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ARTICLE

Design-driven resilience and the limits of geographic critique

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Abstract

In April of 2019, the Rockefeller Foundation's '100 Resilient Cities' (100RC) programme abruptly shuttered, surprising programme proponents and critics alike. In this paper, we explore why this happened, why some styles of geographic critique could not anticipate 100RC's closure, and what this inability means for dominant strands of critical geographic analysis. To answer these questions, we bring literature on the biopolitics of resilience, technopolitics and Black geographies to bear on the case of Greater Miami resilience planning. We argue that answers to these questions revolve around the designerly roots of resilience thinking, whose distinct intellectual lineage conventional critical approaches have struggled to pick up on. We show how, on the one hand, design practices of synthesis in Greater Miami attempted to frame and instrumentalise Black histories of and experiences with racial and environmental violence as bounded knowledge that could improve the functioning of complex systems. On the other hand, synthesis created overflowings: opaque knowledges and experiences that resist the framing process and continue to mediate political battles over what resilience in Greater Miami practically becomes. Based on the case, we propose that an inductive style of critique that traces processes of framing and overflowing can help advance critical geographic analysis. As we illustrate in the paper, this mode of critique pays specific attention to the opaque, historically and contextually specific knowledges and experiences that refuse to be framed or synthesised, and work to counter-frame dominant conceptions of resilience—critical and conventional alike.

KEYWORDS

Black geographies, critique, design, resilience, technopolitics

1 | INTRODUCTION

In a world of cascading climate catastrophes, shrinking budgets and growing demands for public services, building resilience seems impossible to oppose. The term, as defined by the Rockefeller Foundation's 100 Resilient Cities (100RC) initiative, refers to individual and systemic capacities to anticipate, recover from, and transform amid shocks and stressors. In its six years of operation, 100RC oversaw the development of countless resilience efforts in cities around the world,

with proponents describing the initiative as 'critical for the global wellbeing of humanity' (Rodin, 2013). The Rockefeller Foundation's sudden decision to shutter the 100 Resilient Cities programme in April 2019[1] thus came as a shock to many observers. However, for Rajiv Shah, the Foundation president who announced the programme's closure, the reasoning was simple: 100RC was not delivering enough 'measurable' results for vulnerable people (Bliss, 2019, June 12). Shah's demands are anathema to the 100RC programme, which adopted an open-ended, long-range approach that resulted in what one programme reviewer described as 'a gazillion things going on' under the banner of building resilience.

As shocking as this announcement was to 100RC proponents, it is equally surprising when read against dominant critical accounts of the programme. By the time 100RC closed shop, critical scholars, many of them geographers, had produced a significant body of research on resilience. Much of this research has argued that 100RC and similar urban resilience efforts amounted to the latest round of neoliberal urban governance, wherein politics and the political are 'rendered technical' and market-oriented economic growth is prioritised over social protections (Leitner et al., 2018, p. 1276; Bigger & Webber, 2020). But in Shah's words, and contradicting critical assertions like these, the 100RC programme closed because it was not neoliberal enough. That is, 100RC initiatives could *not* be shoehorned into the highly technical programme monitoring practices that Shah, with a background in the metrics-heavy fields of health economics and international development, needed to see to continue Rockefeller Foundation support for 100RC operations.

The tortured road of 100RC thus calls into question how we understand contemporary urban environmental politics and produce geographic thought that guides our analyses of these politics. In this paper, we ask three interrelated questions. First, what elements of resilience programming exceeded neoliberal programme monitoring techniques? Second, what does this excess tell us about the politics of resilience? Third, how does this excess complicate conventional styles of geographic critique—both of resilience and environmental politics in the Anthropocene more broadly?

To answer these questions, we bring literature on the biopolitics of resilience, technopolitics and Black geographies to bear on the case of Greater Miami resilience planning. This case offers a unique window on the politics of resilience. On the one hand, 100RC-driven resilience planning in Greater Miami and the Beaches (GMB, the 100RC umbrella term for the region) is recalibrating how racialised exclusion—and thus value—is produced throughout the metropolitan economy (Grove et al., 2020a). On the other hand, and to borrow from the programme reviewer's terminology quoted above, the 100RC planning process *also* utilised designerly techniques to fold 'a gazillion things' into its resilience strategy. These twin developments, we argue, confound a straightforward reading of resilience-as-neoliberalism. Instead, Miami resilience planning featured multiple, competing forms of resilience that variously emphasised equity and expanded public service provisioning in a region where urban governance remains highly exclusionary along racial and class lines.

Though the case of Greater Miami is in some ways unique,[2] it enables geographers to expand the field's conceptual and analytical limits and examine a wider range of experimental practices in knowing and governing the urban in the Anthropocene (Wakefield, 2021). In this paper, we thus situate GMB resilience initiatives within broader technopolitical struggles over *how* the urban can be rendered calculable in the Anthropocene. We do so by engaging with Michel Callon's (1998, 2009) work on framing and overflowing.[3] These terms refer to the disputes that emerge as actors deploy technical devices in their efforts to render an issue or uncertain future calculable. Paying attention to framing and overflowing allows us to analyse the 'rendering technical' process differently from deductive strands of critical geographic thought. Where many critical geographers have used the presence of technical devices and market actors to deduce that resilience is neoliberalism—and thus that resilience has a clear, pre-baked set of politics—we follow these devices and the actors who deploy them to examine how efforts to 'frame' resilience as a calculable problem produce spaces of contestation that allow social and climate justice activists to develop and press for alternative visions of resilient Miami.

This analytical focus on framing and overflowing offers a distinct slant on both resilience and urban environmental politics more broadly, for it treats Miami resilience as a site of productive tension between the designerly techniques of resilience planning and the Black geographies of the region's racialised urban political economy. On the one hand, it draws attention to the techniques, strategies, and practices of design that, through the 100RC process, attempted to introduce a distinct style of calculative reasoning into core urban problems of public service provisioning. Importantly, this style of reasoning does not seek to impose one-size fits all policy solutions to problems of social and ecological complexity. Instead, it seeks to reform the decision-making processes through which those problems are identified in the first place. In the process, designerly techniques *ontologise* difference. By this, we signal an onto-epistemological effect in which designerly practices attempt to decouple empirically observable socio-ecological inequalities from the ongoing histories of embodied struggle within and against forms of anti-Black violence that conditioned Miami's regional political economy and render them transparent interests that offer bounded knowledge on a complex urban system. When creatively synthesised with other equivalent forms of bounded knowledge, such as public surveys, development interests, or hazard and vulnerability maps, design-driven resilience can make racialised difference *useful* for re-visioning the region's complex challenges and developing pragmatic solutions to them.

On the other hand, these designerly techniques could not fully capture the knowledges and experiences developed through these histories. In its very efforts to frame difference as partial, bounded interests, design-driven resilience produced overflows: spaces of contestation generated by the very framing (or design) process itself. In these spaces, we show how activists have developed and introduced alternative approaches to resilience based on the opaque Black geographies that exceed and refuse designerly efforts to ontologise and instrumentalise these geographies. Activist approaches work to counter-frame resilience in terms of the region's longstanding history of segregated local economic development and exclusionary governance.

What does this mean for how we conduct geographic critique? First, in the case of resilience, it is not enough for critique to 'reveal' the underlying socio-spatial difference behind resilience proponents' claims to truth and universality. As we show, such critiques are easily swallowed by resilience through the very process of designerly synthesis, which renders critiques of resilience epistemologically equivalent to other forms of knowledge on resilience and urban life: all offer partial, bounded knowledge that can be used to identify novel problems and develop provisional solutions to urban complexity. Second, this case shows that deductive reasoning, characteristic of much geographic critique, struggles to account for the specific mechanisms, logics and techniques of power that multiply and synthesise difference, whose wider biopolitical effects can differ substantially from conventional critical accounts of market-oriented governance. Drawing on work in Black geographies and technopolitics, we practice a style of critique that refuses the compulsion for both designerly synthesis *and* deductive, conjectural epistemologies as the central mechanism of critique. The mode of geographic critique that we deploy traces processes of framing and overflowing, paying particular attention to the situated knowledges and experiences that exceed formal framing efforts.[4] The rationale for this form of critique is as pragmatic as it is simple. Following the activists whose work we describe here, it is through strategic intervention based on these opaque, overflowing knowledges and experiences that urban resilience and environmental politics are most likely to meet their transformative potential, and that emancipatory urban futures are most likely to be had.

We develop this argument over five sections. First, we detail the designerly roots of resilience thinking, and advance an approach toward critical engagement with resilience that is attuned to how design-driven resilience planning attempts to frame urban socio-ecological complexity, and the overflowing it generates. Second, we situate competing visions of resilience within GMB within Miami's Black geographies. Third, drawing on 15 months of participant observation in Miami resilience planning activities, and 35 interviews with actors involved in Miami resilience planning, we examine how designerly techniques and practices mobilised in 100RC GMB resilience planning strove to synthesise difference in ways that made histories of racial violence, segregation and exclusion transparent to government knowledge and intervention. Fourth, we describe how activists seized on the overflowing of 100RC resilience planning to lay claim to and transform South Florida urban futures. In the concluding section, we discuss the significance of this case for the practice of geographic critique in the Anthropocene.

2 | DESIGN AS LIMIT TO CONVENTIONAL GEOGRAPHICAL CRITIQUE?

To date, dominant critical approaches to resilience have been strongly influenced by first-cut critiques of the concept (Smirnova et al., 2021). By demonstrating the links between resilience theory and neoliberal governance, these critiques helped historicise and contextualise the more problematic, universalising claims from resilience proponents (Walker & Cooper, 2011). But at the same time, their sedimentation into 'commonsensical' critical knowledge has made further critical engagement with resilience more difficult. This is because subsequent critiques have increasingly come to rely on what Clive Barnett (2017) describes as ontological modes of reasoning: deductive, categorical analyses that hinge on identifying certain familiar forms (such as the biopolitical production of risk-bearing subjects or critiques of centralisation) and then drawing conjectural lines of equivalence between these forms and neoliberal governance. From this angle, resilience is always guilty by association: a fatally compromised concept that cannot escape its formal neoliberal shackles.

The problem is not that this mode of critical reasoning is 'wrong'. Many resilience initiatives do produce neoliberalising effects (Grove, 2014; Welsh, 2014). And these effects, as with expressions of actually existing neoliberalism (Peck & Theodore, 2019), are geo-historically variegated. The issue is that analytically equating resilience to neoliberalism can blind analysis to significant, and surprising, developments taking place on the ground under the banner of resilience. As a growing body of scholarship has shown, resilience has no internal coherence. It is instead an essentially contested concept that can be deployed in a variety of situations in diverse, sometimes contradictory ways (Anderson, 2015; Collier & Cox, 2021; Grove, 2018; Wakefield, 2020). Moreover, by confining their scope of inquiry to the deductive identification of

familiar forms associated with neoliberal governance, dominant approaches offer little analytical support in identifying other epistemologies and techniques of power at work in resilience efforts.

An emerging body of second-cut critical scholarship offers a different style of critique. Rather than conjecturally suturing neoliberalism onto resilience, this work traces alternative intellectual lineages that situate resilience thinking in the geo-historical specificity of second-order cybernetics and the ongoing transformation of modern scientific reasoning around designerly sensibilities. The difference is subtle but important. As David Chandler (2014) has demonstrated, neoliberal thought is a form of *first-order* cybernetics. First-order cybernetic reasoning assumes a closed system, in which the observer is positioned outside the system (Dillon & Reid, 2009). This assumption preserves the possibility for a transcendent, universally applicable measure of value—such as the market—to determine the optimal distribution of resources within a complex system, such as a national economy. In contrast, second-cut critical scholarship has emphasised how resilience thinking expresses a form of *second-order* cybernetics (Chandler, 2014; Grove, 2018). Here, the observer is situated *within* the complex system, and therefore no transcendental measure of value can guarantee optimal system performance. To put it in Elinor Ostrom's (2007) influential terminology, when dealing with complex systems, there are 'no panaceas'.

Second-cut critiques of resilience have increasingly focused on the constitutive influence of designerly styles of reasoning on resilience thinking (Chandler, 2018; Grove, 2018; Nelson, 2020; Wakefield et al., 2021). And for good reason. As per design studies scholar Richard Buchanan (1992, p. 83), design is a 'liberal art of technological culture' that anticipatorily intervenes in and governs *through* indeterminate futures[5] (Grove, 2018). Design involves, in cybernetic behavioural scientist Herbert Simon's famous formulation, 'devis[ing] courses of action aimed at changing existing situations into preferred ones' (Simon, 1996, p. 129). Design thus does not focus on optimising an output. Instead, it problematises the process through which problems are posed and solutions to address the problem are identified. In Simon's (1955) terminology, design focuses less on normatively identifying the 'ideal' solution, and instead develops ways to intervene in a given state of affairs to produce sub-optimal yet 'satisficing' outcomes.

Design studies scholars emphasise that design involves a distinct style of knowledge. Rather than the analytic, explanatory knowledge of the social and natural sciences, or the hermeneutics of the arts, design produces knowledge through *synthesis*: it yokes different forms of knowledge into provisional, pragmatic solutions to specific problems of complexity (Cross, 1982).[6] Approached as a distinct style of thought, designerly synthesis has strongly influenced heterodox thought in several fields. For example, field-defining work by scholars in new institutional economics (Buchanan, 1959; Ostrom, 1990, 2009), and ecology and environmental management (Gunderson & Holling, 2002; Holling, 1995, 2001; Lee, 1993) explicitly drew on designerly sensibilities to recalibrate what 'science' could be in economics and ecology, and how science could be practiced in relation to complex or 'wicked' problems (Rittel & Webber, 1973).

The genealogical linkages between design thinking and resilience theory have been detailed elsewhere (Grove, 2018; Nelson, 2020). However, we can briefly signal the influence of the former on the latter. Resilience theorists in ecology, for instance, mobilised Simon's vision of complexity to create ecological understandings of the adaptive cycle (Holling, 1986) and panarchy (Gunderson & Holling, 2002; Holling, 2001). Both lay the conceptual foundations of resilience theory (Walker & Salt, 2012). To develop their understanding of adaptive management, resilience scholars drew directly on Simon's (1955, 1997) sympathetic critique of neoclassical models of rationality. In general, Simon posits that individuals operating within complex systems possess bounded—not total—rationality, and therefore make not *optimal* but *satisficing* decisions: stepwise, adaptive searches that pragmatically meet the individual's goals, even if results may not be optimal. Simon's reformulation of rationality allowed resilience ecologists to reconceptualise decision-making processes such that scientists and practitioners could collaboratively develop simulation models of future systemic performance and deliberate over more or less desirable outcomes (Holling, 1978; Lee, 1993). Following the model of a Simonian decision tree, these deliberations guided policy interventions, whose effects led to further rounds of reflective model refinement and deliberation.

In this light, we can see how the Rockefeller Foundation's concerns with 100RC reflect the designerly roots of resilience thinking. As Foundation president Rajiv Shah picked up on in his criticisms of the 100 RC programme detailed above, resilience approaches strive to change how decisions are made in the face of social and environmental complexity. These approaches do not lend themselves to the kind of efficiency calculations, predicated on commensurability, total knowledge, and optimisation, that Shah sought to institutionalise in the Foundation. When we consider these designerly roots of resilience thinking, the key question for analysis changes: it is not so much about deductively demonstrating *that* resilience efforts 'render' difference and inequality technical. This step is, after all, implicit in the design process. Instead, the question is *how* and to what effect resilience efforts attempt to reconfigure urban decision-making processes such that difference and inequality become useful in devising pragmatic, place-based solutions to complexity.

Here, we suggest that a technopolitical approach, which pays attention to the techniques and strategies deployed in constructing resilience as a problem on which governments can act, is helpful in answering these questions (Collier & Cox, 2021). For one, it shows us that designerly elements—such as calculative devices and synthesis—are irreducible to familiar neoliberal forms, and that outcomes of their use are open-ended (e.g., Escobar, 2018; Goh, 2021; Heyck, 2015). It also allows us to understand design-driven resilience programmes as highly political, provisional outcomes of framing and overflowing: that is, as political disputes opened up in response to expert efforts to convert indeterminate issues of complexity into a specified set of resilience problems (Callon, 2009). This is about more than details. By following what resists the frame—that is, the opaque knowledges and experiences that refuse or elude the designerly synthesis process—we can develop alternative styles of geographic critique that avoid the trap of deductive reasoning and the cybernetic clutches of design. This manoeuvre enables critical geographic analyses of resilience—and environmental struggle more broadly—to account for political economic and ecological dynamics that resonate across neoliberal urban reforms and design-driven urban resilience planning, without analytically reducing the latter to an expression of the former. In this process, geographical critique can draw out, rather than silence, specific resilience strategies and practices that seize on the concept's plasticity within wider struggles over alternative urban futures.

To illuminate the stakes of taking seriously these nuanced distinctions, we turn to the case of Greater Miami resilience planning. We examine the region's histories of racial and environmental violence, how and to what effect design efforts attempted to frame these experiences as bounded knowledge, and analyse the important spaces of contestation that these framing efforts opened up.

3 | OPAQUE GEOGRAPHIES OF RACIALISED RESILIENCE IN MIAMI-DADE COUNTY

Greater Miami resilience initiatives blend conventional and surprising infrastructural and institutional reform projects. Projects range from highly publicised road-raising and pump installations in the City of Miami Beach (CoMB), affordable housing and public transportation initiatives in the City of Miami (MIA), data-sharing and visualisation platforms in MIA and Miami-Dade County (MDC) local governments, and the creation of institutions to enhance community participation and oversight on local government boards, such as MDC's Climate Change Advisory Task Force and MIA's Climate Resilience Committee. The region's three major local governments—MDC, MIA and CoMB—also participated in the Rockefeller Foundation's 100 Resilient Cities programme, under the moniker of 'Greater Miami and the Beaches' (GMB). In consultation with Rockefeller Foundation staff and consultants from Arup,[7] a global design consultancy and strategic 100RC partner, the 100RC programme created a 2017 preliminary resilience assessment and in May 2019 launched GMB's Resilient305 resilience strategy, designed to organise resilience initiatives across the jurisdictionally fragmented region.

The Resilient305 Strategy stands out for positioning equity as a cross-cutting theme: indeed, the 59 action items in the Strategy seek to address the region's extreme levels of income inequality and ethnic and racial segregation. The inclusion of equity is surprising on multiple fronts. First, while resilience proponents both in and outside of the 100RC programme have long touted the possibilities for resilience planning to offer holistic solutions to socio-economic and environmental inequalities, very few 100RC participating cities integrated equity into their resilience strategies (Fitzgibbons & Mitchell, 2019). GMB's outlier status is even more remarkable given how its history of anti-Black violence, segregation, and racially exclusionary governance continue to shape social and political life in the region (Connolly, 2014; Grove et al., 2020b). As architect Grey Read (2008) emphasises, there are 'multiple Miamis': distinct social worlds of extreme luxury, wealth and leisure exist alongside equally extreme poverty, insecurity and abandonment. These worlds are intimately intertwined. The production of wealth through real estate development, rental housing and high-end tourism depended on racial segregation, anti-black violence that sustained colour lines, and racially exclusionary governance that established a zero-sum approach to local politics and ensured local government acted to the benefit of white, downtown development interests. This racial formation, which sustained Jim Crow era capital accumulation, regularly recalibrates in response to various pressures such as the Civil Rights movement, race riots in the 1980s, and more recently, global financial turbulence and extreme weather events associated with climate change (Grove et al., 2020a).

The socio-spatial differences that compose 'multiple Miamis' are thus products of a contextually specific racial formation that sustains capital accumulation in the metropolitan region. As we have demonstrated elsewhere (Grove et al., 2020a), these diverse experiences of racial violence, segregation and exclusion have conditioned distinct understandings of social and environmental vulnerabilities, which feed into distinct understandings of resilience. On the one hand,

propertied interests often approach resilience as a problem of *future* threats that climate change and global economic turbulence pose to continued growth in property values. This is a 'centripetal' vision of resilience that attempts to *centre* the meaning of resilience around a singular focus on property (and the racial privileges afforded to the propertied). Importantly, this vision of resilience tends to be shared by officials in local government, whose operations are financed through property tax revenues and are thus dependent on sustained growth in the local real estate market. Centripetal visions of resilience have also influenced the scope of 100RC resilience efforts: for instance, the 2017 100RC preliminary resilience assessment emphasised the 2008 housing crisis and its impacts on local governments as key examples of future shocks that the local economy may experience (Murley et al., 2017).

On the other hand, those who have been the targets of racialised violence, segregation and exclusion tend to approach resilience as a problem of present and future insecurities resulting from the historical and continued neglect that local government shows towards minority issues. This is a 'centrifugal' vision of resilience that *disperses* the concept's meaning across socially and spatially diverse experiences of vulnerability. This vision of resilience is held by many social and climate justice organisations, and their allies in local government, who have mobilised around resilience to draw attention to long-ignored issues such as affordable housing, public transportation, and more recent issues such as environmental gentrification. Key for our purposes, while many social and climate justice advocates have actively participated in 100RC processes, this vision of resilience has figured prominently in a number of alternative resilience initiatives. These include the Miami Climate Alliance's (MCA's) get-out-the-vote efforts in support of the successful 2017 Miami Forever Bond; its creation of a Citizen's Oversight Board that provides public accountability over Bond-financed resilience initiatives; local social and climate justice organisations' 2018 Serious Games community-based emergency scenario planning activities, and the MCA's 2020 'Housing Justice is Climate Justice' plan.

Black geographies literatures help contextualise these distinct visions of resilience from the perspective of *struggle* (McKittrick, 2007). Centrifugal visions of resilience gesture toward what Clyde Woods (2007, 2017) calls 'specialized geographical knowledge', alternative forms of knowledge grounded in the experience of recurring racial violence that cannot be fully accessed or comprehended through Western scientific methods. As Katherine McKittrick (2006) emphasises, this contextually specific experience creates a 'Black sense of place', or alternative ways of inhabiting place in a world that seeks to categorise and keep in place Black subjects. These are forms of knowledge and subjectivity that, in the words of Stefano Harney and Fred Moten (2013, p. 50), 'cut the regulatory force' of formal, institutionalised knowledge and its deployment in various governance arrangements. Where governance attempts to render all spaces and subjects transparently knowable and governable through the identification of 'interests' that can be addressed through policy, Black geographies signal subject positions, forged through centuries of racial violence, whose existence threatens the possibility of governance, precisely because their exclusion from the figure of 'humanity' historically conditioned the liberal subject of interests in the first place (Hartman, 1997; Sexton, 2010; Wilderson, 2020).

From the perspective of struggle, centrifugal visions of resilience raise key questions about the ethical and political effects of design-driven resilience efforts, specifically around how design processes engage socio-spatial difference. The next section explores how the designerly techniques and practices resilience planners deployed in 100RC events attempted to frame this racially and biopolitically variegated landscape as transparent forms of bounded knowledge on Greater Miami's complex resilience challenges, instrumentally available to designerly synthesis.

4 | DESIGNING EQUITABLE RESILIENCE?

Proponents and critics of resilience alike have recognised how resilience lacks a single, unified definition (Brand & Jax, 2007). For some advocates, this lack of clarity impedes the wider operationalisation of the concept for policymakers (Meerow et al., 2016). For others, this conceptual multiplicity gives resilience transformative potential. The latter perspective featured centrally in the 100RC approach to resilience planning, which required member cities to develop their own understandings of resilience. Working with a general understanding of resilience as an urban system's ability to withstand, recover from, and even transform in the face of short-term shocks and long-term stressors, the 100RC process asserted that each member city faced its own challenges, and brought a distinct array of knowledge, skills and capacities that reflect their own social, economic, cultural and environmental characteristics. Reflecting the designerly ethos we discussed in Section 2, resilience planning could mobilise these diverse experiences to, first, *multiply* the perspectives available to decision-makers on their region's unique complex social and ecological challenges, and second, *synthesise* these diverse perspectives to create clearly defined problems and resilience solutions. Thus, rather than attempting to optimise city 'performance' around an externally defined and universally applicable measure of 'resilience', the 100RC

programme instead sought to transform the *process* through which urban governance regimes defined problems of complexity and developed solutions to address them.

This designerly ethos has conditioned how formal resilience planning engages with the socio-spatial difference embodied in Miami's Black geographies. Figure 1 depicts the resilience planning timeline that guided the design process of GMB's resilience strategy. The first step was a September 2016 kick-off event that brought together multiple stakeholder groups. The event included over 200 participants from local government, civil society (which, importantly, included representatives from social and climate justice organisations such as the MCA), and the private sector, mixed into 25 tables of 10 participants each, with a volunteer facilitator guiding small group breakout discussions throughout the day. A mix of local government officials, community organisers, and local university faculty, including one of the authors, facilitated these breakouts, after participating in a one-morning training event led by Arup designers. Throughout the event, participants engaged in a variety of activities intended to collectively think through the city's 'resilience challenges'. In 100RC language, this means contextually specific shocks and stressors that disrupt systemic functioning and hold out the threat of catastrophic breakdown.

To put this in Callon's (2009) terms, the challenge in these initial stages of resilience planning is one of problem formation: how might indeterminate issues of social and ecological complexity be rendered into more determinate problems that can be addressed through resilience initiatives? One of the key tools for structuring this reflection is Arup's City Resilience Index (CRI), depicted in Figure 2. The index breaks down resilience into four overarching dimensions: economy and society, infrastructure and ecosystems, leadership and strategy, and health and well-being. It disaggregates each 'dimension' into three goals, and then further disaggregates these into qualitatively measurable 'indicators'. This index structured the breakout discussions: facilitators asked participants to name and collectively rank-order what they thought were major shocks and stressors. Participants then identified indicators where they thought the city's performance was relatively strong, and areas where they thought the city's performance was weak. Facilitators gave each participant three green and three red stickers, which they placed on indicators they thought were appropriate.

The language of 'relative' is important because it indicates that these measurements are not absolute or quantified, but a synthesised assessment meant to provide decision-makers with an actionable, qualitative model of what local governance is and is not doing well (GMB, 2016). GMB's strengths reflect local governments' experience with disaster response and preparedness: workshop participants scored 'ensures continuity of critical services' highest and gave good marks to 'meeting basic needs' and 'fosters long-term, integrated planning'. Weaknesses partially reflect GMB's history of segregated, suburban development-driven growth and highly racialised governance. Participants scored 'provides reliable communications and mobility' as the greatest weakness, reflecting the region's notorious gridlock and lack of reliable public transportation (Figure 3). They also recognised that the region struggled to 'empowe[r] a broad range of stakeholders', 'suppor[t] livelihoods and employment', 'ensur[e] social stability, security and justice' and 'provid[e] and enhance[e] natural and manmade [sic] assets' (Murley et al., 2017).

In designerly terms, these activities are what Richard Buchanan (1992) calls 'placements'. This refers to any technique that allows a designer to visualise a problem from different perspectives. Importantly, placements are unique to individual designers or design teams. By multiplying the perspectives from which designers can view particular issues—urban complexity, in this case—placements help designers and their clients synthesise these perspectives into clearly defined problems and tractable, if partial, solutions to these problems.

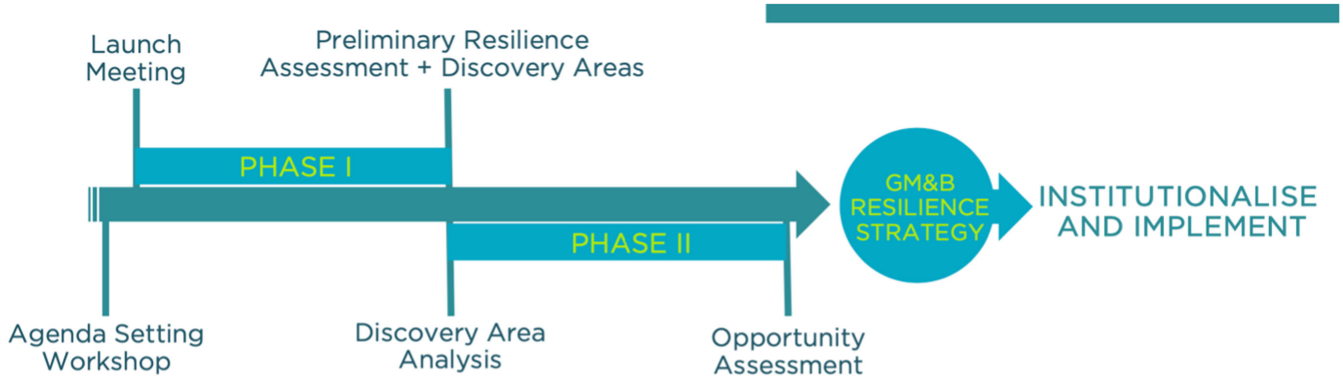

FIGURE 1 GMB resilience planning timeline ('Greater Miami and the Beaches Resilience Strategy'; http://docmgmt.miamibeachfl.gov/WebLink/edoc/210146/GMB%20PDF.pdf?dbid=0&repo=CityClerk, accessed 3 March 2021)

FIGURE 2 City Resilience Index (from: The Rockefeller Foundation and Arup, 'City Resilience Framework', April 2014, updated December 2015; https://www.rockefellerfoundation.org/wp-content/uploads/City-Resilience-Framework-2015.pdf, accessed 3 March 2021)

100 Resilient Cities resilience planners deployed multiple placements to expand the scope of problem identification. Following the kickoff event, the region's CROs used data from breakout groups along with roughly 2000 public surveys on resilience challenges, and input from experts in local government and private sector consultants, to produce a Resilience Assessment that identified six 'discovery areas' (Murley et al., 2017). These are areas where, in 100RC terminology, complexity presents unique challenges and opportunities. In analytical terms, these are sites where existing governance practices and techniques might be reimagined and recalibrated. These discovery areas are thus sites of problematisation, in two senses. First, in Foucauldian terms, they are sites of critical reflection on the limits of existing governmental practices, the focal point of interventions designed to introduce new styles of governance (Collier, 2009; Foucault, 2008; Wakefield, 2019). Second, following Callon, discovery areas are outcomes of expert efforts to render the inchoate issue of resilience into a set of discrete, actionable problems.

Staying with Callon, we can see how resilience planning practices framed Greater Miami's indeterminate and opaque Black geographies as transparent, bounded interests that could be addressed through resilience initiatives. Historical experiences of negligent public service provisioning, racial segregation and violence were gradually sifted into specific discovery areas. For example, the resilience assessment slotted issues of affordable housing and public transportation quality and accessibility into the 'Advancing + Adapting: How We Live And Move' discovery area. It folded questions of income inequality and underserved public schools into 'Building Prosperity: An Economy For All', and integrated questions of social and spatial vulnerability to hazards into 'Robust Recovery: PREPlanning for POSTRecovery' [sic] (Murley et al., 2017). In effect, these framing moves rendered embodied experiences of racial violence and abandonment detailed in Section III not only *technical problems*, but *useful system inputs*: in becoming recognised and valued as part of the Greater Miami system, experts could address these problems to improve systemic performance (Grove et al., 2020a).

These discovery areas allowed resilience planners to instrumentally utilise experiences of social and environmental vulnerability—forged through decades of anti-Black violence, discrimination and segregation—to develop novel, contextually specific resilience solutions. Subsequent focus group workshops organised around discovery area themes convened

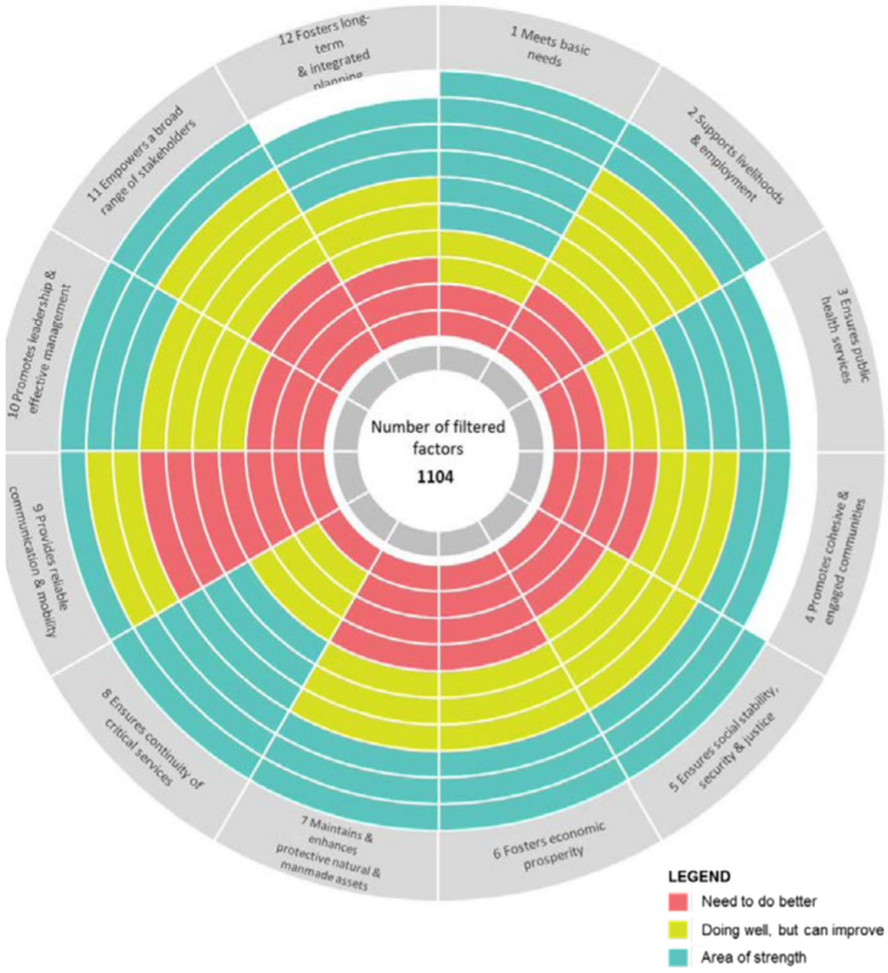

FIGURE 3 Results of the 2016 Greater Miami & the Beaches City Resilience Diagnostic (From 'Greater Miami and the Beaches Resilience Strategy'; http://docmgmt.miamibeachfl.gov/WebLink/edoc/210146/GMB%20PDF.pdf?dbid=0&repo=CityClerk)

individuals from around the region to share their experiences, interests and goals related to specific discovery areas with resilience officials. In further consultation with 100RC consultants, GMB's CROs synthesised these diverse knowledges into pragmatic resilience solutions: the Resilient305 Strategy's 59 action items, arrayed across 14 objectives and three goals. The action items, in turn, identify specific activities that can address the negative impacts of racially uneven social and environmental vulnerability on systemic functioning. These activities include maximising opportunity zones to increase private sector investment in marginalised communities, enhancing energy efficiency to increase home affordability, and utilising inclusive zoning and municipal finance to increase affordable housing. In other words, these agenda items seek to *accommodate the systemic effects* of historical and contemporary forms of racialised violence and exclusion.

To be clear, this planning process drew attention to longstanding, seldom addressed inequalities, which social and climate justice advocates in Miami and cities elsewhere acknowledge (Collier et al., 2016). That said, design-driven planning processes cannot account for the totality of centrifugal visions of resilience that focus on addressing historical and current inequalities. This inability comes at least partially because much of the epistemological substance behind these visions stands outside the technical, ethical and political imperatives and epistemologies that frame centripetal resilience and its focus on future-oriented threats to property and propertied interests.[8] Put simply, what falls outside that frame is not synthesised.

The process of framing socio-ecological complexity through design-driven resilience planning thus had the effect of framing Black geographies as one partial perspective, ontologically and epistemologically equivalent to other experiences and forms of technical and lay knowledge of social and environmental change. The challenge for resilience planners is simply to design ways of synthesising these perspectives into actionable items that can improve system performance. Designerly techniques are thus ontogenic: they work to create a world that frames socio-spatial differences produced

through decades of racialised, political struggle as ontological differences, nothing more or less than distinct, bounded understandings of the complex urban system of GMB.

However, as we suggested above, the epistemological and ethical demands that designerly thinking placed on difference—namely, that it present itself as a rational abstraction or bounded interest—did not fully encompass the forms of social and spatial difference produced through the century-long imposition of, and resistance to, racialised development in South Florida. What design did produce was overflowings. The next section examines these overflowings and considers how they confound conventional critical geographic narratives of resilience.

5 | OVERFLOWS AND THE LIMITS OF CRITIQUE

While the 100RC Greater Miami resilience process played out between 2016 and 2019, South Florida social and climate justice advocacy groups developed initiatives that framed resilience in ways that explicitly focused on minority communities' everyday vulnerabilities and insecurities. These framing efforts contrasted markedly with the resilience framings that resulted from the 100RC process. A brief comparison of the MCA's 'Housing Justice in the Face of Climate Change' report and the affordable housing components of the Resilient305 Strategy illustrates the differences. The MCA published its report in late 2020 following a two-year collaborative planning process between members of the MCA and the University of Miami School of Law's Environmental Justice Clinic.[9] The report is structured around 13 demands, which include the establishment and local government resourcing of community land trusts that give community control over land use and housing rents; the creation of inclusionary zoning and a vacancy tax to deter speculative land sales; the adoption of rent control measures to promote housing affordability; and the creation of a Tenant's Right to Counsel programme that provides legal support for low-income renters facing eviction. The report also includes a call for a moratorium on opportunity zone developments in Greater Miami 'until each community has provided input into a community-driven plan about their priorities and the types of development they would like to see within their neighborhoods' (MCA, 2020, p. 13).[10]

Notably, the report ties Greater Miami's well known problems with housing availability and affordability to existing regulatory regimes that privilege the property rights and land claims of real estate developers over communities. For example, the plan's authors stress that lax enforcement of existing land use and development regulations such as community benefit agreements, public notice processes, and neighbourhood design standards 'generally reflects a larger pattern of urban neglect and also has a marked negative impact on neighborhood health, connectedness, and resilience' (MCA, 2020, p. 12). More importantly, they situate their demands in Florida's history of racialised local economic development. Their top long-term priority is for county commissioners to declare a 'housing state of emergency', a legal manoeuvre which would allow the county government to implement many of these measures and prevent the Florida state government from preemptively banning municipalities from using all available regulatory tools to address the housing crisis. As historian NDB Connolly (2014) demonstrates, these legal assemblages are rooted in Jim Crow-era property regimes that have enabled the enrichment of white developers and property owners through the immiseration and denial of basic rights and land title to impoverished Black residents.

Considerations of the region's history of racialised development, and its continued impact on land development and property rights struggles, do not appear in the Resilient305 Strategy, even though they were raised at 100RC planning events (Grove et al., 2020b). To be sure, some demands from the MCA report appear in the Resilient305 Strategy, such as inclusionary zoning in low-income Black communities, which in part reflects MCA participants' involvement in public 100RC planning activities. At the same time, the Resilient305 Strategy treats housing as a technical problem of decreasing housing quality and affordability. This treatment reduces wider social, environmental and institutional conditions to a functional essence that can shape housing provision in the Greater Miami urban system. For example, the Resilient305 Strategy recommends maximising opportunity zones to promote private investment in low-income communities and building community wealth while promoting resilient development investments. At best, this recommendation ignores how developers have utilised these zones to enrich white-identifying downtown development interests through the displacement of low-income communities.

The differences between these plans require much more space to properly analyse. But for our purposes, they illustrate how the housing justice visions of the MCA plan and the local economic development recommendations of the Resilient305 Strategy reflect conflicting sides in a century-long struggle over racialised property development in South Florida (Taylor & Aalbers, 2022). Importantly, these sides cannot be synthesised. This is because recognising alternative forms of property rights and communal land holdings in minority communities would directly undermine the

exclusionary mechanisms of the region's dominant racial formation that sustains its real estate market. Set in relation to work on Black geographies outlined above, the MCA plan signals opaque histories of racial violence that overflow formal, design-driven resilience planning *precisely because their synthesis would 'cut the regulatory force' of those planning efforts* (Harney & Moten, 2013, p. 50). Their recognition within formal resilience planning activities is unthinkable because it would call into question the geo-historically specific racialising assemblages that condition urban governance and capital accumulation in South Florida.

Thus, the articulation of alternative visions of resilience in Miami, embodied in the MCA plan, are political, practical and ethical because they call into question the techniques of racialisation that make Greater Miami capital accumulation possible. In this sense, resilience is unescapably political, although not for the reasons conventional geographic critique might suggest. Resilience in Miami cannot simply be read as the imposition of a top-down neoliberal governance agenda that relies on privatisation, marketisation and responsibilisation to secure urban capital accumulation in the face of environmental uncertainties. Rather, as in other contexts like New York City (Wakefield, 2020), resilience is a site of problematisation: existing forms of knowledge and urban governance techniques are subjected to critical reflection and, in this case, design-informed intervention. While designerly synthesis may often produce effects that reinforce neoliberal governance agendas (Ranganathan & Bratman, 2021), these effects are contingencies of framing and overflowing processes at work in geographically specific resilience planning efforts.

In Greater Miami, resilience planning allowed community organisers to take up and reformulate their existing concerns with social and climate justice in light of growing interest in, and demand for, resilience among local government, global investment organisations, and high-profile philanthropies. Importantly, organiser visions of resilience emerged out of experiences and knowledges created through a century of violent racialised development. These visions are founded on opaque epistemologies that exist on the constitutive outside of the frame, and cannot be addressed by designerly practices of synthesis without calling into question the racialised political and libidinal economies that sustain Greater Miami capital accumulation. Thus, the ethical and epistemological demands that design imposes on difference—namely to make itself amenable to pragmatic, functional synthesis—runs aground against opaque and incommensurable geographies of struggle.

6 | CONCLUSIONS

As we know, the Rockefeller Foundation shuttered 100RC in July of 2019, just after GMB released its Resilient305 Strategy. Where design-driven resilience planning 'worked' for Greater Miami government officials, at least those operating within the frame of centripetal visions of resilience, it did not for Rockefeller leadership, who wanted to see more measurable impacts for their resilience investments. Nor did design-driven resilience planning necessarily work for economically and socially vulnerable communities in Greater Miami. As previously discussed, elements of their centrifugal visions of resilience that made it into the synthesis process were functionally reduced: histories and experiences of racial and environmental violence mattered, and thus factored into design techniques and practices, insofar as they could be made useful in reducing system vulnerability. Difference, insofar as it could be rendered intelligible to government knowledge, intervention and control, was indeed ontologised. Meanwhile, the opaque, Black knowledges and experiences that design tactics could not fully access remained outside the frame.

One could easily despair at these events. But when analysed through a technopolitical lens, the case of Miami pushes us to consider at least one other perspective. By eluding designerly efforts of synthesis, these Black geographies make up overflowings that continue to mediate ongoing political battles over what resilience in Greater Miami practically becomes. Centrifugal visions of resilience circulating among social and climate justice advocates in South Florida speak to the political plasticity of resilience: they have driven public interest in unconventional resilience initiatives, such as the Miami Forever Bond and its Citizens' Oversight Board, and are producing alternative resilience plans, such as the MCA's 'Housing Justice is Climate Justice' statement. Where design-driven resilience planning sought to render social and spatial difference legible as diverse interests in the local economy, these alternative visions refuse to become fully legible to policy-makers. Black geographies of Miami's history of racial violence, segregation and exclusion are ultimately irreducible to interests that can be serviced through design-driven governance innovations. These centrifugal visions of resilience directly call into question the social and psychological investments in (white) property that underwrite South Florida governance, for these visions originate not in the desire to secure continued growth in property values, but in the everyday practices and forms of knowledge bound up in surviving and resisting the recurring, racialised inequalities that structure property values in South Florida in

the first place. Resilience planning has thus opened for question the field of possible issues that might be relevant for local governance in a way that is unique given the region's history of exclusionary governance. In this light, resilience marks a domain of technopolitical struggle over the possibilities for redesigning boundaries between the state, the public and science.

What, then, are we to make of the case of design-driven resilience planning in Greater Miami as it relates to geographic critique? How might this case push us to think differently about conducting critique? For one, the case shows that it is not just design that deploys framing moves in its operations. Critical geographic thought does, too. As with design, these frames can be useful: the deductive modes of reasoning that characterise influential critical scholarship on resilience have played an important role in historicising and contextualising the more problematic, universalising claims from resilience proponents. But, and as with any frame, some things exceed them. These include technologies of power, such as designerly synthesis, that influence the uneven outcomes, and broader biopolitical effects, of resilience efforts despite not being immediately recognisable as 'neoliberal'. They also include the confounding developments and battles that continue to take place under the banner of resilience. Drawing on work in Black geographies and technopolitics, we have introduced and applied one way to critically account for these technologies and events. It is an inductive mode of critique that pays close attention to framing *and* the opaque, historically and contextually specific knowledges and experiences that refuse to be framed or synthesised, and work to counter-frame dominant conceptions of resilience—critical and conventional alike.[11] To play on Ostrom's (2007) designerly phrasing, and contra the consoling certainties afforded by deductive modes of reasoning, there are 'no panaceas' in taking this analytical approach. But there are overflowings. And it is here where some of the most powerful, transformative critiques of resilience lie. We should not let them exceed us.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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ENDNOTES

[1] The Rockefeller Foundation subsequently launched the Global Resilient Cities Network (GCRN), which sought to help 100RC participants maintain the coalitions they had forged through 100RC. Because GCRN seeks to maintain existing relations—not create new, or design-driven, resilience programming for individual cities—its operations are distinct from those we examine in the 100RC planning process and are beyond our analytical scope. The existence of the GCRN nonetheless speaks to the conceptual persistence of resilience among urban planning, environmental management and international development experts (Wakefield et al., 2021).

[2] For instance, the region's economy is highly speculative; financialised and racialised. Moreover, the region's geology makes climate change an existential threat—not simply a long-term challenge.

[3] Callon (1998) first introduced 'overflowing' in reference to elements that exceed framing efforts in market-making projects. His interest in overflowings is not part of a broader effort to denounce market-making as ineffective—or to make any normative assessments of expert practice—but to stress that novel forms of political space are often created in technical exercises and practices that are intended to remove the possibility of political dispute. We follow Callon in our use of the term in relation to design practice: the goal is not to evaluate whether synthesis and the overflows it produces are 'good' or 'bad', but to underscore that synthesis opens avenues for political claims and counterclaims making.

[4] On 'tracing', see David Collier's (2011) work on process tracing.

[5] This makes design like other styles of anticipatory action such as preparedness and preemption (see, e.g., Anderson, 2010).

[6] This form of synthesis differs from typical geographic understandings. For geographers, synthesis refers to a form of scholarly bricolage that uneasily holds different forms of knowledge to enhance our understanding of human–environment relations and *draw out* multiple forms of spatial and socio-ecological practices (Castree, 2016; Larsen and Harrington, 2021). In contrast, designerly synthesis involves the *integration* of multiple perspectives to develop pragmatic solutions to wicked problems (Grove & Rickards, in press).

[7] Per Arup, its role in 100RC included training and capacity-building with city officials; planning and facilitation of stakeholder engagement activities; technical and strategic advice on effective resilience actions; and project management. In Miami-Dade, consultants oversaw the resilience planning process.

[8] While there is not space to elaborate the point, we want to emphasize the epistemological as well as ethical and political dynamics at play here. As Kristie Dotson (2014) argues, epistemological innovations, such as those represented by design-based resilience planning techniques, can still reinforce epistemological oppressions that render some experiences and knowledges nonsensical and unspeakable (see also Derickson, 2021). In other words, a focus on equity in resilience planning can still reproduce the epistemological silencing of the 'perspective of struggle' (McKittrick, 2007) or a 'blues epistemology' (Woods, 2017).

[9] The Environmental Justice Clinic has been one of the few local academic institutions that consistently advocates on behalf of South Florida minority communities subjected to social and environmental degradation.

[10] Opportunity zones are a US Department of Housing and Urban Development programme that offers tax incentives for development in low-income communities. In Miami, real estate developers often utilise this programme to build mega-developments that displace low-income communities and exacerbate housing affordability problems (Taylor and Aalbers, 2022).

[11] For a much more detailed discussion on similar ethico-epistemological issues in geographic work on displacement, see Derickson (2021).

REFERENCES

Anderson, B. (2010) Preemption, precaution, preparedness: Anticipatory action and future geographies. *Progress in Human Geography*, 34(6), 777–798. Available from: https://doi.org/10.1177/0309132510362600

Anderson, B. (2015) What kind of thing is resilience? *Politics*, 35(1), 60–66. Available from: https://doi.org/10.1111/1467-9256.12079

Barnett, C. (2017) *The priority of injustice: Locating democracy in critical theory*. Athens, GA: University of Georgia Press.

Bigger, P. & Webber, S. (2020) Green structural adjustment in the World Bank's resilient city. *Annals of the American Association of Geographers*, 111(1), 36–51. Available from: https://doi.org/10.1080/24694452.2020.1749023

Bliss, L. (2019) The rise, fall, and possible rebirth of 100 Resilient Cities. Available from: https://www.bloomberg.com/news/articles/2019-06-12/the-demise-of-rockefeller-s-100-resilient-cities?sref=u46JUYRB [Accessed 12th June 2019].

Brand, F. & Jax, K. (2007) Focusing the meaning (s) of resilience: Resilience as a descriptive concept and a boundary object. *Ecology and Society*, 12(1), 23. Available from: https://doi.org/10.5751/es-02029-120123

Buchanan, J. (1959) Positive economics, welfare economics, and political economy. *The Journal of Law and Economics*, 2, 124–138. Available from: https://doi.org/10.1086/466556

Buchanan, R. (1992) Wicked problems in design thinking. *Design Issues*, 8(2), 5–21. Available from: https://doi.org/10.2307/1511637

Callon, M. (1998) Introduction: The embeddedness of economic markets in economics. *The Sociological Review*, 46(1_suppl), 1–57. Available from: https://doi.org/10.1111/j.1467-954x.1998.tb03468.x

Callon, M. (2009) Civilizing markets: Carbon trading between in vitro and in vivo experiments. *Accounting, Organizations and Society*, 34(3–4), 535–548. Available from: https://doi.org/10.1016/j.aos.2008.04.003

Castree, N. (2016) Geography and the new social contract for global change research. *Transactions of the Institute of British Geographers*, 41(3), 328–347. Available from: https://doi.org/10.1093/acrefore/9780190228620.013.630

Chandler, D. (2014) *Resilience: The governance of complexity*. Abingdon, UK: Routledge.

Chandler, D. (2018) *Ontopolitics in the anthropocene: An introduction to mapping, sensing, hacking*. Abingdon, UK: Routledge.

Collier, D. (2011) Understanding process tracing. *Political Science and Politics*, 44(4), 823–830. Available from: https://doi.org/10.1017/s1049096511001429

Collier, S. (2009) Topologies of power: Foucault's analysis of political government beyond 'governmentality'. *Theory, Culture & Society*, 26(6), 78–108. Available from: https://doi.org/10.1177/0263276409347694

Collier, S., Cox, S. & Grove, K. (2016) Rebuilding by design in post-Sandy New York. *Limn*, 5(7), 8–15.

Collier, S. & Cox, S. (2021) Governing urban resilience: Insurance and the problematization of climate change. *Economy and Society*, 50(2), 275–296. Available from: https://doi.org/10.1080/03085147.2021.1904621

Connolly, N.D.B. (2014) *A world more concrete*. Chicago, IL: University of Chicago Press.

Cross, N. (1982) Designerly ways of knowing. *Design Studies*, 3(4), 221–227. Available from: https://doi.org/10.1007/1-84628-301-9_1

Dillon, M. & Reid, J. (2009) *The liberal way of war: Killing to make life live*. London, UK: Routledge.

Derickson, K.D. (2021) Disrupting displacements: Making knowledges for futures otherwise in Gullah/Geechee Nation. *Annals of the American Association of Geographers*, 1–9. Available from: https://doi.org/10.1080/24694452.2021.1996219

Dotson, K. (2014) Conceptualizing epistemic oppression. *Social Epistemology*, 28(2), 115–138. Available from: https://doi.org/10.1080/02691728.2013.782585

Escobar, A. (2018) *Designs for the pluriverse: Radical interdependence, autonomy and the making of worlds*. Durham, NC: Duke University Press.

Fitzgibbons, J. & Mitchell, C. (2019) Just urban futures? Exploring equity in '100 Resilient Cities'. *World Development*, 122, 648–659. Available from: https://doi.org/10.1016/j.worlddev.2019.06.021

Foucault, M. (2008) *The birth of biopolitics: Lectures at the College de France, 1978–1979*. London, UK: Picador.

GMB [Greater Miami & the Beaches]. (2016) *Greater Miami and the Beaches resilience strategy*. Available from: https://resilient305.com/

Goh, K. (2021) *Form and flow: The spatial politics of urban resilience and climate justice*. Cambridge, MA: MIT Press.

Grove, K. (2014) Agency, affect, and the immunological politics of disaster resilience. *Environment and Planning D: Society and Space*, 32(2), 240–256. Available from: https://doi.org/10.1068/d4813

Grove, K. (2018) *Resilience*. Abingdon, UK: Routledge.

Grove, K., Cox, S. & Barnett, A. (2020a) Racializing resilience: Assemblage, critique, and contested futures in Greater Miami resilience planning. *Annals of the American Association of Geographers*, 110(5), 1613–1630. Available from: https://doi.org/10.1080/24694452.2020.1715778

Grove, K., Barnett, A. & Cox, S. (2020b) Designing Justice? Race and the limits of recognition in Greater Miami resilience planning. *Geoforum*, 117, 134–143. Available from: https://doi.org/10.1016/j.geoforum.2020.09.014

Grove, K. & Rickards, L. (in press) Contextualizing narratives of geography's past, present and future: Synthesis, difference and cybernetic control. Accepted article in press at Environment and Planning F.

Gunderson, L. & Holling, C. (Eds.) (2002) *Panarchy: Understanding transformations in human and natural systems*. Washington, DC: Island Press.

Harney, S. & Moten, F. (2013) *The undercommons: Fugitive planning and black study*. London, UK: Minor Compositions.

Hartman, S. (1997) *Scenes of subjection: Terror, slavery, and self-making in nineteenth-century America*. Oxford, UK: Oxford University Press on Demand.

Heyck, H. (2015) *Age of system: Understanding the development of modern social science*. Baltimore, MD: Johns Hopkins University Press.

Holling, C.S. (Ed.) (1978) *Adaptive environmental assessment and management*. Hoboken, NJ: Wiley.

Holling, C.S. (1986) The resilience of terrestrial ecosystems: Local surprise and global change. In: Clark, W. & Munn, R. (Eds.) *Sustainable development of the biosphere*. Cambridge, UK: Cambridge University Press, pp. 292–317.

Holling, C.S. (1995) What barriers? What bridges? In: Gunderson, L., Holling, C.S. & Light, S. (Eds.) *Barriers and bridges to the renewal of ecosystems and institutions*. New York, NY: Columbia University Press, pp. 3–34.

Holling, C.S. (2001) Understanding the complexity of economic, ecological, and social systems. *Ecosystems*, 4, 390–405. Available from: https://doi.org/10.1007/s10021-001-0101-5

Larsen, T. & Harrington, J. Jr (2021) Geographic thought and the anthropocene: What geographers have said and have to say. *Annals of the American Association of Geographers*, 111(3), 729–741. Available from: https://doi.org/10.1080/24694452.2020.1796575

Lee, K. (1993) *Compass and gyroscope: Integrating science and politics for the environment*. Washington, DC: Island Press.

Leitner, H., Sheppard, E., Webber, S. & Colven, E. (2018) Globalizing urban resilience. *Urban Geography*, 39(8), 1276–1284. Available from: https://doi.org/10.1080/02723638.2018.1446870

McKittrick, K. (2006) *Demonic grounds: Black women and the cartographies of struggle*. Minneapolis, MN: University of Minnesota Press.

McKittrick, K. (2007) Freedom is a secret: The future usability of the underground. In: McKittrick, K. & Woods, C. (Eds.) *Black geographies and the politics of place*. Toronto, ON: Between the Lines, pp. 97–114.

Meerow, S., Newell, J. & Stults, M. (2016) Defining urban resilience: A review. *Landscape and Urban Planning*, 147, 38–49. Available from: https://doi.org/10.1016/j.landurbplan.2015.11.011

Miami Climate Alliance. (2020) *Housing justice is climate justice*. Available from: https://d3n8a8pro7vhmx.cloudfront.net/catalystmiami/pages/140/attachments/original/1590720073/Housing_Justice_is_Climate_Justice_2020-compressed.pdf?1590720073

Murley, J., Gilbert, J. & Torriente, S. (2017) *Resilient Greater Miami and the Beaches: Preliminary resilience assessment*. Available from: https://www.miamidade.gov/green/library/gmb-preliminary-resilience-assessment-2017.pdf

Nelson, S. (2020) Resilience arts of government: The birth of a 'systems-cybernetic governmentality'. In: Chandler, D., Grove, K. & Wakefield, S. (Eds.) *Resilience in the anthropocene: Governance and politics at the end of the world*. Abingdon, UK: Routledge, pp. 84–102.

Ostrom, E. (1990) *Governing the commons: The evolution of institutions for collective action*. Cambridge, UK: Cambridge University Press.

Ostrom, E. (2009) Beyond markets and states: Polycentric governance of complex systems. *Nobel Prize Lecture*, 8 December 2009. Available from: https://doi.org/10.1257/aer.100.3.641

Ostrom, E., Janssen, M. & Anderies, M. (2007) Going beyond panaceas. *Proceedings of the National Academy of Sciences of the United States of America*, 104(39), 15176–15178. Available from: https://doi.org/10.1073/pnas.0701886104

Peck, J. & Theodore, N. (2019) Still neoliberalism? *South Atlantic Quarterly*, 118(2), 245–265. Available from: https://doi.org/10.1215/00382876-7381122

Ranganathan, M. & Bratman, E. (2021) From urban resilience to abolitionist climate justice in Washington, DC *Antipode*, 53(1), 115–137. Available from: https://doi.org/10.1111/anti.12555

Read, G. (2008) Public space as theatre in multiple Miamis. In: Shulman, A. (Ed.) *Miami modern metropolis: Mid-century architecture and urbanism*. Miami Beach, FL: Bass Museum of Art.

Rittel, H. & Webber, M. (1973) Dilemmas in a general theory of planning. *Policy Sciences*, 4(2), 155–169.

Rodin, J. (2013) What is the business case for improving the resilience of cities? *The Guardian*, 3 September. Available from: https://www.theguardian.com/sustainable-business/business-case-improving-resilience-cities

Sexton, J. (2010) People-of-color-blindness: Notes on the afterlife of slavery. *Social Text*, 28(2), 31–56. Available from: https://doi.org/10.1215/01642472-2009-066

Simon, H. (1955) A behavioral model of rational choice. *Quarterly Journal of Economics*, 69(1), 99–118. Available from: https://doi.org/10.2307/1884852

Simon, H. (1996) *The sciences of the artificial*, 3rd edition. Cambridge, MA: MIT Press.

Simon, H. (1997) *Administrative behavior*, 4th edition. New York, NY: The Free Press.

Smirnova, V., Lawrence, J. & Bohland, J. (2021) The critical turn of resilience: Mapping thematic communities and modes of critical scholarship. *The Geographical Journal*, 187(1), 16–27. Available from: https://doi.org/10.1111/geoj.12370

Taylor, Z. & Aalbers, M. (2022) Climate gentrification: Risk, rent, and restructuring in Greater Miami. *Annals of the American Association of Geographers*, 1–17. Available from: https://doi.org/10.1080/24694452.2021.2000358

Wakefield, S. (2019) Urban resilience as critique: Problematizing infrastructure in post-Sandy New York City. *Political Geography*, 79, 102148. Available from: https://doi.org/10.1016/j.polgeo.2020.102148

Wakefield, S. (2020) *Anthropocene back loop: Experimentation in unsafe operating space*. London, UK: Open Humanities Press.

Wakefield, S. (2021) Critical urban theory in the Anthropocene. *Urban Studies*, 1–20. Article Published Online First. Available from: https://doi.org/10.1177/00420980211045523

Wakefield, S., Chandler, D. & Grove, K. (2021) The asymmetrical Anthropocene: Resilience and the limits of posthumanism. *Cultural Geography*. Available from: https://doi.org/10.1177/14744740211029278

Walker, B. & Salt, D. (2012) *Resilience thinking: Sustaining ecosystems and people in a changing world*. Washington, DC: Island Press.

Walker, J. & Cooper, M. (2011) Genealogies of resilience: From systems ecology to the political economy of crisis adaptation. *Security Dialogue*, 42(2), 143–160. Available from: https://doi.org/10.1177/0967010611399616

Welsh, M. (2014) Resilience and responsibility: Governing uncertainty in a complex world. *The Geographical Journal*, 180(1), 15–26. Available from: https://doi.org/10.1111/geoj.12012

Wilderson, F. (2020) *Afropessimism*. New York, NY: Livefree.

Woods, C. (2007) 'Sittin' on top of the world': The challenge of blues and hip hop geography. In: McKittrick, K. & Woods, C. (Eds.) *Black geographies and the politics of place*. Toronto, ON: Between the Lines, pp. 46–81.

Woods, C. (2017) *Development arrested: The blues and plantation power in the Mississippi Delta*. London, UK: Verso.

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