affairs. Here, Novalia and Malekpour note that crises are often framed as "special event(s) of exogenous origin punctuating the evolutionary dynamics of prevailing socio-technical or socio-ecological systems" [45] (p. 361). Others see crisis as a persistent feature of socio-technical systems under neo-liberal capitalism such that crisis is a chronic condition of societies today [46–48]. We consider 'urban crisis' to refer to contexts where the scale and/or magnitude of interconnected vulnerabilities that cities face present severe immediate or long-term challenges. The remainder of this section considers how crisis, sustainability, and resilience shape how we think about urban

practice and the extent to which crisis may serve functions of "perpetuating the status quo, or, triggering systemic transformation" [45] (p. 361).

2.1. Averting Crisis: Sustainability and Resilience

Urban sustainability and urban resilience have become central to how we understand and contend with chronic and acute crises. While defined in a range of ways, urban sustainability and urban resilience can be viewed as emphasizing adaptability, flexibility, and the ability to respond to external shocks [49–51], and see cities as complex, interlinked and adaptive social, ecological, political, cultural, and economic systems that are prone to vulnerability in the face of new challenges [52–55]. Although both may be broadly considered to "understand system dynamics, enhance strategic competencies, and include diverse perspectives" [50] (p. 38), resilience and sustainability approaches also differ in important ways, with the boundary conditions of each concept often contested and critiqued [34,56–58].

Broadly, the resilience concept may be viewed as a more passive approach pursued with the purpose of understanding and responding to uncertainty, vulnerability, and the ability of systems to cope with shocks and crises. Alternatively, sustainability might be seen as a more active, deeper, adaptive endeavor devoted to the protection and maintenance of systems that provide social, economic, human, and ecological benefits [55,56]. One may consider resilience approaches as focusing on the process of systemic changes and practices, while sustainability approaches have a greater focus on the outcomes of such actions [50]. For this article, we consider urban resilience as the "ability for any urban system, with its inhabitants, to maintain continuity through all shocks and stresses" [59], and urban sustainability as the adaptive actions and processes that balance current and future ecological, economic and social interests "in response to changes within and beyond urban settlements" [60] (p. 213). By using these definitions, we view sustainability and resilience as related yet distinct concepts, but also concepts that should be interrogated regarding how they relate to contexts of urban crisis.

Therefore, a principal interest in this article is to consider how the knowledge and practices that emerge from urban crisis contexts are used to address and manage conditions of acute and chronic vulnerability. Here we focus on how crisis may inform how urban resilience and sustainability are conceptualized and practiced, rather than simply seeing them as being imposed from the outside. This interest is driven by urban resilience and sustainability thinking remaining encumbered by what we see as two particular challenges. First, there is a relative inflexibility of underlying urban systems [61] that can be seen as a structural barrier to implementing and scaling new practices. Infrastructure systems, institutional and governance structures, and other social and economic conditions can limit how cities alter how they respond, react, or engage with the challenges they face. For instance, Childers and co-authors highlight the problems related to inertia and the lack of flexibility that hinders change and may make cities more prone to vulnerability [62].

Second, and related to this structural inflexibility, there is a tendency to pursue a continuation of the status quo or incrementalism that reduces space for transformative or reflexive approaches [21,57,63]. Here, 'established' approaches and actions often emerge through the reproduction of existing 'expertise' and orthodoxy that may be inflexible or inadequate to meet the challenges at hand. These may also tend to "support particular types of state–society relations, construct particular kinds of at-risk subjects, and privilege technocratic solutions to disaster vulnerability" [64] (p. 1327). Over time, this incrementalism may see a fragmentation of the logic that underlies these approaches, such as the global or local situatedness that action should be taken [65]. Such challenges can be seen in the sustainable cities discourse [66,67], which broadly encompasses an approach to balance social and environmental concerns with urban growth in light of the ecological, social, political, and economic challenges that cities face [68]. In identifying how a narrower techno-economic focus is increasingly defining discussions around sustainable cities at the expense of justice and equity concerns, Hodson and Marvin note that "the sustainable city

appears to be weakening as the dominant policy or research discourse of the future of the urban environments" [69] (p.9).

Given the inflexibility, incrementalism, and top-down focus inherent in many of the more 'traditional' resilience and sustainability approaches, the possibility of alternative knowledge that may emerge from conditions of crisis to support urban resilience is often precluded. This can hinder more reflexive or transformative knowledge production. McKinnon and Derickson note that the idea of resilience "privileges the restoration of existing systemic relations rather than their transformation" [57] (p. 262). This further speaks to the fact that operationalizing and implementing resilience approaches and practices is not 'power-neutral' and may, in many cases, overlook issues of environmental and human justice and equity. Meerow and others [70–72] have outlined, both theoretically and empirically, how the instrumental nature of the predominant conceptualizations of resilience can mask or exacerbate underlying or structural inequities and vulnerabilities, with similar critiques emerging in the sustainability literature [73]. Given this, there are increasing calls for more progressive approaches and operationalizations of the resilience concept that attend to issues of justice and equity in building resilience [34].

In briefly highlighting select aspects of discussions regarding urban resilience and sustainability as relates to the arguments in this paper, we note that while contested and, at times, overlapping concepts, they are both concerned with improving the ability of cities to avert or contend with systemic stresses. Both approaches, however, may tend towards inflexibility, inadequacy, or status quo thinking that undervalues novel or transformative action and may overlook issues of equity and justice. Despite this, the potential for shifts in power, agency, and justice is recognized in parts of the literature that emphasize how shocks to socio-ecological systems allow for reconfigurations and adaptations through cycles of growth and decline. Holling has outlined how following periods of growth and expansion in the 'front-loop', crises may engender a systemic reorganization and adaptation in the 'back-loop', which releases the potential for transformational action and response [74,75]. Viewing urban crises this way, as potential junctures for such 'systemic reorganization', opens a greater consideration of the forms of resilience emerging from contexts of crisis rather than simply as resilience thinking being applied to contexts of crisis. Here, by recognizing the types of knowledge and practices to address vulnerability that emerge from such contexts, so may we broaden how we conceptualize practices of sustainability and resilience.

2.2. Embracing' Crisis: Critical Crisis Theory and Broken World Thinking

Critical crisis scholarship broadly examines how crises may be able to catalyze new, innovative, or flexible practices. Similar to the back-loop discussed above, crises may challenge established political, social, and institutional practices, norms, and systems, promote the emergence of grassroots organizations and movements, and lead to reflections on what actions are possible, necessary, or legitimate [76]. For instance, the destructive nature of crises of capital has long been noted to create conditions for technological innovation and a return to growth, where the "politics in the wake of crises serves as a form of capitalist reconstruction delivering new opportunities" [77] (p. 38). Similarly, in discussions around resilience and disaster recovery, it has been suggested that "the radical potential of disaster lies in the experience of rupture that shifts the way individuals and communities see the world and the way society operates" [78] (p. 9). This notion of crisis as a 'critical juncture' has parallels with urban modes of living. The agglomeration effects in cities may enable new forms of action to emerge from "community interventions that are characterized by a desire to challenge the dominant norms and values of society and to experiment with different relationships and networks" [78] (p. 9). Explicitly noted by De Balanzó and Rodríguez-Planas, for instance, crisis was central to urban reorganization in Barcelona [79], where new interests and social movements came to challenge and negotiate prevailing or dominant urban practices in the 'back-loop phase' of the city's recent historical trajectories.

Such perspectives, thus, often frame crisis as an opportunity [77]. The destructive nature of crisis can have a reordering effect on societies by compelling or allowing for new constellations of practice to become necessary and/or possible and be a catalyst for social transformation. Works by Morin [80,81] suggest that crises reveal uncomfortable aspects of society and shine a light on dynamics that may require change, and while destructive, can also unleash transformational forces. Recently, Cordero and others noted that "crises are a reflexive moment for social actors to be able to put into question the norms and institutions that govern the present organization of society because those very conditions produce human suffering and become increasingly intolerable" [82] (p. 515).

These perspectives also parallel scholarship in the fields of media and technology on the failure and repair of infrastructure and hardware. Steven Jackson forwards the concept of Broken World Thinking, which argues that we see the use and re-use of material goods through the lens of collapse, decay, and failure. Rather than material goods being necessarily characterized by newness and optimal functionality, Jackson suggests that it is "erosion, breakdown, and decay, rather than novelty, growth, and progress" [83] (p. 221), which should be the starting points for thinking about physical products and systems and the ways that they can be used, applied, or enacted. Inherent here is a perspective that the rebuilding, repurposing, and reapplication of physical products is supported by and necessitated in contexts of failure or disrepair.

Extending this perspective from the realm of physical infrastructure and hardware to social systems, there are interesting parallels to draw when looking at situations of urban crisis. Here, in the context of the social, physical, institutional, and ecological systems of cities under stress, new practices can emerge that are able to overcome these challenges. In essence, to what extent does, or can, the breakdown of functional urban systems lead to the emergence of creative repurposing of the instruments of policy and civic action that lead to new, flexible constellations of practice and praxis in response to this systemic breakdown in 'crisis cities'? Jackson contends that we live in an "always-almost-falling-apart world" [83] (p. 222) where physical technologies and infrastructures are in an endless state of decay and disrepair, but also where there is a sense of wonder and appreciation at how lives are built and sustained around the restoration and persistence against the forces of disorder and breakdown. Thus, rather than a bleak vision of societies we live in, Jackson's view reiterates the agency in the face of collapse. It entails a promise of new beginnings as the world is in a "constant process of fixing and reinvention, reconfiguring and reassembling into new combinations and new possibilities". Here, the notion of repair does not simply entail patching together existing structures or institutions; it also fundamentally entails creativity, novelty, innovation, and transformation [83].

Reflecting on this, we draw a parallel to urban systems and the actors within them, considering how crises can invoke the need, and necessity, to re-evaluate, rethink and innovate in cities to encourage sustainable and resilient urban practices. Here, urban crises—be they sudden or slow onset—can present moments of innovation, novelty, and reflection that may initiate changes to mindsets, relationships, practices, policies, behaviors, material structures and urban systems that may lead to more just and sustainable urban outcomes. Thus, as crises may create conditions for flexible and novel solutions to emerge to address challenges facing cities, understanding such practices can provide valuable insights into how cities can adapt to and manage a future of unpredictable urban change.

3. Urban Crisis and the Production of Knowledge

This article calls for a deeper appreciation and understanding of cities experiencing crisis as sites of knowledge production and flexible practices that can support urban resilience. Here, we argue that important, novel, and often non-intuitive formal and informal solutions to urban challenges are arising out of urban vulnerability and complexity. Yet, as we note in the previous section vis-à-vis sustainability and resilience thinking, such practices that are nested in and emerge from specific socio-political contexts are often overlooked [84], despite the fact that these 'unexpected' cities are "making a virtue out of

necessity have become world leaders in urban innovation" [85] (p. 337). Thus in 'crisis cities', knowledge and practice attuned to the constraints, necessities, and possibilities of local contexts can emerge in parallel, opposition to, or in concert with expert knowledge or 'best practice'. As Weichselgartner and Kelman observe, "decontextualized top-down knowledge on resilience offers a severely limited guide to operational practice, and may have considerably less purchase in problem-solving than pursuing co-designed bottom-up knowledge" [40]. As such, rather than a reliance on expert, external knowledge, actions to support resilience in the face of urban crises could rather see "urban systems . . . re-imagined and re-designed by local actors with support from international organizations, not the reverse" [86] (p. 12).

Taking stock of this, it would be beneficial for scholars to consider in more detail how crisis may be constitutive in shaping new urban practices and alternative sites of knowledge production. In referring back to our conceptual representation in Section 1, we suggest that new knowledge and novel practices may emerge due to three conditions that characterize the experience of crisis.

First, crisis tends to limit the capacity for action available to address it. Financial, technical, geographic, political, or other resources may be acutely or persistently limited, which may constrain the range of ways that cities and citizens may 'ideally' seek to address a challenge. Moreover, established approaches may be less effective or incompatible with capacity-limited contexts. Instead, addressing crises in such instances may require flexible approaches to working through crisis in the absence of ideal or necessary capacities, encouraging new approaches in governing, organizing, and responding. This parallels with ideas of 'latent' social capital or capacity being activated to support adaptation activities, where underlying social bonds may reveal themselves through flexible forms of collective action, organization, or mobilization in response to socio-ecological vulnerability [87,88].

Second, crisis, with its negative impacts on societies, may tend to increase the necessity of action. Where more stable contexts may see more cautious, patient, or deliberate actions, crisis may engender an urgency that requires an acceleration of action. It may catalyze coalitions or interests around issues that may otherwise not be possible, force decision-making bottlenecks to be overcome, or shorten timelines for intervention where the alternative is to continue to suffer the (worsening) effects of crisis.

Finally, in addition to altering capacities in a way that may foster non-traditional actions and incentivize the necessity or urgency to act with purpose, crisis also opens the range of possibility for action. Crisis may represent moments where non-traditional courses of action can be pursued by states, when more traditional policy actions may prove ineffective or insufficient to address the challenges at hand [89,90]. Alternatively, manifestations of crisis may see once stable or impenetrable socio-political orders or organizing structures become contested or fragile and represent openings for new, often bottom-up forms of social innovation, resistance, collective action, or mobilization [91–93]. This idea also intersects with perspectives in other literature on moments of reorientation following shocks or crises. In the natural hazards and politics of disaster literature, periods of time following exogenous shocks or disasters are often conceptualized as a 'window of opportunity' to effect more radical forms of change [94,95]. Similarly, other literature considers the relevance of ecological concepts of 'disturbances' and their application to urban systems and how they may support the reflexive emergence of new or resilient practices [96].

Broadly then, crisis may be seen as a juncture where the societal or institutional constraints placed on particular sets of actions may soften or wane, and where the possibilities of new forms of action and the potentials for transformation are heightened. Moreover, an appreciation for urban crisis as a potential site of knowledge production can counteract or offer alternatives to predominating status quos. Here, attending to new sites and types of knowledge emerging from crisis challenges the centrality of formal, technocratic, 'best-practice' approaches to resilience. For instance, novel and effective solutions emerging from urban crises may not be top-down policy prescriptions but bottom-up or multi-stakeholder approaches that promote adaptive, just, and flexible approaches. This also contests the

notion that cities encountering crisis are somehow 'failing' or are knowledge and capital 'collectors' rather than 'suppliers'. In particular, the literature on knowledge and policy exchange and diffusion, with few exceptions [97], are often rooted in the implicit assumption that knowledge flows from north to south, from 'successful' to 'strained' cities, or from 'formal' contexts to 'less formal' ones [98,99]. However, as Simone outlines in The City Yet to Come, by viewing Africa's metropolises as 'failing', we overlook opportunities to understand and capitalize on the myriad practices and structures in these cities that work under challenging conditions and that we may draw inspiration or lessons from [100]. In being open to the potential of new sites of knowledge production being shaped by the experience of crisis, we also then embrace the possibility that the flexible practices emerging in these places may transcend the contexts from where they came and have relevance for how we engage elsewhere with vulnerable and relatively inflexible urban systems [101,102].

Returning then to the title of this paper, what can we learn from urban crisis? At this stage, we have argued three main points. First, a series of interlinked, multidimensional challenges and crises will come to be constitutive of the urban condition in the future. Second, current approaches to sustainability and resilience thinking may lack the flexibility and reflexivity to manage these challenges and risk reproducing the conditions that permit the continuity of crisis. Third, flexible approaches to addressing vulnerability may emerge in contexts of urban crisis, and these may have implications for the production of knowledge for urban sustainability and resilience. In considering this further, we outline below a series of practices drawn from both the literature and our own primary research that shows real-world examples of the conceptual perspectives in this paper [41]. Rather than presenting a particular empirical argument, they should be seen as indicative cases that highlight the diverse ways in which new forms of organization and knowledge production are addressing urban challenges.

Practices

New, flexible urban practices are emerging in a number of areas, with many relating to citizens using creative means to overcome infrastructure, energy, or service delivery deficits. For instance, urban utility infrastructures are not necessarily ubiquitous [103], and particularly in the Global South, many creative solutions to this gap have emerged. Informal settlements often informally connect to water or electricity grids or establish connection and billing agreements with the state, as cases from Tanzania [104], India [105], and Bangladesh [106] show. While the creative repurposing of urban infrastructure is traditionally resisted by authorities and seen as 'anti-developmental', these actions also constitute sources of insight and innovation for infrastructural improvement.

Other cities have used creative governance approaches and planning reforms to address urban crises, exploring more participatory distributed systems in governance and for the urban environment. For example, Medellín, where we undertook qualitative fieldwork in 2018, is a well-known example of a city reimagining itself through a series of multi-stakeholder, participatory urban interventions over the past two decades. Broadly, the city has improved marginalized neighborhoods through holistic approaches that incorporate high-quality education, transport, utility infrastructure, and public space interventions [107]. Through its social urbanism approach, Medellin has been transformed from one of the world's most violent cities to a recognized hub of innovation and progressive urban practice and change [108,109]. The process was characterized by broad and interdisciplinary collaborations as well as a partnership between the city government and the public utility company Empresas Publicas de Medellín (EPM), exemplifying how architects, planners, engineers, and politicians used unique, innovative, and participatory approaches to reimagine a city that was fundamentally in crisis. As noted by a former mayor of Medellin, "I am certain the changes (policy and material interventions) in the city have made changes in the citizens and to citizenship . . . (To make these changes) you need something to bring together all these different sectors to work together. (You need) the unifying challenge and the leadership to unify" [110].

Other urban challenges that cut across issues of urban infrastructure, planning, governance, urban space, and the environment are seen in the decline of the post-industrial city. Detroit, Michigan, in the USA, for instance, where we undertook qualitative fieldwork in 2019, was an industrial powerhouse in the mid-twentieth century, yet the loss of its manufacturing base caused a remarkable population decline and middle-class flight to the suburbs in the following decades. As the municipal tax base declined, exacerbated by the Global Financial Crisis, which decimated homeownership through bankruptcies and foreclosures, the management of the physical city and delivery of services became severely constrained. The city was ultimately governed into demise, declaring bankruptcy in 2013, with the former mayor Kwame Kilpatrick imprisoned for corruption and financial mismanagement [111,112]. Yet despite resource constraints, extensive poverty, land and home vacancy, and blight in the city, the past decade has seen a resurgence; new community initiatives, social movements, innovative planning approaches, and social entrepreneurship have emerged. These new practices include alternate forms of community-driven governance, urban greening and farming, and new forms of land tenure following the city's real estate collapse [113], representing diverse strategies for urban reinvention and reconfiguration of social, governance, and infrastructure systems [114]. With some considering Detroit's crisis as an opportunity for reinvention and renewal [115,116], the enthusiasm around the city has seen Detroit be called "the most exciting city in America", and that it has turned its "end of days into a laboratory of the future" [117].

While far from exhaustive, these brief illustrative examples outline the potential for urban challenges and multidimensional crises to shape the conditions for—and often enable—new forms of civic and state interventions that address complexity and vulnerability. As we have noted elsewhere, it calls on us to re-evaluate the mindsets, actors, behaviors, relationships, structures, and resources needed to allow these to flourish and pursue more inclusive, flexible urban transformations [41].

4. Discussion

This paper argues that novel, flexible urban practices that emerge out of conditions of crisis in cities across the world need to be better understood, both in how and what type of knowledge is produced and how knowledge is used. As we have outlined, established knowledge and practice may be unsuited to contexts of urban crisis, but also that the nature of capacity, necessity, and the possibility of action during crisis may produce new practices, solutions and knowledge. Paying greater attention to these may benefit broader understandings of how we can support urban resilience in different ways.

Regarding the production of knowledge, at the outset, we should interrogate notions of what is regarded as 'best practice' or 'innovation'. For instance, the central 'narratives' or common 'best practices' related to urban resilience and sustainability often view knowledge as produced in western, formal, or 'stable' contexts and transferred to southern, informal, or 'crisis' contexts [118]. Yet this is often done without sufficient appreciation for grassroots or subaltern forms of action that may value alternative types of knowledge or, more concretely, center issues of participation, equity, and justice in urban resilience and sustainability practices [119]. Indeed, in assessing north–south knowledge transfer and city to city cooperation, Mayer and Long note that these initiatives were "more likely to support than challenge entrenched practices which can weaken sustainable development governance" [120] (p. 1). For instance, technocratic approaches that often drive urban sustainability and resilience agendas [121] are by and large beholden to prevailing 'best practice' governance logics and status quos that may themselves create conditions for crisis [122,123]. Moreover, a focus on 'best practice' can reinforce a unidirectionality of knowledge flows without appreciation for "translocal geographies of knowledge production and circulation" [124] (p. 10). This may preclude certain 'alternative' or bottom-up practices from taking root or occluding them from the toolkit of possible responses [125,126]. Here, May has observed a "culture of expertise that is at odds with democracy through a separation between the forms of justification it deploys and the contexts of its application… in which models and ideas for

urban development circulate without sensitivity to context" [127] (p. 2189). Countering this requires a deeper focus on the knowledge and practice emerging in new places or from new actors that may be outside the scope of what is regarded as being 'typical', 'expert', or 'accepted'. May suggests this requires "a movement away from these narrowly constituted forms of knowledge production and reception to provide a responsible politics through a more open and inclusive approach to urban development" [127] (p. 2189). This sentiment is echoed in calls to understand better the nature of crisis in order to resist and challenge prevailing discourses and move towards more transformative urban politics and practice [128].

In uncovering and supporting a diversity of flexible practices, voices, and agencies of urban stakeholders, notions of urban experimentation have arisen. Discussing urban laboratories, Karvonen and van Heur note, "these spaces of innovation and change provide a designated space for experimentation where new ideas can be designed, implemented, measured and, if successful, scaled up and transferred to other locales" [129] (p. 11). Yet here, there is a need to be attentive to the conditions under which such experimental or innovative approaches emerge and how they consider equity, justice, and agency in these processes [130]. While crises create the potential for new forms of knowledge and practice to be produced through innovative or experimental actions, discourses and constructions of crisis can likewise be subjugated to existing structures of power or justify exclusionary urban interventions [131,132]. Thus, while some urban laboratories "make a genuine attempt to cultivate emancipatory forms of change that could have widespread implications on urban life in the twenty-first century and beyond", others "simply employ the notions of 'laboratory' and 'experiment' as a rhetorical strategy to further consolidate and reinforce existing patterns of urban development" [129] (p. 11).

More recently, the COVID pandemic has brought into sharp relief the inherent fragility in our urban systems, prompting new considerations about governance innovation and urban experimentation [133,134]. It has also shown the relevance of mobilizing and sharing knowledge to contend with emerging urban vulnerabilities [135]. It has rightly been noted that "COVID-19 has magnified the deficiencies of how we manage our cities but has also given us a unique chance to rethink, replan, and redesign" [134] (p. 318). It is thus possible to view this period as a critical juncture or moment of reflection regarding our current trajectories of urban development, sustainability, and resilience. It suggests a reconsideration of how we think about crisis, how the knowledge and practices to contend with crisis are produced, and how such 'alternative' knowledge is shared, used, and integrated with 'established' knowledge. As the urban condition of the 21st century will require the management of and response to a series of multidimensional challenges, so too should we re-evaluate what crisis, care, resilience, and sustainable practice can and could be.

5. Conclusions

We are witnessing a cleavage where many of the foundational aspects of our political, economic, ecological, and social systems are slowly being revealed as both acutely inflexible and inherently fragile [136]. Despite the emergence of resilience and sustainability practices in the past 30 years, cities remain largely underprepared for the challenges they will face in the coming decades. As Roitman notes, "crisis characterize(s) the world in which we act", but also rightly identifies how narratives of crisis can instrumentally enable certain responses to the exclusion of others [137] (pp. 73–74). Dissecting these narratives, understanding varied experiences of crisis, acknowledging the novel responses and practices that support resilience, justice, and equity in the city, and discerning what and how we can learn from these experiences have become imperative for urban research and practice.

This article has presented a modest conceptual reflection on the future of interconnected challenges in urban areas. We have offered that the dynamics of capacity, necessity, and possibility during urban crises may shape new forms of knowledge and practice that should be more systematically examined. In being more attentive to the new forms of

urban policy, social organization, consensus building, and alternative practices that can emerge in places characterized by crisis and vulnerability, we are asked to reconsider the nature of knowledge production and knowledge sharing to support urban resilience. Here, seeing cities through a lens of crisis, flexibility and learning may reveal new knowledge pathways or entry points to address vulnerability and catalyze learning and engagement within and across cities. As crisis is becoming a defining condition of 21st-century cities, it should also be integral in influencing how we should respond. Future research focusing on identifying how cities and citizens, particularly in the Global South, have experienced and managed crisis, processes by which resilient practices emerge and are sustained, and how these may be scaled or transferred to other contexts would be fruitful forward agendas for scholarship.

Finally, while we must contend with the potential of crisis as a 'new normal', our collective pursuits should perhaps be focused on what Alarouf has elegantly termed our 'forgotten normal', and its expressions of community, social justice, respect for ecological sustainability, and people-based places and spaces. As he notes, there is "nothing more profound than times of crisis to inspire communities to create better existential positions" [138] (p. 169). It is prudent then that we begin to value the knowledge produced in cities that are contending with crisis and consider more thoroughly how we can use this knowledge to improve the prospects for a just and equitable urban future.

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