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THEMED INTERVENTION

Post-pandemic cities: An urban lexicon of accelerations/decelerations

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Abstract

COVID-19 has stimulated renewed societal and academic debate about the future of cities and urban life. Future visons have veered from the 'death of the city' to visual renderings and limited experiments with novel 15 minute neighbourhoods. Within this context, we as a diverse group of urban scholars sought to examine the emergent 'post'-COVID city through the production of an urban lexicon that investigates its socio-material contours. The urban lexicon makes three contributions. First, to explore how the pandemic has accelerated certain processes and agendas, while at the same time, other processes, priorities and sites have been decelerated and put on hold. Second, to utilise this framing to examine the impacts of the pandemic on how cities are governed, how urban geographies are managed and lived, and how care emerged as a vital urban resource. Third, to tease out what might be temporary intensifications and what may become configurational in urban governance, platforming, density, technosolutionism, dwelling, crowds, respatialisation, reconcentration, care, improvisation and atmosphere. The urban lexicon proposes a vocabulary for describing and understanding some of the key contours of the emergent post-pandemic city.

KEYWORDS
acceleration/deceleration, cities, COVID-19, pandemic urbanism, urban lexicon

1 | INTRODUCTION

The COVID-19 pandemic has provoked intense public and political debate on the future of cities and urbanisation. Prognoses have ranged from the 'end of the city' to reinvigorated visions of green multifunctional neighbourhoods. Urban researchers have identified a set of existing and potential shifts in all kinds of areas: urban imaginaries, material forms, sociotechnical networks, economic activities, social practices, governance arrangements, and spatial configurations. Our collective purpose as a diverse group of urban scholars is to examine the emergent post-pandemic city through the

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production of an urban lexicon that investigates its material and imaginative contours, exploring what changes have been fleeting, interim or potentially longer term. Now is an important moment in which to engage in such reflections, after the immediate pronouncements on the pandemic in the city, and before longer-term shifts and trends have settled and become embedded.

Our starting point is a concern with how the pandemic has *accelerated* certain processes and agendas and how these operate in relation to circulations that are variously prioritised, catalysed, devalued, neglected and abandoned at different sites across the urban world. At the same time, other processes, priorities and sites have been *decelerated*, interred, put on hold, and confined to particular margins. This relation between acceleration and deceleration operates as larger frame that informs this lexicon. It serves as a provocation for distilling, from the vantage point of particular scholars in particular places, what might be temporary intensifications and what may become configurational in shaping spatial–temporal structures and modes of urban life. We assembled a group consisting of mainly geographers who would primarily, although not exclusively, identify as urban studies scholars and who were actively working on the pandemic in the city. The collective research interests of the group ranges from urban technology studies, development studies, urban politics, and architecture, to urban social reproduction and urban mobilities, with research commitments in Africa, Asia, Europe and North and South America. To structure conversations across this disciplinary and geographical diversity we collectively began with three questions structured around the problematic of acceleration/deceleration.

First, how has the pandemic impacted the nature of urban governance? The collision of the pandemic with the governance challenges of climate change, changing patterns of urbanisation, and deepening urban inequalities may have shifted how urban governance proceeds. New forms of mutual support, reformed urban solidarities and social movements have been generated by the pandemic and may seek to reconfigure short-term and longer-term state and civic responses. At the same time, new awareness of how cities engage in agro-ecological and more general resource-extractivism, and how that impacts global hinterlands, has grown as the origins of SARS-CoV-2 in environmental upheaval have been examined (Ali et al., 2023; Brenner & Swarnabh Ghosh, 2022; Wallace et al., 2020). We may also be seeing the emergence of new or intensified domains state intervention. For example, recent political concerns and interventions have been targeted at potential spaces of emergent disease, especially on urban peripheries where entanglements of intensive agriculture, urban ecology and global production and consumption networks are found. The implications for local communities and environment are uncertain.

Second, what are the consequences of the pandemic for urban geographies? We may be witnessing transformations in labour geographies, a de-linking of economies and pre-pandemic spatialities, and a shift to peripheral and smaller urban agglomerations. City centres have been impacted by both lockdowns and an acceleration of online economies. Global logistics and local consumption economies may have permanently changed. At the same time, new thinking and logics of crowd management and concerns with density at different scales, from the home to the urban-region, have emerged. All of this is differentiated by class, race, ethnicity, age and gender, and there is a large body of research demonstrating both the links between inequality, poverty, disease vulnerability, and poor often overcrowded housing, and the solidarity and mutual aid responses to those conditions (Desmaison et al., 2022; Mould et al., 2022; Ortiz & Boano, 2020).

And third, we asked: has COVID-19 shifted urban sociotechnical configurations, and if so how? The pandemic catalysed debate about the role of urban infrastructure in supporting urban economies, health and everyday living. Urban experiments have rapidly repurposed existing digital platforms, AI, automated logistics, drones and robotics, and biomedical surveillance in urban pandemic responses. This may accelerate the intertwining of technological affordances and epidemiological thinking to a potentially wider array of applications designed to enhance urban bio-(in)security.

From these three points of departure, we each wrote our own response, which were then assembled into a range of themes that we identified as particularly important for the post-pandemic city: *governance*, *geographies* and *care*. The production of the lexicon was curated as an iterative and reflexive process, and involved three steps. The first was to inform the selection of entries through two online discussions involving the collective. This helped pinpoint the importance of differential accelerations/decelerations and to identify those concerns which stood out as consequential and illustrative of uneven outcomes. The second was to test both the logic and veracity of this selection with a mixed audience of over 30 of our peers at the 2021 annual conference of the Royal Geographical Society which took place in a synchronous, online format due to the pandemic. Then, we reviewed and refined the entries over several iterations.

Our aim with this lexicon is not to be comprehensive. While the impact of COVID-19 is highly uneven, with some aspects of cities and urbanisation more affected than others, we are acutely aware of the overall scale and multisystem impact of a pandemic that we are still attempting to come to terms with. This is not a comprehensive A–Z glossary. Instead, it is an effort by a collective working across a range of urban questions and fields and global locales to identify a lexicon—a selective vocabulary—of what we see as key themes and concerns now and into the future. The lexicon seeks to tell a (necessarily incomplete) story about pandemic accelerations/decelerations, focused on drawing out key changes in urban governance, geographies, sociotechnical configurations and politics, with a particular eye on potentially configurational shifts, and is intended to add to and generate debate rather than to capture the sweep of pandemic changes in the city.

Geography as a discipline has responded to the challenges of the COVID-19 pandemic in two important ways. The first is connected with the 'context' of the wider social and economic organisation of geographical research. Several journals, including this one, sought to address the uneven impacts of the crisis on both the production and dissemination of relevant research, from extending review timescales to recognise extra work and care responsibilities, to expediting review times for the publication of potentially pandemic-relevant research. Journals experimented with the use of open access for relevant research, the use of curated blogs, shorter articles, and new sections especially for early career academics, which together have accelerated the potential for less conventional styles of output alongside full academic papers. Another promising possibility is the recent call from this journal to 'care-fully' develop new opportunities and spaces for collective exchange and engagement for more caring styles of scholarly transactions (see Bailey et al., 2023; McFarlane, 2021a). We also recognise the predominance of English language journals while working with a team chosen to explore the multiplicity of different contexts in which the post-pandemic city is emerging. Our overview of the burgeoning geographical and urban literature here is clearly selective.

The second is connected to the substantive 'content' of geographical and urban research. The geographical literature on COVID-19 both in Geography and Urban Studies journals has expanded dramatically since the pandemic emerged in 2020 (see, for instance, the reviews in Armondi et al., 2022, Doucet et al., 2021). Here, we spotlight three key areas: health, governance, and the social (e.g., Aalbers et al., 2020; Sparke & Anguelov, 2020).

First, on health, research has focused on the specifically urban nature of disease outbreaks and the consequences for future preparedness, including for health systems, governance frameworks, and global mobility patterns. Connolly et al. (2021) have argued that 'extended urbanisation', including peripheral urban developments and mobility patterns, have increased vulnerabilities to the spread of infectious disease, including zoonotic disease, in the 'expansion of urban settlements in previously forested or agricultural areas' (Connolly et al., 2021, p. 258; and see Ali et al., 2023). Some of this literature has considered the extent to which density might be a factor in higher rates of infection, hospitalisation and death, and has typically linked increased risks in cities to working patterns, poverty, domestic overcrowding, class and ethnicity rather than density per se (Boterman, 2020, p. 14; Hamidi et al., 2020; McFarlane, 2021b). There has also been work on the importance of understanding the historic importance of health and pandemics in shaping the governance, materiality and infrastructures of the city (Enright & Ward, 2021; Keil, 2022; Odendaal, 2021). Our concern has been less with the dimensions of health specifically, and more with how to understand how health and infectious disease concerns now might be shaping wider urban processes in the medium term (and see Ruszczyk et al., 2022).

Second, there is a growing literature on the changing governance arrangements of COVID-19 in cities. This includes work on the relative weakening capacity of urban governments to deal with pandemics because of the legacies of austerity (Lunstrum et al., 2021; Mould et al., 2022; Sparke & Williams, 2022), including the erosion of public services and the pre-pandemic rise in socioeconomic inequality. There has also been a focus on new forms and politics of experimentalism. This includes faster decisionmaking, moving key functions to digital platforms, enhancing or developing new relationships with civil society or private sector, reconfiguring local–global economic and political relationships, and instigating new mobility arrangements in urban space (Acuto, 2020; Herrick et al., 2022; Hesse & Rafferty, 2020; McGuirk, Dowling, Maalsen, & Baker, 2021; Temenos, 2022). These experiments have also involved an intensification of tools of 'crowd control' and biosecure regulation, from robot dogs in Singapore and thermal imaging in China, to enhanced capability for urban spatial management and social and mobility control (Chen et al., 2020; McGuirk, Dowling, Maalsen, & Baker, 2021). Again, our concern has been to understand what shifts here might be temporary and which might be longer term.

Third, there is a growing literature on the social geographies of COVID-19 in the city. Much of this work has examined the sharp sociospatial inequalities accompanying the pandemic, and efforts to respond to them (Lutpon & Willis, 2021). There have been calls for greater attention to vulnerability and death (Shchglovitova & Pitas, 2022), including differential vulnerabilities amongst elderly groups (Osborne & Meijering, 2021) or people with learning disabilities (Macpherson et al., 2021; Van Holstein et al., 2022), and research on how the pandemic intersects with social geographies of health, mobility, housing, employment, care, prisons and the arts (Ho & Maddrell, 2021; McEwan et al., 2022; Schliehe et al., 2022). To take one example, in a rich account of how garment workers experienced the pandemic in Cambodia, Brickell et al. (2022) revealed the social knock-on effects of restrictions as workers received reduced wages which led to them eating less, struggling to pay back debt, and becoming increasingly worn out.

There has been a particular focus on care and mutual support. This ranges from work on 'infrastructures of care' in Peru and South Africa (Desmaison et al., 2022; Odendaal, 2021) or university-led initiatives to organise care and support (Fullilove et al., 2022), to work on the 'social robotics' of the pandemic, including how robots acted as 'caring subjects' (Sumartojo & Lugli, 2022), or the role of therapeutic landscapes and differential access to them (Doughty et al., 2022). Mould et al. (2022) have examined different expressions of mutual aid (e.g., charity, contributory and radical groups). In work with women in the favelas of Maré, Rio de Janeiro, McIlwaine et al. (2022) explored how mutual care and activism supported 'emotional-political communities' in response to violence (and see Sultana, 2021). Others have explored different ways in which the pandemic might lead to new possibilities to develop the oft-stated ambition to 'Build Back Better' (Pelling et al., 2022). Our work extends this research by focusing on how care unfolded as a politics of recognition and support, but also as a process of improvisation. We consider too how care operates not just between people, but as care for the atmosphere, albeit in ways that are not always progressive (see Lin, 2022a).

In addition to these three key themes, there has been a range of research across a set of other areas, including the economic and political geographies of the pandemic in the city. For example, there is the question of how the economic geographies of the city and urbanisation might be changing in light of the pandemic. This includes the potential longer-term impacts of working from home and online trade and retail on city centre economies and housing markets. For example, Florida et al. (2021) argue that while the pandemic is unlikely to shift macroeconomic urban geographies, there could be significant changes nonetheless. This includes, for instance, altered geographies of housing and labour, lingering apprehensions of crowds, and a new emphasis on planning, architecture and design to invest in public health. Key here is the extent to which there may be changes in the interrelations between decentralising and recentralising logics of urban change. There has been research too on the impact of the pandemic on care economies in the city, which are so often dependent on migrant labour (Banta & Pratt, 2022; Schilliger et al., 2022). There is also work on the lasting impact of political controls and restrictions, in which seemingly temporary emergency measures become permanent shifts in liberal democracies (e.g., Kipfer & Mohamud, 2021). These too are themes we connect to in the discussions to follow.

Our contribution to this larger body of work is threefold. First, we focus attention on the impacts of the pandemic on how cities are *governed*, on how urban *geographies* are managed and lived, and with how *care* emerged as a vital urban resource. We contribute to research and debates on governing the pandemic by exploring governance experimentalism, the growing importance of digital platforms in urban management, the reconfiguration of urban densities, and the deepening grip of a technosolutionism. We look at how pandemic geographies emerged and reconfigured social relations, including forms of dwelling, reconcentration and crowding, all of which are rooted in pre-pandemic inequalities that were then intensified. And we examine how care was shaped through activist and community groups, as well as through practices of improvisation and atmospheric relations. Running throughout is a concern with what is accelerating or decelerating.

Second, we look to apprehend both short-term and possible longer-term impacts. In relation to the latter, we remain in a moment of speculation. What is clear, though, is that the pandemic has rapidly accelerated a range of changes in urban governance, commercial practice, logistics, and technological experimentation which cumulatively are having and will have significant impacts on urban form, economies and social conditions. Notably the pandemic posed an immediate threat to society, in contrast to the 'slow emergency' of climate change (Anderson et al., 2019), prompting rapid policy responses, sometimes involving huge levels of state support for citizens and business not seen since the global financial crisis. At the same time, our contribution shows that historical patterns are powerful, enduring and embedded, whether in the exploitation of migrant labour, the lack of state support for marginal groups, or the inequalities in housing and infrastructure provision. Even a pandemic, it seems, has only limited impact on these material conditions, although it has generated a new urgency in the need to address them. Indeed, the greatest change may have been at the level of discourse, as media, activists, policymakers and planners consider new ways of looking at old challenges, or finding new ideas for catalysing agendas that have failed to get going in the past. We see this, for instance, in a renewed commitment to green and open space, enhanced of course by the climate agenda, even if those developments are often co-opted by powerful private urban development actors on market frontiers. We see this too in a new emphasis on health spending and social care across national and urban polities, which may lead to enhanced welfare in poorer areas.

Finally, third, our hope is that the terms put to work here—acceleration/deceleration, platforming, density, technosolutionism, dwelling, crowds, respatialisation, reconcentration, care, improvisation and atmosphere—offer a vocabulary for describing and understanding some of the key contours of the emergent post-pandemic city. We have emphasised the term lexicon, rather than say glossary or grammar, because we are, as a collective, questioning the very terms we are putting to work here, in the sense of asking how the pandemic might have caused us to rethink their operations, value and potentials in the short and longer term. The lexicon is not exhaustive nor is it final; instead we offer it here as a snapshot, a provisional examination of the post-pandemic city in flux, unsettled and, given that we write in the context of the deepening impacts of climate change, the invasion of Ukraine, economic destabilisation, and growing inequalities, one certain to change significantly in the months and years to come.

2 | GOVERNING THE PANDEMIC

2.1 | Governance

Urban Studies and Geography have long engaged with the urban governance of infectious diseases, addressing its shifting (bio)politics, spatialities, practices and constituent actants (Fidler, 2003; Gandy, 2005, 2006; Harrison, 2020; Keil & Ali, 2007). As this work revealed to be the case with diseases such as typhoid, smallpox, HIV/AIDS and SARS, COVID's demands on urban governance—around public health management, urban public space, public service and welfare support needs, and economic recovery—have also resulted in accelerated reconfigurations of urban governance norms, practices and actants. The unfolding of governance reconfiguration in any given context are inevitably shaped by socio-political, epidemiological, temporal and geographical conditions and relations. In global North contexts, two conditions became evident. First, COVID's demands have deepened existing iterations of an 'imperative to innovate' urban governance to address insistent problematisations of govern*ments* as lacking the capabilities and agility to tackle complex urban challenges (McGuirk et al., 2022).

Second, these demands have also revealed and revived the fundamental importance of state capacity to urban functioning, unleashing generational uplift in state-led urban intervention as well as investment in urban public space, public welfare and public health. COVID's 'state of exception' leveraged a rapid loosening of institutional constraints and an expanded mandate for new socio-political arrangements and experimentation in urban governance. The emergent results involve proliferating repertoires of urban governance actors, practices, dispositions and agenda, that both involve and exist in parallel to 'the state': the state, in other words, is both amplified and absent in COVID-inflected urban governance formations in the global North. These repertoires point to COVID's acceleration of the distribution of governance capacity across a diverse ecosystem of actants and open out its politics, parameters and practices as COVID-aligned governance innovation is shaped by differing logics ranging from bio-security, surveillance, competitiveness and profitability, through to welfare, care, cooperation and mutuality. Three accelerated shifts with configurational implications for urban politics and governance stand out.

First is the intensified involvement of private sector-led networks and philanthropies. While the role of such actors in governance is well established and widely recognised, especially in neoliberalised urban and national contexts, their attentions and energies have pivoted toward COVID and shaping recovery pathways (Fuentenebro, 2020). These organisations' involvement generates governance capacity and resources and, equally, creates strategic opportunities for their enmeshing in emergent political and economic agendas at a key inflection point in a COVID-responsive reset of urban governance roles and practices. One outcome is the deeper embedding of new logics, such as those of 'digitally enabled and data-driven' urban governance, in the COVID recovery agenda. Another is the potential for increased city government resource dependency on such organisations and the emergence of a form of philanthro-policymaking (Rogers, 2011; Sparke & Levy, 2022), as solution sets offered by such organisations are more firmly embedded in city governance.

Second is the diversification of governance agenda associated with the expansion of civic 'pandemic solidarity' initiatives based on mutual aid and reciprocity (McGuirk, Dowling, & Chatterjee, 2021; McGuirk, Dowling, Maalsen, & Baker, 2021). Many of these initiatives have addressed market and formal governance failures in supporting communities and localities in need and drawn attention to critical absences of the state geographically and socially. Long recognised in cities of the global South, they have surfaced in global North urban contexts too the functioning of people-as-infrastructure and urban dwellers as interdependent: ideas in tension with the individuating impulse behind states' adoption of data-driven COVID management techniques (Simone, 2021). But other initiatives have worked collaboratively with governments, incorporating citizen knowledge, skills and capacities into state-led governance.

Third is the further institutionalisation of experimental governance induced by COVID conditions. The emergency-driven suspension of conventional state bureaucratic and policymaking processes enhanced the permissiveness for institutional change, innovation and experimentation around urban planning, mobility, human service delivery and, perhaps especially, data-driven and tech-driven urban management. A lexicon conventionally associated with private-sector tech innovation and experimentation—agility, trials and pilots, fast demos, and prototyping—has infused this, alongside an 'orientation to action'. Though well established pre-COVID, the acceleration of experimental orientations to urban governance raises important questions about how states are positioned in newly emergent relations with corporations, philanthropies and communities, as well as about how state responsibilities for 'public good' outcomes can be sustained through the potentially depoliticising effect of experimentation's 'what works' ethos.

COVID-related amplifications and absences of states and related accelerations in the distributed nature of governance capacity have longer-term implications for the emergent means and ends of urban governance. In one sense, this amplifies existing trends. The openness and permissiveness invoked by pandemic emergency responses are likely both to further embed existing non-state actors and legitimate a widening cast of actors that are deemed authoritative in ideating and enacting governance: from global philanthropies and transnational urban networks, to universities, not-for-profits and community-based collectives. Equally the new collaborations and relationships built between diverse governance actors and across geographies are likely to deepen institutional connection between cities, opening new opportunities for diversified policy mobilities and the expansion of experimental governance practices.

Key questions here are how to take advantage of private-sector, philanthropic and civic governance capacity gains while maintaining critical evaluation of, first, the agenda, norms and practices their involvement instils in urban governance; and second, the spatial and social differentiations that inhere across the attentions and agenda of non-state actors. For example, as philanthropies gain deepening traction in urban governance, critical attention will be needed to how their approaches to addressing urban inequalities and exclusions are entangled with logics of data-driven governance (with related surveillance capabilities) and infused with logics of marketisation and commodification, potentially pre-filtering the solution sets and governance logics put into play in individual cities (Fuentenebro & Acuto, 2021). In parallel, COVID has palpably shifted the dial on expectations that wider citizen movements—such as those promoting urban commoning, participatory governance, community development and progressive urban social change—be given wider legitimacy as 'co-creators'of local governance, not least because of community-based mobilisations that addressed critical gaps in state service and support provision through the pandemic. Whether this transforms the scope of conceivable urban change and ensures a lasting infusion of wider sets of progressive values, priorities and aspirations (such as social inclusion, care and cooperation, and the expansion of public value) in urban governance remains to be seen.

In another sense, COVID's implications for governance take us beyond existing trends to suggest a possible reset in terms of renewed reliance on interventionist state capacity in city governance. Certainly some reinvigoration of the capacities of urban governments has emerged from COVID's impacts, even as governance capacity beyond the state has been accelerated. Extant market and formal governance failures in supporting urban communities and localities were thrown into relief through COVID, as was the importance of universal urban public services and infrastructures to the public good of the city: from green space and public amenities, to transit systems and health infrastructure. Temporarily as least, this has mobilised demand and shaped a disposition behind a resurgence in public capacities to provide and maintain critical public, collective urban infrastructures and for the prioritisation of public interests in city governments' mediation of urban contestations and accountabilities.

Whether this consolidates into a longer-termed urban governance reset will depend on the strength of the polity's appetite for more interventionalist government. Equally it depends on ensuring amplified state capacities are attuned to public purposes, notwithstanding entrenched dependencies on private sector and philanthropic resources (and related valuing of certain expertise and policy actors over others) in the provision and operational logics of public services and infrastructures. Urban municipalities' recent willingness to engage with socially progressive governance means and ends as they address complex contemporary urban challenges suggests cause for guarded optimism (Thompson, 2019).

2.2 | Platforming

COVID-19, with its unprecedented disruption to urban transport systems around the world, at times brought the vital circulation of people and goods that cities depend upon to a grinding halt. In responding to the pandemic, processes of experimenting with digital mobility platforms were fundamental to facilitating urban mobility circulations. In this context, platforming refers to the process by which digital platforms and urban contexts are mutually reconstituted and the multiple, accelerated and decelerated urban circulations that this produces in the search for biosecure urban mobility under COVID-19 conditions (Lockhart et al., 2021).

Urban platforms are shape-shifting in their constitution (Hodson et al., 2021). They are simultaneously an urban service, a form of sociotechnical organisation, and generators of urban data. This threefold focus gives us the conceptual basis for analysis of how, under COVID-19 conditions, urban platforms are simultaneously being reconstituted and reconfiguring urban mobility circulations, by remaking their relationships with existing urban infrastructural and governing inheritances, in processes that are underpinned by experimentation with and some relaxation of legislative and governance arrangements for data sharing. Urban platforms aim to grow through attributing new value to existing assets and resources that the platform company/organisation often does not own, where network effects are possible especially in contexts of concentrated urban activity. Social distancing and lockdowns challenge the generation of network effects. Experimentation with urban platforms under COVID-19 conditions has produced three generic kinds of response to this tension.

First, urban platforms are mobilised to mitigate COVID-19's disruption to and deceleration of urban mobility circulations. Prior to COVID-19, both privately and publicly owned and controlled mobility platforms, including ride-hailing, bike-sharing and e-scooter platforms, concentrated their activities on urban cores, aiming to intervene in and reconfigure dense urban mobility circulations of people, goods and services and where platform services and business models relied on thick pre-existing transport infrastructural configurations. As primarily an urban phenomenon, mitigation responses to COVID-19 saw digital mobility platforms incorporate new cleaning, disinfection and ventilation protocols, the use of 'contactless' payment, ticketing and delivery, as well as facemasks and protective screens to minimise transmission and mitigate COVID-19's impact on existing services. There is also the extended use of digital platforms to manage and control flows of passengers and vehicles across mass transport networks in order to enable social distancing and to optimise service provision under new operational constraints.

Second, to adapt to the urban mobility challenges presented by COVID-19, experimentation with platform infrastructures has sought to accelerate urban mobility flows. Adaptation responses are based on renewed investment and growth in urban micro-mobility and other vehicle rental platforms that are positioned as offering individualised, 'COVID-safe' alternatives to more risky public transport and taxi services. There is also the use of digital platforms to connect and establish new and bespoke mobility services by redeploying existing vehicles and infrastructure for the 'biosecure' circulation of people and things for particular purposes. Alongside these responses, there is a platform-enabled reduction in urban travel via a massive reversal in—or inversion of—flows of work, shopping and entertainment to the home rather than vice versa through the rapid expansions of remote working, home entertainment, e-commerce and delivery platforms, alongside some sharp increases in housing prices in rural and coastal areas (e.g., Dillon, 2021).

Third, there are embryonic efforts to rebundle and integrate different biosecurity measures and mobility services into urban transport systems through single platforms, promoted as building flexibility and resilience to the new demands of public health and other shocks to urban mobility. However, while mitigating and adapting to potential vulnerabilities these responses variably accelerate and decelerate urban mobility circulations. But, focusing on these responses together allows us to recognise that platforming is a locus of struggle that resonates with wider debates on the future of urban governance and the politics of urban space (McGuirk, Dowling, & Chatterjee, 2021; McGuirk, Dowling, Maalsen, & Baker, 2021). In particular, as a response to the threat of disease, these platforming processes are likely to inform a wider politics of the uneven building of new biosecure forms of spatial organisation and mobility circulations (Collier & Lakoff, 2015), where the configuration and operation of platforms are mobilised as technologies that allow some things and people to circulate but not others and as a precautionary approach to protecting particular spaces and populations from infectious disease (Hinchliffe & Ward, 2014). Platforming strategies may be mobilised to support the pre-COVID-19 status quo in making urban agglomeration navigable (Florida et al., 2021) via biosecure spaces of urban mobility circulation. The issue is how these responses are organised in sociospatial configurations. Platforming may be mobilised to build new forms of exclusive biosecure decentralised urban spaces of urban mobility. Alternatively, it may be that platforming is mobilised in the search for an inclusive and universal form of biosecure urban mobility environments.

2.3 | Density

The COVID-19 pandemic turned on its head a fundamental feature of cities and urban life: density. While lockdowns entailed a vast process of temporary de-densification of urban space, especially of city centres, in some especially poorer urban areas physical isolation at home or in the neighbourhood was next to impossible (Durizzo et al., 2021; Sengupta & Jha, 2020). Across the pandemic, national and city governments adopted radically different approaches to managing densities, rolling out a host of changing restrictions and spatial arrangements to minimise contact between people in transit systems, at work, in the neighbourhood, and in public spaces (Joiner et al., 2022).

While the urban middle classes were often able to isolate at home, or even seek out new homes in peripheral or rural retreats, the pandemic focused attention too on those most vulnerable to infection, especially poorer and ethnic minority groups. This led, for a time, to intensified public and political debate around the links between density and inequalities in housing and labour, a debate that has unfolded across the urban world (Hamidi et al., 2020; Pitter, 2020). Following an era of pro-density planning, policy and thinking (Perez, 2020), there was for a while a renewed focus on the debate about the merits of dense urban living.

Across the pandemic, that debate shifted from initial and largely erroneous claims that density was to blame for the spread of the virus—an imaginary of density-as-pathology—to a more nuanced geographical understanding of the urban dimensions of the crisis, focused on certain spatial conditions, domestic 'overcrowding', poverty, and race and ethnicity (Ali et al., 2023; Boterman, 2020; McFarlane, 2022). At the same time, the focus on density of different kinds—including in the home ('overcrowding'), in the neighbourhood, in transit, and in public space—presented an opportunity for critical urbanists to develop a new politics of density (Pitter, 2020). That opportunity remains open.

A key question that emerged here was: how might we revalue density by reimagining and politicising it? While we are familiar with the ways in which urban space and living is spun for financial value, cities also generate all kinds of other value, from the politics of contesting state spending decisions, or socioeconomic experiments such as city participatory budgeting, or the wider postcapitalist economy of self-provisioning, gifting, caring, to the use of digital platforms that crowdfund initiatives. Value signals a larger politics that attaches particular kinds of worth to density of different sorts. This goes to the heart of living together in the city, and whether the shock and profound inequalities of the pandemic impact on density—as both idea and material configuration—might have left us with a legacy from which to progressively support and enable urban concentrations.

By starkly revealing and catalysing the inequalities of cities, COVID-19 generated a public debate about the pros and cons of dense urban living in the round, and presents a pivotal moment through which to shape—and repopulate—the larger question of what density offers the city, from health and sociality to economy and environment (Boterman, 2020; Hamidi et al., 2020; McFarlane, 2021b; Pitter, 2020). One question will be whether that debate will alter some of the familiar tensions around proposed densification, including NIMBYism and slow growth opponents or those rightly concerned about how often densification becomes exclusionary real estate development (Perez, 2020). These questions fundamentally turn on a politics of value: economic value, sure, but social and moral value too.

The pandemic has enabled the possibility of reimagining and politicising density. While that opening remains in many parts of the urban world as the experience of the pandemic remains firmly embedded in urban lives and governance, it is rapidly receding. Realising progressive change demands generating new forms of knowledge, planning and political economic arrangements that can shift the composition of densities. A huge task, for sure, and one that demands new alliances that foreground different ways of understanding the value of density in the city. The embedded nature of vested interests—from developers and real estate actors to complicit municipalities—and structural momentum, means that even in the face of a global pandemic, it is all too easy to return to business-as-usual (Goulding et al., 2022). For critical urbanists, foregrounding a new politic of value rooted in alternative imaginaries, knowledges and politics of density is a vital part of the challenge ahead.

2.4 | Technological solutionism

The urban technical landscape has been rapidly accelerated and extended, and has penetrated even more domains of everyday life with claims of 'technological solutionism' in its potential to effectively govern and enable life pandemics. Reflecting on these intensifications and experiments there is a set of technically mediated responses that have been widely practiced by states, municipalities, civil society and commercial providers that extend the current scope of our understanding of urban infrastructures (Chen et al., 2020). Technological solutionism has spawned the development of this new language of CovTec, PandemicTech and RecoverTech. The question is how does this landscape reshape how we might think of urban technological change. There are three important implications.

First, what is interesting about these sorts of forms of Covtech is the range of functional technologies that have been repurposed. It is partly about the repurposing of capacities that have been developed through smart cities, the use of control rooms, the application of platforms, technologies, apps and social media (Datta et al., 2021). Yet Covtech is not solely about the digital and computational. It is also about fourth generation industrial systems, urban robotics and automation, the reuse of drones and aerial systems for disinfection, the use of delivery robots in quarantined areas and hospitals, and experiments with automated vehicles. Key also appears to be the use of urban artificial intelligence, facial recognition and autonomous systems to manage both services and populations more generally. This is potentially significant in enabling and constraining access to public services, infrastructures and urban movement. Consequently, we need to try to think beyond the digital and computational to include the kinetic and potentially novel forms of automated decision making.

Second, the existing landscape of urban technology powerfully shapes the nature of the responses in different urban areas because there is a sense that this is all new and innovative. Many responses lever off existing smart and robotic landscapes and priorities. So, we have to understand the dynamics and potential lock-in of the prior technological trajectories, especially the structure of socioeconomic inequalities in different urban contexts in the ways in which these responses have either been sensitised, or not, to disparities (Das & Zhang, 2021; Woo, 2020). Furthermore, for robots to work effectively they require carefully structured predictable spaces that resonate with the live complexities of real urban spaces (Sumartojo & Lugli, 2022).There are quite different governance capacities amongst corporate, state and civil societies in their ability to harness these systems. This in turn leads to interesting questions about the degree to which regulation might have been temporarily liberalised for forms of improvisation and emergency responses.

The third issue is the extent to which these forms of experimentation in CovTech have generated social learning about the potential malleability (and obduracy) of novel technological innovations and capacities (Lin, 2022a, 2022b). While the use of delivery robots in urban China was rapidly accelerated, these were restricted to relatively simple and safe linear routes (Chen et al., 2020). In contrast, an already working robotic delivery system in Milton Keynes was rapidly scaled up to increase capacity by 300% (Valdez Juarez et al., 2021). This complimented the existing human delivery network which was then able to focus on vulnerable populations that could not use robots. Critically there is need to understand what practices may become embedded and configurational and which were symbolic or only temporary. Furthermore, the potential for robots to work with humans in new hybrid formation that may enhance urban resilience need to be further explored.

3 | PANDEMIC GEOGRAPHIES

3.1 | Dwelling

Early in the COVID-19 pandemic, political leaders emphasised the need for citywide lockdowns, social distancing and quarantine in order to slow the pace of infection and reduce rates of hospitalisation and death. This restructuring of home into a space apart from the virus rested on middle class, suburban values of single-family residence with sufficient space to work remotely while maintaining our daily routines, online or off. For those living in crowded urban conditions and typically working face to face in industries, home was not a break from the fear of COVID-19, it was another place of infection.

The situation in Chelsea, Massachusetts reflects this (Barry, 2020; Boston Globe Editorial Board, 2020; Robb, 2020). Chelsea is a majority Latinx, immigrant enclave built around an older industrial waterfront close to both downtown Boston and the Boston-Logan International Airport, and the location of many major logistics distribution centres and warehouses for the region. For decades, in addition to its officially recognised population, it has been a sanctuary for undocumented migrants, a first stop in the journey from central America or points south. Since long before the start of the pandemic, Chelsea's city government and service sectors struggled with providing resources to all residents, primarily due to undocumented individuals' concern that requesting assistance would require exposing their unofficial immigration status. This concentration of undocumented people has led to ongoing exploitation of city residents who typically work low paying jobs in essential economic sectors, but also through these residents dwelling in rented rooms in overcrowded, unpermitted, subdivided housing reminiscent of nineteenth century slum conditions.

For instance, 100-plus year-old apartment buildings designed for one family per unit have been remodelled by landlords into holding one family per room, with everyone sharing one bathroom and one kitchen. When 12 people are living in one apartment the ability of those exposed to or infected with COVID-19 to isolate is effectively zero (Boston Globe Editorial Board, 2020). This dismal situation was amplified by undocumented residents' fear that seeking medical care would lead to arrest and deportation. The inability to isolate due to domestic overcrowding accelerated the spread of COVID-19. Chelsea saw some of the highest rates of COVID-19 infection and death in the United States. As of July 2021, there were 8800 diagnosed cases of COVID-19 and 229 deaths—at least 20% of Chelsea's population was infected, which, given what is known about asymptomatic spread, the difficulty of getting tested especially early on, the concern that testing positive would mean staying away from work and then losing income or getting kicked out of a shared apartment for inability to pay rent, meant that it is likely that a higher percentage of residents were infected (Chelsea, 2021).

Reflecting on the wider issues these experience raise is the way that the pandemic made domestic overcrowding legible. It may not be visible on the street, or quantifiable in official population data, but dwelling with COVID-19 transformed what went on behind closed doors into a matter of public concern. For critical urbanists' ongoing consideration of COVID-19's impact, this pushes us to orient our analysis into domestic spaces and the informal and ungoverned living situations like those detailed above. As cities grow even more unaffordable for the working class, marginalised, peripheral or fragmented urban areas are likely to continue densifying into conditions of domestic overcrowding, with the attendant public health risks. While the exterior form of such residential neighbourhoods has not changed significantly, the interior use and function has. Because these dwellings are behind closed doors in established neighbourhoods of industrial-era cities of the global North, they are inherently difficult to study, doubly so given they are at risk, often undocumented residents, but regardless, recognising a post-pandemic (or, more likely endemic) right to the city necessitates bringing these residents' living conditions into the proverbial conversation.

3.2 | The crowd

The crowd is a particular instantiation of density that can take all kinds of forms, from the commuting crowd to the crowd at the festival, sports event or in protest. It has been seen to be more likely to possess qualities of improvisation, elasticity, intensity and disruption. In this sense, it has been seen as a kind of signature of the liberal city (Sudjic, 2016).

The COVID-19 pandemic radically disrupted the management and experience of being together in the city. The presence of crowds, so vital to the history of cities and urban living, was radically disrupted, reconstituted and reframed. No longer was the crowded city café, bar, commute or public square the stuff of urban life, variously bemoaned, dreaded, celebrated and negotiated. With the pandemic, the introduction of lockdowns and the proliferation of new architectures and behaviours of public health, massing together was not only very often illegal but a source of intense social anxiety and debate. New perceptions of urban crowding have been generated, with concerns ranging from daily apprehensions, tensions and longings through to worries over ‘COVID-19 syndrome’ or ‘enochlophobia’ (fear of crowds).

In his history of the crowd, Christian Borch (2012) examines how ‘crowd semantics’—the concepts or vocabulary in which society describes crowds—change over time, including how crowds come to be understood, differently interpreted, argued over, managed and controlled. In short, with how crowds are *problematised*, and how that varies over time. Historically, the crowd has been seen, especially by the political Right, as a threat to the social and political order, an embodiment of larger social dangers (see also McClelland, 1989; and for a more affirmative story of the crowd, see Canetti [1961] *Crowds and Power*). The pandemic is a new problematisation of the crowd, or, more accurately, a multiple and changing set of problematisations, some more dominant than others.

While those problematisations are largely a product of the pandemic, they are also shaped through histories of social power, inequality and perception of different urban groups and forms of crowding (Clarke & Barnett, 2022; Joiner et al., 2022). For city governments, the key challenge was to ‘manage out’ crowds, to create the architectures and regulations that would prevent crowds and crowding of different sorts from forming, and with varying levels of success. In this sense, the crowd went to the heart of the very idea of the liberal city, and became a key problem space in efforts to balance control and freedom in urban living.

At the same time, as the pandemic marched on, it became increasingly clear to both public health officials and larger urban publics that some forms of crowding were more of a risk to health than others. Attention focused, for instance, on vulnerable groups in neighbourhoods—often poorer—in which patterns of work, family and sociality made forms of crowding near inevitable. Here, attention to so-called ‘overcrowded’ homes or neighbourhoods became subject to debate and all kinds of intervention, ranging from disciplinary policing and fines to more welfarist efforts to provide financial and other support to those needing to isolate or tied to exploitative labour and living conditions.

As time wore on and ‘compliance’ wore thin, media reports across the urban world routinely performed bouts of moral outrage about urban crowds. Crowds of younger people in all kinds of places—streets, squares, parks, urban beaches, bars and clubs—were often portrayed as ‘reckless’ or ‘selfish’, with little regard for the impact the long months of regulations might have had on the lives of those splashed over mainstream and social media. Yet, any student of urban history knows that cities always bite back, that they are forever rupturing regulatory codes, improvising ways of being together, finding spaces and times to generate something of what so often pulls people to cities in the first place.

Many of the regulations precluding crowding of different kinds—social, festival, travel, protest, and so on—are disappearing, but others will stick around (the UK's controversial Police, Crime and Sentencing Bill, which places strict limits on the right to protest, is one example) (Kipfer & Mohamud, 2021). At the same time, new forms of working from home, especially for the middle classes, and changing patterns of travel around, in and out of cities may change the possibilities for crowding. The crowd is a beating heart of urban life, for good or ill, and its specific manifestations and possibilities are now at stake in ways they have not been since at least the early nineteenth century. The task for critical urbanists must surely involve, at the least, understanding how the crowd is being reproblematised, and generating new conversations that connect it to social justice, and—however loaded the term—'freedom' in the city.

3.3 | Respatialisation

Urban geographies of work, retail, services and sociality are always restless, never settled. Yet the impacts of the pandemic rewrote these geographies and the multiple circulations of people and objects they entail at an accelerated pace. Pandemic restrictions both stilled and stretched urban activities and related circulations, allowing reconfigured urban practices, functions and spatialities to emerge in ways that have potentially long-term implications for the respatialisation of key urban domains and intensities.

The respatialisation of cities' central business districts (CBDs) and CBD office economies offers a resonant illustration of COVID's spatial reconfiguration of urban life in line with logics of dispersion and de-densification. With lockdown, office workplaces closed, office support economies went into freefall, and office occupancy rates dipped (as low as 4% in Sydney, for example) as the work of the office economy dispersed, with its workers, to the suburbs (Maginn & Mortimer, 2020). After decades where CBD agglomerations persisted despite IT-driven claims of its inevitable dispersion, the destabilisation of the CBD value proposition was rapidly accelerated. This has untethered substantive reimagination and reregulation aimed to reassemble CBD geographies and economies and, of course, to recreate a value proposition for office towers as an investment asset class.

Even as office occupancy rates have unevenly recovered post lockdown and the lifeblood of the office support economy has been reinvigorated, the CBD is likely to be permanently reconfigured, though reassembly and reconstitution are more likely than decentralisation in the longer term. Surveys of CBD-based workers around the world are revealing workers' expressed preference for long-term hybrid work (McKinsey, 2021). The property and real estate industries, city governments reliant on commercial property rates revenue, and global consulting firms are actively devising hybrid workplace strategies aimed at reconstituting CBD space, work and economy (Committee for Sydney and ARUP, 2020), while tech and software firms are flooding the market with apps to enable the dispersed yet collaborative performance of work and its monitoring and management.

Three accelerated trajectories of CBD respatialisation are discernible. First is the geography of office work itself. CBD office work has conventionally been distributed beyond the office workplace, across the 'soft spaces' of the CBD: hotel foyers, coffee shops, and so on. However, in COVID, more radically distributed and mobile configurations quickly emerged that span home, neighbourhood and coworking spaces across the urban. Work processes were rapidly redesigned, reregulated and respatialised with individualised 'deep' work and routine work to be done from workers' homes, while collaborative work is coordinated to take place intermittently at reimagined primary city offices. Rapid institutional and technical adjustments are being made to reregulate the performance of knowledge work via changed measures of productivity, invasive digital forms of worker surveillance and corporate rethinking of pay agreements, performance measurement, Health & Safety, cyber security and IP, with potentially profound, long-term social as well as spatial implications in these accelerations (PWC, 2021).

The second relates to reimagining the function and design of CBD office space. Emergent post-pandemic settlements have witnessed corporate employers, property interests, urban consultants and city authorities collaborating to reinvent the CBD as a 'central experience district'. Attempts to reconfigure office towers to enable stimulating experiences to entice workers back are emerging, alongside rapid-fire initiatives to recreate the spatial intensities of shared CBD space and the face-to-face 'buzz' said to underpin value creation through knowledge work. These efforts are accelerating CBD reinvention, reregulation and reconstitution of what has become 'excess' office space. These changes are triggering potentially configurational shifts insofar as they underwrite the emergence of new CBD ecosystems as corporate tenants downsize their footprint and contemplate 'flexible real-estate' configurations, adaptable across office, cultural and residential uses (Clark, 2020).

A third accelerated trajectory is the wider respatialisation of city centre space. Rapid-fire investments in hard and soft infrastructures and fast-tracked regulatory changes are being rolled out to actively constitute new CBD geographies. 'Fast policy' shifts around land use and other regulations are driving a repurposing of city centre space as an enabling infrastructure for a reconstituted CBD economy: expanded cycling networks, pedestrianised public space, expanded outdoor dining, and a reappropriation of cultural activities. This suggests a reconstitution of city centre space around more shared (though not necessarily socially inclusive) infrastructures.

These respatialisations do challenge the hyperconcentrating pull of global North CBDs as nodes of knowledge work, wealth generation and corporate presence. They also unevenly seed the longer-term dispersal of work, retail and residential patterns, potentially altering the structure and morphology of cities and interconnections with their suburbs and with proximate regional cities (Clark, 2020). Yet CBD dynamics and functional concentrations are more likely to churn than be transformed in an absolute sense. Hybrid and flexible, multilocational work rather than fully remote work is emerging as the preference of corporations and CBD office workers alike and, of course, only around 35% of workers have jobs amenable to working from home in any case (Productivity Commission, 2021). Some relocation of firms, households and real estate demand is evident (Bloom & Ramani, 2021). But city centres are likely to remain 'potent powerhouses of the spatial concentration of the means of production and infrastructure' (Rogerson & Giddings, 2021), continuing to benefit from the cultural and agglomeration economies of proximity and concentration, even as their industry configuration may adjust as the digitally enabled post-pandemic dynamics of settlement, work, investment and mobility are reassembled.

Pandemic-accelerated respatialisations—illustrated here in relation to CBD office work—point to the need to ask more broadly what is disrupted and what is locked in via associated reimaginings and reregulation of urban functions and their unevenly shifting spatialities: what is reimagined as rightly belonging amongst the functions and economy of given spaces; and what social, cultural and political tensions are introduced by reconstituting the value proposition of particular spaces.

3.4 | Reconcentration

Extended urbanisation has produced forms of human and non-human intersection generative of viral transmissions (Ali et al., 2023). The logic of quarantine specifically aims to limit the circulation of populations. If policies and available apparatuses of containment face marked limitations in their long-term capacity to sufficiently control the spread of new infectious disease, there will be a need to double-down on effective forms of centration. While stereotypical renditions would seem to equate high density with the likelihood of viral spread, the need for effective contact tracing, health service delivery, monitoring of populations, and the generation of high-impact economic innovation would suggest the importance of *reconcentration*. While some observers have indicated that high-density urban living will likely be a thing of the past, perhaps more salient are the possibilities for the elaboration of 'premium' densities—the capacity of intense centration afforded to those who demonstrate the appropriate eligibility as registered through antibody testing, acclimation, adherence to lifestyles associated with proper health, and with disposable incomes sufficient to pay for premium urban and health services.

If prospective futures link the viability of high-density urban core residence and work to an attenuated presence of 'dangerous classes', with their reliance upon intensive relationalities as a basis for livelihood and social reproduction, then not only does the urban core become increasingly peripheral to the 'urban majority', but that majority must increasingly operate at peripheries that will avail much less opportunities for them to repiece together the kinds of economic relations that have appeared endemic to their survival. What makes the urban majority dangerous is not so much their reliance upon thick relations of transaction and support that would make them seedbeds for viral outbreaks, but rather their fundamental heterogeneity.

In an urban world where increased value is placed on the capacity to render different facets of the environment interoperable—to more precisely determine what those different facets have to do with each other in a series of various combinations of calculation—urban majorities as aggregate practices of inhabitation and livelihood largely are *inoperable* within such logics of numeracy. It is difficult in a complex economy of affordances to work out for sure just what are the proportions of cash, debt, gift, obligation, volunteer labour, ethnic solidarity, popular sentiment, clientelism, manipulation, brokerage, and so forth that make up the *popular economies* associated with the majority.

As viral loads, underlying conditions, intellectual aptitude, social resilience, prospective career trajectories, emotional intelligence, creditworthiness and genetic profiling make up the essential variables for determining eligibility to access particular kinds of employment, resources, information, and prospectively, locations of residence, the capacity to interrelate these variables into workable profiles in real time becomes ever more important. This is especially important if the possibilities for high-density urban core living are to be availed only to a premium class of actual and potential residents. Such is not new but rather an intensification of structural conditions that have been present in many urban areas all along.

For example, Kathryn Olivarios points out that for early nineteenth century New Orleans, the speculative, high-risk and volitional exposure to annual outbreaks of yellow fever revealed, amongst those who survived, a moral turpitude that made them eligible for participation in jobs and institutions that enabled them to accumulate capital—most particularly that of slaves. Surviving the epidemic for slaves legitimated their fixture as nothing more than labour, and they were often removed from 'hot zones' in order to maintain their value as capital. In an entrepôt economy that required large amounts of cheap labour, the seemingly endless availability of poor white immigrants made their survival rates insignificant as long as those who attained sufficient acclimation might remain as physically, socially and politically distant as possible.

In not dissimilar fashion, there will be significant strands of economic planning and politics that will now be oriented toward better managing the expendability of the majority through attempts to render it more homogeneous, to facilitate its emplacement within conditions that reduce its heterogeneity and internal peripheries. This, regardless of the indeed prescient opportunities to steer economic redevelopment around social reproduction issues, green climate, and a more judicious provision of urban services.

4 | PANDEMIC CARE

4.1 | Care

Caring has been pivotal to navigating the pandemic. In fact, the pandemic has been described as a crisis of care because it has accelerated the inequitable distribution of care activities within and across households and geographies. Care refers to a key survival strategy that weaves together the individual, social and political body, and therefore its understanding cannot be detached from structural inequity and racism (Neely & Lopez, 2022). Debates on the role of care in city-making during the pandemic mushroomed. For instance, the compilation of the Latin American perspectives on care and its impacts on public policy (Batthyány, 2020, 2021) or the cross-disciplinary and cross-regional collection of empirical, methodological and theoretical understandings on the nexus between care and the city (Gabauer et al., 2021). In the pages of this journal, feminist, queer and anti-racist geographers have contributed to framing current debates on care as well as extending care to its editorial work as a caretaking endeavour (Bailey et al., 2023).

The pandemic revealed the ambivalences around care and uncare embedded in the urban spaces, discourses and practices (Gabauer et al., 2021). While the measures of containment proclaimed school and workplace closures, stay-at-home orders and travel restrictions, the immobility of people became a sort of privilege for those who can afford 'working from home'. The pandemic has revealed as 'essential' not only the invisible precarious workers that sustain the maintenance and care that make cities operate, but also the gendered reproductive labour that sustains the collective responsibility of care (Ortiz & Boano, 2020). Care has been understood as the life-sustaining web steaming from feminist theories, yet the contradiction between care intended as emancipatory relational practice and as a gendered exploitative labour remains unresolved.

In the slow route to 'recovery', the acute need to strengthen infrastructures of care requires collectively redistributing care labour across social sectors. In Latin America, women dedicate three times the amount of time daily to unpaid care and domestic work compared with men, with the extra labour of caring for elders, children, or those who have fallen ill. This excessive burden of care for women in domestic and health work has exacerbated income inequalities and vulnerability to gender-based violence, despite being necessary activities for the protection of life. During the pandemic, the number of femicides increased to the extent that the phrase 'violence against women is the other pandemic' was widely adopted. The acceleration of material violence against women and non-binary people has fuelled powerful multifarious feminist mobilisation.

In southern cities, the de-acceleration of economic circuits weakened even more popular economies relying on people's circulation in the city. The economic impact of the pandemic hit differentially the ability to generate income between men and women, with a special impact on migrant workers. For Latin America, according to ECLAC, the pandemic has increased extreme poverty for 12.5% in the region. As a result of the wide impoverishment, the FAO estimates that four in 10 people in the region—267 million—experienced moderate or severe food insecurity in 2020, 60 million more than in 2019. In this context, informal settlement dwellers referred to the dilemma of risking their lives either by 'contagious or hunger'. The acceleration of food insecurity also triggered an amplification of care practices rooted in existing solidarity networks. The mapping of civil society responses to COVID-19 in popular neighbourhoods in Latin America found that the main infrastructures of care became the 'Ollas populares' or 'ollas comunes' mainly led by women (Duque Franco et al., 2020).

We need to bring to the public debate who are the caregivers of the city and the place-based social protection measures needed. In the case of the 'olla populares', the caregivers operate in makeshift community kitchens enabled by the solidarity networks that have been forged in the very process of community mobilisation for self-construction. More than 37% of the initiatives reported refer to the activation of networks for survival in the generation of food security by setting up community kitchens, common pots and gatherings for food distribution, highlighting the central role of women in care work. For example, only in the city of Cali (Colombia), over 243 community kitchens operated in 2021. Similarly, it was found that 34% of the initiatives focus on the activation of solidarity networks for prevention, where community media and the distribution of hygiene kits have been the central mechanism in the pedagogical campaigns on hygiene and public health. Therefore, territorial planning would require a renewed spatial imagination to conceive 'slum' upgrading programmes departing from community care practices and based on proximity, quality, diversity and universal accessibility to urban services.

Care underpins the territorial systems that support collective life in the face of extreme uncertainty. This acceleration of the circulation of care practices suggests thinking in terms of infrastructures of care as indispensable for survival, yet emergent, shifting and incomplete (Guma, 2020). The making of these infrastructures has prompted innovative responses from civil society and local governments alike. Some collectives have already proposed plans that show the paths to de-commodify housing with antidiscriminatory strategies that promote alternatives based on a solidarity economy, food sovereignty and low-carbon technologies (Ortiz, 2020). For instance, 'La Olla de Chile' is a voluntary citizen initiative that uses digital technology at the country level to verify and disseminate information about local groups and communities that are organising common pots, open kitchens and other forms of community feeding in the face of the social crisis resulting from the COVID-19 pandemic. This initiative also generated a decentralised strategy to direct donations and in-kind contributions to localised community kitchens, promoting solidarity across scales. Another interesting example is the local government of Bogota (Colombia), which has pioneered a 'system of care' at the district level. This system is a cross-institutional effort targeting strategic blocks in the most vulnerable territories to anchor care services. The system seeks to recognise care work and those who perform it, to reduce the distribution of caregiving work between men and women, and to reduce unpaid care work time for caregivers.

It is still too early to assess these types of initiatives, but it becomes apparent that care has become a new governance priority and has forged new cross-class solidarities. Although the sustenance of infrastructures of care has been framed as a survival strategy, they also encapsulate the kernels of an imagination of a different world. As seen in Latin America, this draws on the communitarian-popular tradition where politics is a shared task to sustain life also paired with an effervescence of intersectional and anti-colonial feminist activism in the region (Ortiz, 2020). These political movements are showing that providing care of people and the planet is only possible with the feminisation of politics in movements such as feminist municipalism. In the longer term, the acceleration of the (re)activation of infrastructures of care can be possible if they depart from the recognition of community territorial practices of care and communities' grounded knowledge.

4.2 | Improvisation

During the pandemic, improvisation often came to constitute the norm for many urban residents, especially those in peripheral urban contexts characterised by institutionalised sociospatial inequalities of urban residents, limitations on formal institutions of governance, disrepair of conventional infrastructure grid and services, and further heightened by pandemic restrictions on movement. The material experiences during the pandemic in African cities offer four examples that are especially illustrative. The first constitutes a kind of critical consciousness that emerged amongst residents in many African cities where residents derived solutions from within their communities. In cities like Kampala, these constituted drawing largely from cultural constructions and awareness of the disease seeking heterodox and local forms of knowledge to deal with the volatile infectious disease, developing their own epidemiological knowledge over time about infections (to compliment epidemiological advice from the experts), visiting seers or community and spiritual agents and herbs men within their neighbourhoods (in addition to the advice from experts), self-medicating as an option (sometimes becoming their own doctors), and using preventative remedies that speak to their own understanding of the disease.

In many African cities, situated rituals, practices and actions have offered local residents a repertoire of options to explore and experiment with in order to cope with the uncertainty of the pandemic times. In Nairobi, for instance, musical compositions and poetic performances by experienced and amateur artists played an integral role in constructing and sustaining popular meanings of the pandemic and enhancing compliance with the global protocols (Mulemi, 2021). Popular media platforms such as Facebook, WhatsApp and TikTok became sites where medical logics and cultural logics of care combined and moved to help residents navigate pandemic restrictions (Guma, 2022). Kailahun in Sierra Leone saw residents employ carefully choreographed funerals that allowed safe and respectful burial processes (Green, 2020) and that while rooted in everyday rituals and practices of livelihood and spirituality, played an integral role in reducing family risks of infection. The experience of the strong lethality of the Ebola disease in Kinshasa, Democratic Republic of the Congo, Freetown, Sierra Leone, and Monrovia, Liberia in 2014–2016 offered communities ways to cope with and tackle threats of the novel disease more generally without necessarily having to learn from scratch (see Ali et al., 2022; Wilkinson et al., 2020). In many cities, the fight against AIDS has accentuated the imperative of rather more cooperative medical policies in the fight against epidemics, as opposed to rather more regressive approaches (ibid.). These practices and actions, while drawing from prior experiences and rituals, allowed residents to counter imminent pandemic challenges introspectively, intentionally and sensitively.

The second example has to do with how residents facilitate and sustain collective, incremental and continuous efforts, networks and partnerships amidst vivid systemic inequalities and hegemonic political priorities that oppress the poor in many cities (see, e.g., Ali et al., 2022; Guma, 2022). In the face of uncertainty, often due to authoritarian actions of containment and lockdown during the pandemic, residents attempted to ‘beat the system’ at its own game, sometimes by attempting to exceed overdetermined infrastructural and governance stacks, by routing around them often through a kind of performance-as-practice, in really complex and unimaginable ways. This example highlights forms of manoeuvre where residents survive by applying cunning skill, subtle mastery, slickness and artfulness as a way to route around real or perceived restrictions.

For instance, in southern cities like Harare and Johannesburg, local residents showed much adaptive creativity and inventiveness in devising solutions, sometimes through acts of solidarity that played an integral role in fashioning urban residents through forms of sociality that provided hope, care and solutions in times of need (Guma, 2022). Residents improvise solidarities as a form of agency, collaboration or (living) otherwise, under imposed (and sometimes chosen) situations of pandemic encounter. Such improvised solidarities are sustained by practices of collective identity and cohesion beyond what the state, a church or a specific cultural association could offer, and make possible different kinds of practices and relations. It was very common during the pandemic to find different kinds of habitations where people forge new and provisional affiliations, friendships and collaborations through a type of mutuality and indifference to the essence of individuality (see, for example, Simone, 2015). Improvised solidarities are not simply infrastructural and material, but also ontological and humane.

The third example concerns the flexible use of disaggregated infrastructures, combining smart improvisation and creative calculation of risk. There were several cases, especially in eastern and western Africa where prototypical technological infrastructures were ascribed or made to take on certain other functions that were not intended by those who govern the infrastructures in question. A typical case here can be seen in how mobile phone and mobile-based innovations such as ‘mobile money’ provided necessary infrastructure and socioeconomic tools not just for balancing social obligations with economic cooperation amongst extended family networks, group-specific associations and social networks, but also for providing a cushion or buffer in extreme times of need during the pandemic restrictions (see Tonuchi, 2020). Mobile phones, and mobile money in particular, re-enacted communal and social networks, allowing people to connect and promote the values of community, collaboration and shared access to resources foregrounding their pandemic lives. Here, digital platforms and applications constituted a kind of hybrid of vernacular-modern technologies offering bricolage architecture and infrastructure in makeshift and organic urban contexts, and becoming mutually purposeful in their entanglement with the realities of the present.

A second typical case can be taken of bicycles and motorcycle taxis commonly found in Eastern and Western Africa that during the pandemic allowed residents to flexibly bypass risks and dangers of reductive state policies, and largely to circumvent restrictive lockdowns, and navigate the cities' fragmented districts. In this case, improvisation arose not only out of the uncertainty caused by rigid systems but also as an omnipresent and creative process that not only enables urban navigation but also helps residents to tap into different possibilities. Improvising thus entailed people becoming infrastructures (Simone, 2004), by so doing, emancipating themselves from uncertainties that make up city life. Residents improvised with the imperfect infrastructures available where the existing formal infrastructures were not adequate or sufficient. They improvised with local tools (such as water handcarts and the like) to offer much needed services to residents at a fee in situations where no proper formal systems existed. Residents improvised as a way to put to good use what is available at the moment.

The fourth and final example of improvisation is focused on the spatial–temporal practices of makeshift urbanism and improvisation that appears to have emerged during the pandemic. In particular, frugal technologies and micro-economies emerged, enabling access to inexpensive supplies and personal protective equipment and necessities at a time of little to no access to anything during lockdown. Here, what was mostly observable in many African cities were the small businesses, workshops and roadside tailors that produced makeshift sanitisers and popular facemasks out of local fabricated patched-colour clothing at scale; and informal down-town mechanics and repair whizzes that designed reasonably priced outdoor dispensing hand washing machines and sanitisers in different varieties. These examples were particularly prominent in larger capitals like Nairobi, Kampala, Dar es Salaam and Kinshasa, and illustrate how practices of improvisation often led to alternative modernities and solutions.

While improvisation may speak to the consequences of inadequate or absent urban infrastructure and planning, it also speaks to the local processes of creativity, robustness and resilience of the pandemic city within societies that seek to counter or complement universal processes. Improvisation is key for better understanding of how people build strategies from within in order to bring them in the purview and create translatable and scalable policies and actions for them in the post-pandemic world. In light of the infrastructural violence and calamities of the pandemic, improvisation becomes important for us to think about other processes, agendas and dimensions that constitute aspects of socio-material urban life: processes, agendas and aspects that are provisional, makeshift and imperfect, and an exercise of making do through which urban residents play crucial roles in making imperfect cities, communities and infrastructures work for them. Here thus, improvisation creates potential and possibilities through processes of reengineering, recalibrating, upgrading or repairing to better accommodate their real and situated needs and demands. It instigates new and radical sociotechnical paradigms for navigating (for ordinary residents) and planning (for the experts) the pandemic and post-pandemic city.

4.3 | Atmospheres

COVID-19 revealed improvised infrastructures of ‘atmospheric affect’ that sought to demonstrate forms of care for human bodies in a potentially hostile local environmental milieu. These systems comprised repurposed drones, robots, snow making and water cannons, misting machines that were often combined into novel products such as misting tunnels, and UV lighting pods that delivered disinfectants into the urban domain. In the Alps region of Italy, snow cannons have been repurposed to spray disinfection in towns, drones were used above Indonesia's second-largest city Surabaya to disperse clouds of disinfectant in the sky, in India over 100 smart cities improvised an infrastructure of urban disinfectant spraying, and in Mexico and the Middle East outdoor disinfectant spraying tunnels were installed on the border with the USA and at the entrance to infected neighbourhoods. These repurposed infrastructures target the virus on both material surfaces and also directly on humans, with the claim that urban space and the body can be cleansed. Yet disinfecting public space is also widely and consistently viewed by international health agencies as ineffective and even dangerous to human and non-human life (Xiao & Torok, 2020).

In China, disinfection needs to be located in practices of state environmental intervention that target atmospheric deficits—too much dust, too many pollutants, too little rainfall and too much heat. Complex infrastructures of weather modification are assembled in a variegated strategy of atmospheric control that creates a ‘machine sky’ (Zee, 2020). Urban programmes of disinfection mobilised this infrastructure and will to engineer weather as a demonstration of ‘socialist ecological civilisation’ to combat the virus in public space. Strategies of public health were linked with the intensive programme of social mobilisation of the ‘patriotic hygiene movement’ established by Mao in 1949 (Yang, 2004). Carefully curated disinfection strategies focused on areas of high infection and the zones of quarantine and treatment were used to demonstrate the proficiency of the Chinese state in a strategy of ‘competent atmospheric re-engineering’ (Lin, 2022a, 2022b).

In contrast, Indian strategies of urban disinfection which were similarly innovative and varied in their repurposing of existing infrastructures and rapid extension into new products and disinfection services including UV and misting tunnels at the boundaries of neighbourhoods and buildings. Yet the strategy of disinfection was much more seriously contested. When a group of 5000 migrant workers who returned to the city of Barieilly in the northern state of Uttar Pradesh were sprayed by officials in hazmat suits, it created uproar on Twitter seen millions of times. Moreover, commentators mobilised the historical example of forced disinfection of Indians in quarantine camps by the British in 1897 and the way that contemporary strategies powerful echoed racialised, dangerous and damaging responses (Steere-Williams, 2019). The strategy of ‘corporeally hostile disinfection’ was strongly contested.

Urban disinfection raises three key issues for sociotechnical infrastructures in the post-pandemic city. First, the extension of infrastructural capacities into the boundary between the atmospheric and terrestrial milieu in an attempt to render public spaces and selected bodies temporarily safe through a materially affective intervention (cf. Adey, 2013). Second, exploring the remobilisation of disinfection strategies initially adopted in the nineteenth and early twentieth century practicing racialised, unsafe and destructive logics of spatial and corporeal control. And third, understanding the specificities of the sociospatially uneven ways in which the capacity was mobilised, utilised, contested and even banned across different urban contexts.

5 | CONCLUSION

After COVID, what has changed? What remains the same? What are the lessons for urban research, governance or activism? What do we take forward into the future? The very notion of 'Cities after COVID-19' has become a complicated one, not just because we are not quite 'after' COVID, but because the pandemic enfolds and disrupts pasts, presents and futures. The pandemic has revived and intensified old debates on urban development and the diffusion of policies and technologies, while at the same time generating different and alternative framings around the city and its geographies even while much of the embedded political economies, cultures and inequalities of cities remain in place. When we look at the post-COVID city, we see urban spheres being continually constructed and reconstructed through local translations and imitations of globally circulating and typically neoliberal ideals, and local practices that sustain and invent despite those circulating ideals. And all emmeshed with the deepening climate crisis and a new period of economic and political instability.

On the one hand, pandemic accelerations/decelerations emerge as such because of inadequate urban and national government, which has enabled all kinds of governance forms to emerge alongside, and often with, market and popular actors. Some of this is the acceleration of pre-existing agendas. As Cristina Temenos (2022) has argued, for example, COVID-19 allowed some national and city states to catalyse and speed up the criminalisation of marginal groups, such as the homeless. On the other hand, accelerations/decelerations reveal processes of creativity, robustness, resilience and care within the pandemic city that seek to counter or complement larger inequalities and vulnerabilities. As an entry point to the pandemic city and its afterlives, accelerations/decelerations provoke both a critique of the absent, hostile or inadequate local and national state, and the possibilities for city making and practice beyond centralised structures and outlooks at the interstices of planning practice and everyday living. And yet, they also reignite longstanding campaigns for justice and support, including through the state and its welfarist and distributive potentials—even in a time of 'crisis policy making' (ibid)—and instigate new and radical sociotechnical paradigms for urban planning and development in the twenty-first century. In short, to focus on accelerations/decelerations is to disclose a space of possibility, even if the power relations and pathways are so often stacked against progressive change.

One of those progressive directions lies in investing in the strategies of care, support and inclusion that people have devised in cities, partly but not only in response to the past few years, and creating meaningful space in the planning process for local concerns, knowledges and aspirations. The extent to which cities can create spaces for dialogue and learning with the everyday city and marginalised groups will be significant both for securing the city as we know it—heterogeneous and fragmented, innovative and flexible, despite the immense challenges and hardships—and for building better urbanisms to come. Can existing policy production processes create translatable and scalable policies and actions that are genuinely rooted in urban life in the post-pandemic world? As some of our examples suggest, the potential is there amongst the cracks and beyond the limits of embedded political, economic and cultural hegemonies.

The post-pandemic moment is a profoundly contradictory one. On the one hand, cities were temporality transformed, with new regimes of power and political and technological experimentation put to work. The relations between cities and larger global economies were realigned. Media discourse seemed to constantly question the very future of how urban life, economy and polity are organised. On the other hand, the pandemic intensified old problems—patterns of disinvestment and vast inequalities that protect some over majorities, and placing the routinised geographies of exploitation vividly on display. Speculative housing and commercial real estate markets in cities largely continued apace, especially in larger cities. Is it all change or no change? The answer is contingent. We have shown some of these shifts in governance, in the organisation of urban space, in the sociotechnical configurations that frame urban living and economy, and in the sheer force of creative possibility and support that is so deeply embedded in cities globally. There is no single answer then, no bite-sized take-home message for the future of the city, save for the fact that as urbanists our best hope usually lies in supporting and augmenting the openings that people manage to generate despite it all, in the ongoing making and unmaking of provisional urban worlds.

We conclude by highlighting two contributions from this collection for research in Geography and Urban Studies, in addition to the discussion in the Introduction: on geographical concentration, and urban technologies. First, one of the contributions the collection makes is its focus on the *changing geographies of concentration*. The collection identifies a set of ways in which the pandemic has pulled people and activities together, with all kinds of impacts across the urban realm from work and technology to governance and care. By 'concentration', we are referring both to concentration in space, and to concentration as the bringing together and accelerating of pre-existing activities and forms of calculation. We have highlighted, for example, the intensified use of expendable labour, the exposure of often overcrowded homes of migrant workers to viral impact and state exclusion, changing geographies of densification through labour and housing, a catalysing of activities around digital platforming, the deepening of experimental forms of urban governance, and the embedding of forms of care and mutual support.

In doing so, we build on existing work in Geography and Urban Studies that has asked how the pandemic might change spatial concentration (e.g., Anacker, 2021), but do so by expanding the social and spatial scope of (re)concentration as a geographical problematic. COVID-19 has not fundamentally challenged existing process of hyper-concentration and extended suburbanisation, yet what is critically important is to focus on the uneven geographies of respatialisation that have reinforced the importance of the domestic sphere as a context for work and further reinforced global cities as sites of economic and political control and labour exploitation. Concentration becomes, then, a lens through which to expose and examine the differential geographical impacts of crises, and responses to them, whether in the pandemic or in relation to climate change, political instabilities or intensifying inequalities.

Second, and more broadly, our collection has highlighted the ways in which forms of deceleration and acceleration work relationally and simultaneously within the same domain. Key to this is the intensification of existing logics of space and technology. COVID-19 had enabled both the acceleration of the application of new technologies of monitoring distribution and access control under conditions of emergency, from drones and platforms to apps and control rooms, and a deceleration of debates about technological social selectivity, surveillance, appropriate regulation and technological sovereignty. Furthermore, the critical importance of the growth of improvisation in the provision of infrastructure and care where collective resource provision has failed points to the importance of rethinking strategies of service delivery and mutual support. The implications for future urban geographical work are threefold. First, to unpack the ways in which COVID-19 simultaneously delayed and hastened particular urban sociotechnical logics; second, to explore the implications for what is an intensification of an existing pattern and what might actually be a novel alternative; and third, to examine what configurations may become embedded and configurational, and what is temporary and transient.

Above all, our hope is that the lexicon itself provides a useful vocabulary for describing and understanding cities and urban change in this moment. Our efforts here are, to be sure, selective, but our aim has been to capture key elements of the conversation in Geography and Urban Studies and to move it forward, hopefully in ways that generate further discussion and alternative perspectives.

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