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**Article:**

McFarlane, C., Silver, J. and Truelove, Y. (2016) Cities within cities: intra-urban comparison of infrastructure in Mumbai, Delhi and Cape Town. *Urban Geography*. pp. 1-25. ISSN: 0272-3638

<https://doi.org/10.1080/02723638.2016.1243386>

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# Cities within cities: intra-urban comparison of infrastructure in Mumbai, Delhi and Cape Town

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**To cite this article:** Colin McFarlane, Jonathan Silver & Yaffa Truelove (2016): Cities within cities: intra-urban comparison of infrastructure in Mumbai, Delhi and Cape Town, *Urban Geography*, DOI: 10.1080/02723638.2016.1243386

## ABSTRACT

Comparison is now taken as vital to the constitution of knowledge about cities and urbanism. However, debate on comparative urbanism has been far more attentive to the merits of comparisons between cities than it has been to the potential and challenges of comparisons within cities—to what we call “Intra-Urban Comparison” (IUC). We argue that a focus on the diverse forms of urbanism located within cities may generate critical knowledge for both intra- and inter-urban comparative projects. IUCs highlight the diversity inherent in the category “city,” revealing dimensions of the urban that are central to how cities work and are experienced. We mobilise fieldwork within three cities: Mumbai, Delhi and Cape Town, and consider both how these cities have been historically understood as different urban worlds within a city, and discuss key findings from IUCs we have conducted on infrastructures. We find that IUCs can enhance comparative work both within and between cities: reconceptualising urban politics; attending to the varied and contradictory trajectories of urban life; and bringing visibility to the diverse routes through which progressive change can occur.

## Introduction

The potential and limits of comparative urbanism are currently being rethought (e.g. Peck, 2015; Harris, 2008; Jacobs, 2012; McFarlane, 2010; McFarlane & Robinson, 2012; Robinson, 2006, 2011, 2016; Soderstrom, 2014; Ward, 2011). This has produced a vibrant set of debates on how we conceptualise and research urbanism on different translocal registers, on how different theoretical traditions might conduct comparative work, and on the potential of interrogating urban politics, life, economy and culture through different kinds of comparison. In this article, we contribute to this debate by questioning an assumption that is built into many of these interventions, even as the interventions themselves differ. Running through these debates is an often unexamined assumption about how and where we locate urban complexity and diversity. The claim tends to be that including more cities within our research purview will lead to a more plural and nuanced understanding of urbanism. This is a reasonable assumption, and one that has

demonstrably borne fruit in a number of cases (e.g. see the 2012 Urban Geography collection on comparative urbanism).

But in the rush to a reinvigorated comparativism relevant to an increasingly urbanising and globalising world, there is a tendency to suppose too much. For those of us concerned both with how diversity can form a basis for urban insight, and with how everyday practices and grey areas of the city can enter into theorisation of global urbanism, is bringing more cities into view the only route forward? Might comparisons of the moving parts and components within cities more explicitly bring to the forefront the diversity inherent in the category “city,” informing and complementing urban comparative work more generally? And might doing so help us to build a theorisation of urbanism more attuned to the similarities and differences of the majority of urban life?

The renewed interest in global comparativism is not only disclosing diverse conceptualisations and methodologies for urban research, it also happens to be a necessary process. In a world increasingly predicated on all sorts of urban connections, especially economic networks upon which ideologies of neoliberal globalisation depend (e.g. Smith & Doel, 2011), it is crucial that we examine how relations to multiple “else- wheres” impact urban political economy, governance and culture. One of the important contributions from urban research is the ever-expanding agenda on different kinds of travelling urbanisms; examining policy, planning, activist, cultural and ecological mobilities and territorialisations; and contextualising the relative importance of translocal geographies for contemporary cities (McCann & Ward, 2011; Peck and Theodore, 2015; Healey and Upton, 2010; McFarlane, 2011). Alongside this is a largely postcolonial imperative to translocalise urban understanding, theory and imaginaries that shifts thinking away from polarisations around either the developmentalism of categories of global North/South (Robinson, 2006), and depictions of elite urban models (e.g. Roy & Ong, 2011) set against dystopic megacities (Roy, 2011). This set of work probes the critical question: how do we develop a worldly theory for an ever more worldly urbanism? Of course, comparison is at the heart of only some attempts to build a more global understanding of cities. For example, recent accounts of “planetary urbanization” position particular theoretical traditions motivated by readings of Henri Lefebvre as the key reference point, not comparison (Brenner & Schmid, 2015; Merrifield, 2014).

Our contention is that Intra-Urban Comparison (“IUC” from here on) can generate new perspectives that show the multiple ways in which both similarity and difference need to be reworked within both the context of one city, and in its componentary relationality to other cities. Here, we are referring to cities not as

bounded territorial containers but as relational sites and processes. IUCs can contribute to the comparative urbanism project by specifically illuminating how a city is less of a unitary construction and more a space of many urban worlds. The visibility and linkages surrounding these differing components of cities are analytically useful for three key reasons.

First, comparisons within cities help to more distinctly reveal a set of diverse, and often overlapping, urbanisms that pluralise how we understand and approach the city. This comparative work reveals the danger of oversimplifying the conditions and coherence of cities, calling for a detailed analysis of the multiple forms of urbanism that emerge from the different spaces, contexts and presents that constitute a city. For example, IUCs help to uncover differing axes of power and difference, particularly at the micro-scale, as they shape urban experiences and vulnerabilities. This approach helps researchers query, for instance, why seemingly similar districts come to experience divergent urban conditions that impact everyday urban practices, visions, possibilities and constraints (e.g. see Simone, 2010). But, as we will argue, IUC can reveal more than this. While in each of the cases we explore IUC reveals radical differences in both the access to and the experience of infrastructure within a city, we also show how IUC can reveal a different kind of urban politics across the city. It is not just that access is varied, but that the political configurations can themselves be radically different as we see in the limited studies that have also undertaken comparative research of infra-structure within cities (see, for example, Zérah (2008) on Mumbai's splintered urbanisms). There are implications here for how we think about the relationship between scale and complexity: if we stay with the city-scale of policy debates around infrastructure access, for instance, we may end up seeing a quite particular kind of urban politics. IUC can serve to challenge this.

Second, IUCs provide a means to examine why and how translocal ideas, materialities and socio-economic processes take up unique configurations within cities, not just between them. For example, a set of insightful analyses have traced the workings of translocal ideas and practices between cities (Ong, 2011; Roy & Ong, 2011), but such scholarship has yet to focus more centrally on the theoretical and empirical purchase of limiting the gaze to comparisons within a single city. The new urban comparativism compares always already relational urbanisms that connect cities to multiple elsewhere (Ward, 2010). Instead, IUCs more explicitly disentangle passage points that influence how and why particular forms of urbanism coexist, contradict and overlap with others.

Lastly, IUCs are also useful for shedding light on the plurality of global urbanism as a whole, despite being focused on the diversity of urbanism within particular

cities. By marking and tracking a range of similarities and differences in urban subsystems, IUCs reveal not only the diversity and difference that contrast urban meta-narratives within cities, but patterns of similarity and interconnectedness between cities, as similar experiences, components and subsystems arise in differing cities of the globe that might otherwise go overlooked. IUC provides a complementary, rather than oppositional, effort to inter-urban comparisons, but serves to question the implicit tendency for IUC to be positioned as less important to this task than comparisons that operate between metropolitan areas.

There is a rich tradition of work on IUC, and yet it has remained peripheral to the renewed debate on comparative urbanism. We might think, for example, of South African cities, and the depth of work that has sought to put different types of comparative approaches to work across urban spaces. In Johannesburg alone, Bremner (2004) examines the “colliding worlds” across suburban spaces in which the black elite have moved to and the townships in which they keep many linkages. Simone (2004, p. 411) reworks notions of urban infrastructure to incorporate people and social interactions through ethnographic work across Johannesburg’s multiple inner-cities, arguing that “navigation of their interior requires familiarity with many different and, on the surface, conflicting temporal trajectories through which Johannesburg has changed, with its sudden switches across ruin, repair, and redevelopment.” Peyroux’s (2006) study of different City Improvement Districts shows the varied intersections of neoliberal urban policy across Johannesburg, while Beall et al.’s (2002) edited collection draws attention to diverse processes of governance being configured across the city, and Murray’s (Murray, 2004) exploration of spatial politics and multiple forms of securitisation reveal urban space made up of multiple, varied defensive spaces. Mbembe and Nuttal (2004) write of their “rendition” of the city as “unfinished” urging scholars to pay attention to the multiple spatialities that exist across different parts of the city. In a somewhat different vein of comparison, Lemanski (2014) shows how comparing two theoretical models of housing transformations in Cape Town reveals what she calls “hybrid gentrification.” This work demonstrates that a theoretical comparative approach can be put to work to illuminate a diversity of intra-settlement processes and lived experiences. Such rich examples reveal how differing forms of IUC can be used to bring particular urban instances and theorisations together, generating insights into wider urban geographies.

Comparison has become much more than a method, and is strategy for de-centring urban knowledge (Jacobs, 2011) and understanding urbanism through heterogeneity (McFarlane, 2010). It is our hope that this article, in foregrounding three examples of IUC, provides a contribution in arguing for the potential and challenges of IUC. We reflect on three specific empirical comparative projects

that compare multiple sites within one city and plural forms of urbanism they feature. We consider what the comparison revealed both about the particular cities and about the wider urban condition.

All three case studies are focused on urban infrastructure and built on emerging work by scholars such as Jaglin (2014, p. 434), who argues for understanding heterogeneity with regard to the different ways services are produced and regulated, and “the role of networked infrastructures and public utilities that operate them.” While this reflects our shared interest in the politics and experience of urban infrastructure, the fact we all use analysis of infrastructure to think comparatively is itself important for the article. Given the centrality of infrastructure to urban life, it is a particularly useful lens through which to disclose differentiation within cities. As illuminated through scholarship on, for example, the splintering urbanism of infrastructures (Graham & Marvin, 2001; Zerah, 2008) to their “socio-technical dispotifs” that shape heterogeneous urban environments (Jaglin, 2014), urban infrastructures provide an important lens for examining urban diversity and differentiation at multiple scales. In Mumbai (McFarlane), we examine the different instantiations of sanitation in two informal settlements, revealing not just distinct experiences and politics but different urban worlds structured by relations of legality, religion and political connections, and with radically different referent points and needs. In Delhi (Truelove), we show how land, legality, religion, gender and political connections create sharp incongruities both within and between two different neighbourhoods, revealing discrete water geographies and political configurations, and pointing to necessarily distinct needs. In Cape Town (Silver), we show how differentiated housing and energy infrastructures in three neighbourhoods prompt very different interpretations of the post-apartheid city both in terms of material conditions and socio-political relations with the state. In each city, urban diversity—not just of infrastructural forms, but of urban politics and everyday life—is located through comparative methodologies focused within the city itself. In other words, looking within, at different contexts and trajectories in different parts of the same city, can reveal precisely the kinds of heterogeneities that we find by looking across different cities.

The reason we are focusing on these three particular cities is simply because we are conducting research in them, but we recognise that all three cities are large, complex and profoundly unequal. In a paper that argues that urban diversity can be located and understood within as well as between cities, it is important to acknowledge that IUC is at least more likely to yield richer conceptual differences in these kinds of cities than in, say, small towns. Also relevant here is the context of the comparison. For example, a city like Mumbai is radically more

unequal in economic terms than a city like Oslo, and so if we are seeking out diversity in economic lives it is probable that IUC will deliver less conceptual richness in Oslo than in Mumbai. In such a context, comparison between cities may well be more fruitful. We are not, as we say below, arguing for IUC over comparison between cities, but instead arguing that IUC often has the potential to do the work that comparison between cities claims to do. There are advantages and disadvantages to both routes, and much depends on the city contexts and the research question at hand. One other advantage to IUC, for instance, is that locating diversity in, say, urban culture, may allow us to stay within a city—Mumbai, Stockholm, Manchester, Kampala or even smaller towns for that matter—rather than feel compelled to take ourselves off to another city altogether.

Now, we appreciate that in arguing for comparison within cities, it may on first sight seem a little odd to do so by also drawing on three different cities. Our argument is that IUC is useful for thinking about urban diversity, and that IUC can occur in one city or, as is the case in this article, more than one city—both are valuable. Our primary aim is not to compare the three cities but to demonstrate the value of IUC within each city. That said, in doing so, a secondary interest we have in the article is to consider the value IUC brings when it itself becomes the basis for comparing between cities, especially given that the two forms of comparison are complementary rather than at odds. We conclude by examining three cross-cutting themes relevant to both intra-urban and inter-urban comparisons: the need to see urban politics as an expansive and varied field as it relates, in our case, to infrastructure (as we will show, politics takes a different form within each city as well as between them); in the need to attend to the varied and often contradictory trajectories of urban life for marginalised groups; and in bringing visibility to the unique and diverse routes progressive urban change can take for differing groups and spaces in the city. There is, then, a double-comparison at work in our arguments: first, and foremost, an argument for the potential of IUC, and second a discussion of what IUC can bring when it becomes the basis of comparing between cities.

### **Mumbai: worlds within worlds**

It is often said that Mumbai is several cities within a city (Pinto & Fernandes, 2003; Prakash, 2010). Certainly if we work with a definition of Mumbai as the Mumbai Metropolitan Region, which includes large towns administered in part through their own municipalities, such as Navi Mumbai, Thane and Kalyan, the case for this claim appears self-evident insofar as there are administrative cities within the Greater Mumbai city-region. Or, we might think of Mumbai's multiple cities chronologically, from the historic colonial centre in the southern island city

built around the Fort, to the urbanisation of more northern areas through the cotton mill boom in the late nineteenth and early twentieth century, or the huge and controversial projects of land reclamation to construct commercial areas like Nariman Point in the south, or the postwar modernist project of Navi Mumbai, itself one of the largest planned cities in the world. A more nuanced approach might focus on the historic neighbourhoods that constitute the city. Here, particular neighbourhoods are lived as worlds within a wider constellation. As D'Monte (2002, p. 97) describes it: "...in areas like Gurgaum, there are wadis or precincts that are predominantly populated by one community. In this area, Hindu Pathare Prabhus, one of the oldest communities, live cheek by jowl with the next wadi with Hindus from the trading communities of Gujarat and 'East Indian' (after the company) Catholics ... Mumbaikers tend to relate primarily to their neighbourhood, with communal tension arising only when specific incidents occur after provocation."

Or we might start not with territories and communities but with the profound inequalities of Mumbai's urban experience. Considering the following extract from the poem "Mumbai" by the social activist and poet Narayan Surve, who here considers the experience of the city from the perspective of Mumbai's many toilers:

(...)

We wander your streets,

squares and bazaars;

sometimes as citizens, householders

at times as loafers

These streets carry the festival of lights into the heart of the night;

balancing two separate worlds

with all their splendour.

The city of the urban toiler is, in Surve's rendering, a different city from the city of lights, and represents a city he knew well as someone who once lived on the city's pavements, and who was later a union activist. If the resurgent project of comparative urbanism is about experimenting with a broader range of urbanisms in order to develop new understandings and theorisations of urban life, cultures, economies and politics, then large and diverse cities like Mumbai offer an extraordinary illustration of urban diversity.

In a research project focused on everyday experiences and perceptions of sanitation in informal settlements in Mumbai, McFarlane, working with Renu Desai and Stephen Graham, sought to develop a detailed understanding of urban

sanitation in different parts of the city. Sixty per cent of Mumbai's population lives in informal settlements, but this stark statistic hides a vast world of difference and complexity, from established and relatively well-serviced neighbourhoods that include white-collar workers who struggle with Mumbai's ludicrously expensive real estate market, to extremely poor neighbourhoods deemed illegal by the state and almost lacking any services and infrastructures. Sanitation provision, access, use and conditions vary greatly across the city. We thought it was important to foreground the difference that this geographical diversity makes to the lived experience and politics of sanitation, in order to understand how sanitation emerges as a problem in different places, to think through what that means for policy, practice and activism on inadequate sanitation, and to consider what the differences and similarities mean for developing conceptualisations of urban life (McFarlane, Desai, & Graham, 2014). Following pilot research into several different neighbourhoods in the city, we selected two very different neighbourhoods that we believed would offer breadth to the study. The research examined two informal settlements: Khotwadi, an authorised, established neighbourhood in the west, and Rafinagar (Figure 1), an unauthorised, poorer neighbourhood in the east. Rafinagar comprises two parts: Part 1, which has been provided with some basic urban services, and Part 2, with almost no basic urban services.

Khotwadi, with a population of approximately 2000 households, has 24 toilet blocks and a total of 180 seats, whereas Rafinagar, with approximately 4000 households, has 6 toilet blocks with a total of 76 seats (McFarlane et al., 2014). Rafinagar, then, has twice the population and half the number of toilet seats, and Rafinagar Part 2 has only one formal toilet block (provided by the state government in 2011) and is also serviced by a range of temporary hanging latrines (rudimentary makeshift toilets usually lacking connections to sewers, septic tanks, water pipes or electricity connections). While the majority of residents in Khotwadi have a level of secure water access through unmetered municipal standposts, metered group connections and wells, the majority of Rafinagar's residents face profound difficulties and are forced to incur high expenditures for water and/or time and effort in collecting water. The condition of solid waste management in the two settlements is also uneven. Rafinagar in particular, partly due to its illegality and partly due to its marginal status as a predominantly Muslim settlement, suffers from infrequent instances of municipal cleaning of drains and collection and disposal of garbage. The neighbourhoods were selected, then, on account of a range of

Figure 1. Rafinagar, Mumbai (source: Renu Desai).



significant differences in legality, income, religion, location and sanitation conditions. This selection was the result of pilot research that produced a long list of potential sites, but in practice the sheer diversity of potential choices amongst the city's informal neighbourhoods means that there could have been any number of potential comparisons.

While in both neighbourhoods securing access to adequate sanitation on a daily basis is a considerable labour for many people, the nature of that labour is radically different in both places. As a predominantly Hindu neighbourhood, Khotwadi is controlled by the dominant political party in the city, the right-wing ethno-religious and anti-Muslim Shiv Sena. The presence of the Shiv Sena in Khotwadi is critical to the production and maintenance of sanitation. For example, the Sena operates a “complaint space” at its local office, and residents usually go to this office if there is work needing done in the area, from blocked drains and broken toilets to uncollected garbage. The party is able to take up and expedite requests far more quickly than if the residents had directly contacted the relevant municipal department. This constitutes a form of patronage in the area that helps promote the Shiv Sena electorally through the soft politicisation of basic infrastructure.

In Rafinagar, however, given that it is a predominantly Muslim neighbourhood, residential links are less to the Shiv Sena and more to political parties that are more limited in their capacity to wield the local state, like the Samajwadi (Socialist) party. Given that the settlement is illegal, it is qualitatively more difficult to have any complaints dealt with. Here, there is a much slower, longer-term process of working through community groups, nongovernmental organisations, councillors and municipal officials in order to get basic work like the occasional cleaning of drains completed. There are few assurances that requests will ever be met, and people often feel left without any viable political outlet to meet basic sanitation needs.

Rafinagar is also far more vulnerable to shifts in urban infrastructural politics than Khotwadi. For example, in the winter of 2009–2010, the municipal corporation used the so-called city-wide “water shortage” (following a poor monsoon) to justify a violent clampdown on “illegal” water. In Rafinagar, this culminated in the systematic cutting, in full public view, of a great deal of the neighbourhood’s water infrastructure (Graham, Desai and McFarlane, 2013). After the savage cutting of Rafinagar’s urban metabolism, which threw the daily routine of water and sanitation into disarray, a dramatic transformation was required through new forms of collectivising infrastructure. A temporary arrangement of water infrastructure emerged, including municipal and private water tankers, with their irregular rhythms, municipal-installed water storage tanks, and evolving regimes of local control over tanks, mostly involving the labour of women. Households who sought municipal water could do so only through municipal water tankers and water storage tanks, and women and children were forced to wait in long queues with water cans, often for hours at a time. While water cuts are not unusual in Rafinagar, the intensity and level of municipal coordination—with police support— was new. Given Khotwadi’s political context, this level of water cuts is far less likely.

There are other important differences. For example, while in Khotwadi most residents regularly use toilet blocks, in Rafinagar—especially in Part 2—open defecation is regular. During the monsoon, residents often construct makeshift hanging latrines from rudimentary materials in order to provide a nearby toilet when the rains make it

difficult to wade to the spaces used for open defecation. The latrines are vulnerable to erosion from rising tides and from demolition by the municipality. Residents too frequently made claims about their infrastructure that compare it with other parts of the city or with other cities. In their research on wastewater in

Delhi, Karpouzoglou and Zimmer (2012, p. 65) document how residents often describe the informal settlements in which they live as unclean, as one resident put it in interviews with them: “This is a third class area, I would prefer to call it fourth class ... [the neighbourhood authorised colony] is second class. In first class areas even the cars are not covered, you can’t find any dust on them and the trees look like [they have been] washed, but here even inside the house there is so much dust.”

Taken together, the uncertain rhythm and politics of sanitation in the two Mumbai neighbourhoods are predicated on a series of changing conditions and catalysts, from demolition, land erosion and changing land use, to reciprocal relations amongst residents and civil society groups, changing tariffs of toilets and the identity politics connected to political parties. The contrasting sanitation conditions in Rafinagar and Khotwadi reflect not just different urban histories, social composition and state-based or legal (dis)connections, but two quite distinct Mumbais, with autonomous if inter-lined (e.g. through legal and ethno-religious inclusion/exclusion) modes of infrastructure production and politics, and requiring very different kinds of solutions. If municipal connections (in personal networks and in physical pipes) are vital to the production and maintenance in Khotwadi, in Rafinagar the municipality is the problem and people can expect little or nothing from it other than demolition. This means that not only are the conditions of sanitation production and maintenance quite distinct in the two spaces, the prospects for better sanitation conditions are also starkly different and the political fights must take quite different routes. What IUC reveals here is not just that access to and the experience of infrastructure in different parts of the city varies radically, but that when we examine these differences comparatively we see different kinds of urban politics.

There are implications here for how we think the relationship between urban politics and scale. If we look at the scale of the city, say in policy formulations and debates in infrastructure, we see a different kind of urban politics than if we look at contrasting urban spaces within the city.

IUC, then, widens both our conception of infrastructure politics, the conditions through which urban life is collectively made and remade, and our understanding of the nature of urban politics within cities. Moreover, the plurality IUC reveals important challenges for how we understand urbanism more generally. It is clear, for instance, that infrastructure politics here is not only one of, say, the political economy of privatisation, but of both ethno-religious patronage and improvised provisioning and protest. This offers a challenge to our dominant ways of seeing and theorising infrastructure politics at the global urban level, which tends to be

preoccupied with how splintering urbanism (Graham & Marvin, 2001) emerges through privatisation and neoliberalism, and demands that we make room for a more flexible conceptualisation of how infrastructure politics and inequalities are made and help shape urban worlds (Graham & McFarlane, 2015).

## **Incongruent Delhi**

Delhi is a city of multiple cities—not only in its contemporary manifestation, but through the legacy of its chequered history. As early as 1206, when the Delhi Sultanate made the city its centre of rule, it became a site of global power. Although the city was burnt to the ground under the rule of Muhammad bin Tughlaq, it was later rebuilt, only to be left once again in ruins by Timur in 1398. By the sixteenth century, the city was made the seat of Mughal control under Islam Shah Suri. And later, in the colonial era, Lutyens' Delhi extended the urban landscape to the south of the old walled area of Shahjahanabad in the construction of a new imperial capital. Yet, the colonial city propelled incongruent cities for urbanites, with architecture and infrastructure reflecting clear divides between colonial officials and the majority of the indigenous population (Sharan, 2011). Delhi's legacy of its differing past cities remains etched on the landscape, captured by urban writers through the metaphors of djinns (“ghosts”) (Dalrymple, 2003) or palimpsests that link present-day urban life to historical layers of differing urban systems.

In contemporary times, much of everyday life in India's capital continues to be marked by incongruent spaces. The variegated urban fabric provides home to over 17 million people, with a vast heterogeneity of built forms, infrastructures and improvisational practices that keep the city ticking. With specific regard to housing provisions, more than 75% of the population lives in a diverse range of settlements other than those designated as “Planned Colonies” (Center for Policy Research, 2015). This heterogeneity of settlement forms has levelled differing degrees of (and anxieties pertaining to) tenure security and rights in the city.

Similarly, access to services such as water and sewerage remains highly fractured, sometimes indifferent to social and spatial divides in the city, while other times working to deepen them. For example, nearly three million people have recently been estimated to receive only three litres per person per day (lppd) of state water (Comptroller and Auditor General of India (CAG), 2013), while areas such as Delhi's Cantonment receive 24-hour water access and upwards of 400 lppd through piped systems dating back to British rule (Zérah, 2000). Everything from complex configurations of neighbourhood pipes, pumps and household position with regard to lanes and slopes, to one's relatively arbitrary geographical

proximity to transmission lines, can affect the flow of the central supply. The diversity of socio-technical assemblages of state piped water is to such an extreme degree that even neighbours may not be able to procure equivalent water flows, while more than half of the population is estimated to lack official rights to this water source altogether due to the illegality of residential areas (Sheikh, Sharma, & Banda, 2015).<sup>2</sup> In addition, the micropolitics of negotiating everyday access reveals another scale and dimension of urban inequality and variance, as political rights to water do not guarantee its flow, and residents across class and social groups resort to differing iterations of overlapping formal and informal networks to meet daily requirements (Truelove, 2011).

As ordinary life for Delhi-ites is characterised by uncertain and diverse infrastructural configurations and politics, there is an analytical need to situate and pluralise the distinctive forms of urbanism shaping the capital city. While a number of recent typologies have been used to help conceptualise Delhi's contemporary urbanism— characterising the capital as an aspiring and neo-liberal “world-class city” (Dupont, 2011; Ghertner, 2015), “illegal city” (Datta, 2012) or a city of “bourgeois environmentalism” (Baviskar, 2003)—there may be equal utility in exploring the ways the city's diverse urban spaces and practices often disrupt, transmute and complicate these encapsulations.

From 2011–2012, Truelove conducted in-depth ethnographic research on the every-day practices and politics of water across the city. In particular, the research compared the plurality of socio-technical delivery configurations (Jaglin, 2014) and residents' related water practices within, and across, two settlements. The research specifically queried (1) whether these settlements were characterised by differing kinds of water politics and governance, (2) the everyday embodied experiences of city-dwellers in relation to accessing water, and (3) the potential transformations by which delivery configurations could become more just in each site. The specific settlements in question were selected in order to probe the heterogeneity that might emerge within and between informal settlements broadly considered to be of a similar typology (informal/illegal) and serviced by some of the same local politicians. The decision to analyse these differing urban environments was also informed by a methodological approach to foster “the conditions to see multiplicity” (Jacobs, 2012, p. 906). The aim was to work between sites placing them each in dialogue.

The first settlement was Rampur Camp (Figure 2),<sup>1</sup> a jhuggi jhopri (JJ) cluster (or small informal neighbourhood) housing approximately 5000 residents. This settlement was geographically divided by a predominately Hindu and predominately Muslim side. Each side of the settlement had historically received

differing levels of infrastructure, with the predominately Hindu area having more pakka (built of solid materials) homes, lanes and drainage channels. Water in this portion of the settlement, up until 2011, had been primarily accessed through a daily state tanker delivery. In contrast, the

Figure 2. Rampur Camp, Delhi (source: Yaffa Truelove).



predominately Muslim-side, largely housing migrants from Bihar, notably had greater numbers of kaccha (built from unsolid materials such as tarps and mud) hutments, more sporadic electricity connections, and a separate and smaller state water tanker servicing the area.

The second selected settlement was Saroj Bagh, a large agglomerated unauthorised colony (UC) in southwest Delhi, housing residents whose socio-economic positions ranged from the very poor to the middle classes. In this neighbourhood, it was common to come across residents who owned cars, carried titles to their homes (though the state had failed to ratify such deeds), and were undertaking one or more rebuilds of their homes. Less advantaged residents were

typically renters, and could be found working as vegetable vendors, bicycle rickshaw drivers and domestic help.

With regard to water, each settlement had significantly different (and changing) constellations of actors, technologies, water ecologies and governance practices that shaped regimes of access. These unique configurations demonstrate the need to parse down water governance to the micro-scale of everyday practice. Rather than the politics of water distribution and governance solely and primarily operating at the meso-level of the state, through the water board's policy to officially exclude illegal settlements from rights to state water provisions (see Delhi Jal Board Act, 1998), both state and non-state, legal and illegal, delivery configurations shaped the everyday politics by which residents procured and negotiated water in the city.

In Rampur Camp, beginning in 2011, a Delhi-based NGO teamed up with a set of state officials, international actors and donors, local women and neighbourhood strongmen to replace state tanker deliveries with tube well water. The internal piped system, drawing from the city's rapidly depleting groundwater (Maria, 2006), was extended first and foremost to the predominately Hindu-side and those residents who could pay start-up and monthly fees. The local NGO initiated the infrastructural transformation, initially including a collective of women from Rampur Camp as leaders in regulating where and how water would flow to various points in the settlement (Truelove, *in press*).

However, throughout the first year of the project, new delivery configurations shifted and realigned multiple times, transforming everyday water access and demonstrating the need to take a temporal view of governance on the ground. Initially, in 2011, NGO workers promised to give the women's collective the "key" to the tube well motor, which unlocked access to turn the flow of water on and off for the community. Later, when the Municipal Councillor promised funding for the tube well's motor, this local politician stipulated that the key to the motor be left in the hands of the Pradhan (informal local leader). As a result, by 2012, control over operating the tube well had shifted entirely from the women's collective to the Pradhan's control (Truelove, *in press*).

These changing configurations ultimately restructured how water was governed and how social power became redistributed. As the Pradhan and an associated group of strongmen colluded with the police to seize contested control of the water supply, these openings and closures produced profound embodied consequences. For example, the majority of women from the Hindu area had to wait hours in the lanes for strongmen to turn on piped water, which at times

would only run for 10–15 min. On the other hand, a privileged group of families enjoyed a more unrestricted access to sometimes hundreds of litres per day, due to their ties to the Pradhan and social networks in the settlement. In addition, as access points were peppered throughout the Hindu area of the settlement to the broad exclusion of the Muslim area, the majority of Muslim men (who lived solitarily, as their families remained in Bihar) were unconnected to the new supply, and had to embark on a strained journey to an open spigot several kilometres away to gain access. Thus, the gender and ethno-religious differentiation of everyday water practices became reconfigured by the tube well installation and its associated micropolitical networks, locating particular groups of men and women with differing degrees of privileged access and embodied hardships (Truelove, [in press](#)).

Residents of Saroj Bagh, on the other hand, experienced a differing set of water delivery configurations, which were also tied to everyday politics and social power in the settlement. Despite the “illegality” of the settlement, the state had begun formalising water access and billing through installing state-run tube wells that brought water inside of each house along with regular billing. However, the formalisation process only benefitted residents who were able to afford signing up for state water, and who were also fortuitously located in a geographic position in relation to other houses, hills and pipes such that water pressure was sufficient (given that the groundwater in the vicinity was particularly scarce (Maria, 2006)). Residents with piped connections regularly reported that water was extremely sporadic and unreliable, and often accessed at unpredictable times, such as the middle of the night or suddenly after weeks of taps being dry. Shifting dependence onto an unpredictable, yet legalised, state delivery configuration levelled a host of gendered disadvantages that spatially constrained a subset of lower-middle class women. In particular, women who stayed back from work (while their spouses held salaried positions at the airport) had their day-to-day routines hijacked by the quest for water. They often woke up at odd hours of the night checking and waiting for water from their taps, and were also fearful to leave their own homes and lanes during the state’s weekly tanker water delivery (sometimes the only water to come when tube wells failed). Here, the legalisation of water, expected to occur in a more wide-spread manner if UCs in Delhi are granted regularisation (Lemanski & Tawa Lama-Rewal, 2013), intersected with the built environment and classed and gendered forms of domesticity to level a set of everyday constraints, hardships and at times fortuitous openings (depending on the geography of local pipes and water pressure), for residents in the settlement. The divergent trajectories of Saroj Bagh’s waterscape reveal the ways

that incongruent cities can exist lane by lane and neighbour by neighbour, as well as within households themselves (Truelove, [in press](#)).

Lastly, working between these multiple sites illuminated a different set of pathways by which national and regional water ecologies and politics shaped the unequal lived experiences of water infrastructure in the city's spaces. At the time of research, Delhi had been engaged in a long-term dispute with the state of Haryana over the release of water for the city through the Munak Canal (Levasseur & Maria, [2004](#)). Water from Haryana, running through the canal, had been projected to supply the new water treatment plant in the Dwarka area with more than 50 million gallons of water per day (MGD). Just as the residents of Saroj Bagh were located in a marginal position in relation to rapidly decreasing groundwater reserves in the western area of the city, this neighbourhood also disproportionately suffered the consequences of inter-state disputes with Haryana. Saroj Bagh was one of a few unauthorised colonies that had been approved for piped water from the Dwarka Treatment Plant through a public grievance, although infrastructure from the treatment plant had yet to be extended to the neighbourhood. The failure and delay in water flows from Haryana to Delhi, while frequently framed by the media as leaving the entire city water-parched, demonstrates how regional ecologies and inter-state water politics are in reality producing disproportionate consequences for a distinct set of urban spaces, environments and city-dwellers (Delhi Jal Board (DJB) Office of the Executive Engineer, [2011](#)).

Overall, this comparative project within Delhi demonstrates how two informal settlements, which appear to be broadly similar on paper, experience highly differing configurations of water governance, ecologies and politics on the ground. Employing an intra-urban comparative approach specifically reveals the pathways by which incongruent urban environments are produced within and across settlements. In addition, while each settlement was ensconced in a unique set of delivery configurations and everyday practices to access water, there was also a tremendous degree of variation within settlements themselves. These findings show that residents sharing neighbourhoods, lanes, buildings and even households experience very different water worlds. In the Delhi case, IUC provided an avenue for revealing how broader processes and structures of exclusion —such as the state withholding official water rights from illegal areas —are situated, transmuted or even sometimes irrelevant in shaping the actual logics of governance and methods of procuring water in everyday practice. As such, IUCs have the potential to more overtly shed light on possible political openings and closures that are, at times, less about blanketly targeting processes of world-classing, neo-liberalism or even patronage politics per se, and more

about revealing everyday sites and spaces within governance and delivery configurations by which access can become more just.

## **Fractured Cape Town**

Cape Town is most often conceived as two different urban worlds. This spatial imaginary is predicated on an ongoing racialised geography of apartheid that has found both new expressions of inequality and sustained ongoing divisions of the past. Images of service delivery protests with accompanying burning tyres in townships contrast with the often visible and at times ostentatious wealth in the affluent suburbs. It is a spatial imaginary ubiquitous to this most divided of cities (UN-Habitat, 2008). From the cleared central zone of District Six to Khayelitsha, a peripheral township on the Cape Flats and home to over 400,000 people, the forms of apartheid control and segregation have left a spatial legacy on the city of noticeable division, trauma and displacement (McDonald, 2012). In Cape Town the non-white population often remain in conditions of poverty, oppression and inequality that are arguably most visible and politicised across the infrastructure systems of these marginalised spaces. As Korianda, Kinky and Solitude from the hip hop collective, Soundz of the South lament:

“There’s a war in the ghetto,  
there’s a war on the streets  
and for too long we’ve been facing defeat”

The lyrics are a strong expression of the ongoing power struggles taking place across the low income neighbourhoods of Cape Town as communities wait for and challenge the state, particularly at the municipal scale, which has been the fulcrum of most service delivery efforts in South Africa (Hart, 2014), to fulfil Mandela’s promise of infrastructure for all in a fairer city (Turok & Parnell, 2009). As Lester, Menguele, Karurui- Sebina, & Kruger, (2009, p. 13) comment: “South Africa is left with cities structured by apartheid. Townships are characterised by small, poor quality houses, with a large number of informal settlements, poor service infrastructure and amenities and lack of affordable public transportation.” Over the last 20 years the post-apartheid state has both sought to provide housing and essential infrastructure to many poor areas (Parnell, Beall, & Crankshaw, 2005) whilst continuing apiece with repressive policing and forms of dispossession from the apartheid era in others (Desai & Pithouse, 2004; Legget, 2003). Cape Town is no exception and tens of thousands of housing units have been provided by the municipal and provincial governments to communities in need. Yet in the context of one of the world’s

most unequal societies the legacies of racial division, state control and segregation remain ever present (McDonald, 2012).

Whilst this powerful spatial demarcation of two Cape Towns persists such an imaginary belies the varied experiences of different low income neighbourhoods, including the relations between infrastructure and the varied actions of the state. Such diversity of experience across the city's poor spaces draws our attention to the need for IUCs that can articulate the heterogeneous and seemingly contradictory trajectories of urban life across Cape Town. This is a comparative practice that complicates and blurs the boundaries of how we imagine, research and write this fractured city. As with Mumbai and Delhi, a more textured analysis of Cape Town that moves beyond the spatial binaries of rich/poor and black/white draws attention to the differences, whether material, historical, social or political that may be brought out through thinking across seemingly similar neighbourhoods in the city (see also Lemanski's, 2006 work on fear across two suburbs for a pertinent example of similar work).

In 2011, Silver undertook research in three low-income neighbourhoods across Cape Town with both formal and informal conditions, analysing the housing and energy geographies in the poor areas of the city. This work was broadly interested in understanding the infrastructure geographies that have been transformed since the advent of democracy in South Africa. It examined the ways infrastructures of housing and energy became central to mediating urban politics at a community scale and beyond and the comparative methodologies needed to develop nuanced understandings of these experiences. Over the 20 years since apartheid ended, state delivery, attempts to rectify under-investment, negotiations with communities, technological specifications, opportunities to experiment with new technologies and the actual process of installation varied greatly across the city. The aim was to capture these diverse experiences and resulting politics in order to reflect on the ways in which these different spaces generated multiple interpretations of the city. Seeking to identify through statistical data and pilot research neighbourhoods that all had high levels of poverty, non-white populations and experiences with service delivery, three were chosen: Mamre on the northern fringes of the metro region, together with Kuyasa and Mandela Park, situated 30 km from the central city and opposite each other in the township of Khayelitsha.

Mamre is a small, mainly Coloured (93%), low-income neighbourhood with 28% unemployment rate compared to 20% across the city (City of Cape Town, 2013a). Its long history can be traced back to the seventeenth century as a military outpost for the Dutch East India Company, when it was known as Groene Kloof and

provided protection to settler-colonialists from the indigenous KhoiKhoi. Through the forced removals of District Six in the 1970s many new residents were moved out of the central city and left to deal with problems of isolation, poverty and environmental degradation in this peripheral location. From 1996 the state became involved in delivery of housing systems with 550 units built slowly over the next decade in an often frustrating process of investment that underwent delays and contestations (Davy, 2006). The neighbourhood also experienced further investment in the housing/energy systems in 2011 with the installation of new ceilings as a response to the ongoing conditions of socio- environmental deprivation caused by ill-thought-out housing design (Bulkeley, Luque, & Silver, 2014). This investment can be understood as a response by the municipality to rectifying some of the material consequences of failing to provide adequate infrastructure and of seeking to shift the lived experiences of Mamre's residents from ongoing conditions of material deprivation.

Mandela Park is a mainly Black (98%) low-income neighbourhood shown by its 39% unemployment rate (City of Cape Town, 2013c). The infrastructure conditions and resulting politics in Mandela Park are very different to that of Mamre. The neighbourhood was one of the first in the city, and significantly also across South Africa, in which Black Africans could purchase housing from banks that had bought the land from around 1986 (Desai & Pithouse, 2004). The purchase of these bank- built houses was mired in controversy from the beginning, with many of the homes inadequately completed. This practice of sub-standard construction of housing continued beyond apartheid into the late 1990s with ongoing problems generating often violent responses from the various arms of the state and private sector to those residents who contested such conditions (Legget, 2003). The almost daily evictions of families in Mandela Park led to the organisation of an anti-eviction campaign in the early years of the millennium which had some success in mobilising the community against dispossession. Yet, residents remained in bitter conflict with the municipality through its failure to deliver adequate infrastructure and the banks that have continued to evict resulting in sporadic moments of protest and seemingly inevitable state repression (Desai & Pithouse, 2004).

Kuyasa, is located opposite Mandela Park in Khayelitsha and shares a similar predominance of Black residents (98%) and high rates of unemployment at 38.5% (City of Cape Town, 2013b). The residents have lived in Kuyasa (Figure 3) for 10 years, moving from informal settlements in other parts of the township, that lacked services to the state built housing, with its name meaning “new dawn” in isiXhosa. Kuyasa is home to a growing professional class (teachers, doctors and so forth) that have chosen to continue living in the township illustrating the

growing emergence of a black middle class in South Africa. Furthermore, it has also seen large-scale network reconfiguration of the housing and energy systems through an NGO-led, government funded installation of solar water heaters, insulated ceilings and other energy saving measures in 2500 households that draws together energy and housing as co-produced infrastructures of dwelling that have been targeted for retrofitting in the city (Silver, 2014).

Undertaking this IUC research in Cape Town enabled reflection on the wider socio-material conditions of post-apartheid infrastructure governance in the city and



Figure 3. Kuyasa, Khayeltisha, Cape Town (source: Jonathan Silver).

the social relations and urban politics such arrangements (re)shape. The findings from the research illustrated the varied intersections between the state, intermediaries such as NGO's and residents and the shifting power relations configured from the materialities of these urban spaces (Silver, 2013). Beneath the apparent commonalities shared by the neighbourhoods, very different urban infrastructural worlds exist. The divergent socio-spatial relations in these communities and across infra-structure can be partly explained by the histories of the neighbourhoods: Mamre was established during colonial times, Mandela Park during apartheid, and Kuyasa in the post-apartheid era, resulting in very different

network histories, subsequent trajectories and relations between state actors, the private sector, urban intermediaries and communities. The findings also drew attention to the myriad processes by which infrastructure systems of housing and energy are invested, contested and intervened in across post-apartheid Cape Town both within the city and through the national and regional geographies of investment and political contestation that shape South Africa.

Here the role of IUC draws out the localised histories, cultures and socio-material conditions that shape such heterogeneous geographies of infrastructure in ways that go beyond processes of governance, policy formulation and financing at the urban and national scales in the country. This is important for it shows the diversity of the city and how we see different kinds of urban politics from different experiences of infrastructure. The process of infrastructure investment in Mamre can be considered as embodying the promises of the post-apartheid era. Housing and the subsequent retrofitting of ceiling insulation have been financed by international donors and the municipality. Many problems remain however for residents in Mamre who, although in receipt of government built housing still face issues of energy poverty, difficult housing conditions and bad health (Silver, 2014) that draw into focus not just local policymaking but national politics and priorities, financing and political economy. Mamre arguably represents the most common experience of service delivery in Cape Town. It shows the limitations of a developmental state seeking to overcome apartheid's spatial legacies whilst operating within neoliberal, macro-economic constraints and to an extent a powerlessness in the face of ongoing processes of South Africa capitalism and crisis (Hart, 2014; Davy, 2006; Silver, 2014).

Kuyasa suggests a possibility of a rather different urban politics of infrastructure investment within the city, based on the notion of co-production between community, state and non-state actors (Watson, 2014). Kuyasa illustrates the potential of Cape Town's low income communities to actively shape the flows and circulations of investment that make significant impacts on the everyday reproduction of households and importantly involves forms of learning that empower the residents to hold the capacity to undertake further improvement of housing and other infrastructure systems. The community of Kuyasa, increasingly middle class, can be mobilised in this context to suggest it embodies the hopes and dreams of the post-apartheid era, of the steady growth of (some of) the black population, of sustained investment in infrastructures, housing and urban spaces and the learning of new knowledges that allow some forms of control over the community's material future.

Finally, Mandela Park offers a critical questioning of state and market power over infrastructure and the resulting urban politics. Unlike the co-production and collaboration in Kuyasa, the politics in Mandela Park are dominated by conflict and contestation between the various urban actors. Such conflict belies the lost hope of many urban dwellers in post-apartheid Cape Town, particularly amongst those living in informal and/or backyard conditions. The community has had little investment in infrastructure and articulates a highly political challenge to both the national (African National Congress) and local (Democratic Alliance) government power to shape and govern urban space in the townships. This takes place not just by resisting the oppressive actions of the state, but by generating material responses to the crisis facing many poor households through backyard dwellings and self-build housing (that is often subsequently demolished). The violent experiences of residents in Mandela Park are sadly replicated in other communities in Cape Town, portraying a highly political governing of infrastructure by the post-apartheid state in the city. This use of violence, to assert the power of the state to control infrastructure space adds to the serious concerns that dispossession, segregation and inequality have been sustained well beyond the end of apartheid.

These three neighbourhoods illustrate the different kinds of urban politics that are being configured across Cape Town's infrastructure (see also McFarlane and Silver, 2016 on the sanitation politics of the city) at the intersection of post-apartheid, neoliberal and developmental urban policy orientations (McDonald, 2012) and across the various intersections of state, capital and infrastructure. They show the multiple urban worlds and politics that lay beneath the imaginary of Cape Town as splintered and fractured between rich and poor, elite and marginalised through portraying a textured infrastructural landscape of highly variegated socio-spatial geographies. The experiences of communities in terms of infrastructure in Cape Town are highly differentiated from neighbourhood to neighbourhood predicating very different political relations with the state. This suggests that singular, homogeneous conceptions of service delivery experience are both unfounded and politically dangerous. Detailed understandings of the pasts, presents and futures of infrastructure investment and the experiences of particular neighbourhoods are vitally important in attempts to move beyond a binary imaginary of fractured Cape Town and to understand the importance of often highly localised service delivery politics upon broader, national directions, currents and political agencies. IUC discloses the plurality of the urban and the multiple politics of infrastructure that constitute what is often understood as a common post-apartheid experience. It prompts us to question how we build understandings of inequality and the urban political across cities such as Cape

Town when we see such heterogeneous (and unequal) urban infrastructural worlds within one city. Furthermore, it helps us to consider urban theory building more generally as needing to be situated in our particular research contexts (Lawhon, Ernstson, & Silver, 2014) and open to findings built out of the everyday and local that complicate, challenge and blur our knowledge, narratives and assumptions of the urban.

## Conclusions

If a key point of departure for contemporary urban geography is a conceptualisation of the city as relational (Jacobs, 2011), the new comparative urbanism scholarship from geographers and other social scientists offer promising pathways (Robinson, 2011, Ward, 2011). A relational comparativism disrupts the idea that cities are territorially bound and contributes to wider efforts to understand and research the different forms, extents and impacts of processes found in, connected by, or contested through different cities (Ward, 2010). But in the rush to map and contest different urban political, economic, cultural and ecological relationalities and to produce new comparative forms of thinking and methodology, the tendency has often been to downgrade the potential of comparison within a city, rather than take these comparative methodologies and apply them within specific urban contexts.

Scholars of comparative urbanism have rightly questioned, “which cities matter” as a critique of global city hierarchies, North/South binaries, and the sidelining of “ordinary” cities. This questioning has relied on bringing multiple cities into conversation with each other, including cities that have been historically left “off the map” in generating urban knowledge and theory (Robinson, 2006). However, an IUC approach provides potential for addressing a congruent, and perhaps equally important, set of questions: Which urban spaces, processes and practices matter when we look at cities? Which urbanisms have we made central, and which have we sidelined, as urban scholars? What version of a city do we choose to prioritise and why? Where do we assume diversity and similarity to lie in relation to urbanism, and how do we foreground it? If we understand cities as being made up of incongruent and multiple worlds that connect the local to a variety of differing scales and processes, then there is a need to question how we can more fully grapple with and connect heterogeneous componentary aspects of the “urban,” as well as how we communicate such urban imaginaries across activist and policymaking spheres. Here, we are not arguing against longer traditions in urban studies such as the Chicago School that have looked at the diversity of cities, rather that new debates in comparative urbanism have missed these potentials and that through comparing subsystems such as infrastructures

we are able to diversify the category of city, and bring increased visibility to its many moving parts and processes.

We argue that IUC provides an avenue by which we can pluralise how we understand and research the making and politicising of urban life. We have argued for the merit of IUC in relation to three respective cities, but in doing so we have also shown that IUC can itself be a useful basis for comparison between cities, particularly in gleaning lessons from placing the componentary findings of our comparative studies in conversations concerning urban mobilities, relational urbanisms, policy, planning practises, new political formations and translocal solidarities. In closing, we outline three cross-cutting themes here.

First, our comparative studies within Mumbai, Delhi and Cape Town illuminate a wide array of infrastructural politics, economies and practices that suggest a move away from political or economic reductionism in approaching cities and toward a focus on internal differentiation within cities. Such focus reveals the ways infrastructure and resulting politics are shaped through the diversity of lived experiences, neighbourhood and city histories, cultural practices, power constellations and socio-environmental conditions. In doing so, we have shown that IUC can reveal not just different kinds of access and experience of infrastructure within cities—as vital as that is—but radically different kinds of urban politics. It is not the case, then, that taking a “city-scale” view of urban politics will necessarily reveal a lesser diversity than an IUC approach focused on particular contrasting neighbourhoods—in fact it could end up revealing a quite specific set of formulations of urban political debate that may or may not get to grips with the important differences, concerns and needs across the city. Each site is a complex milieu of differing state regulations, micro-economies of infrastructure and unique political configurations that shape lived experiences and outcomes on the ground. Comparing sites within Mumbai, Delhi and Cape Town reveals not just different kinds of experiences and politics, it has the potential to inform a reconceptualisation of the politics of urban infrastructure that takes us away, for instance, from the tendency to privilege privatisation as the key politics of infrastructure fragmentation.

For example, in both Mumbai and Delhi, material arrangements and associated infrastructural politics were circumscribed by distinct (and temporally changing) networks of ethno-religious patronage and improvised provisioning. In all three cities, intersections between the state, urban intermediaries and local communities not only shaped unequal provision of infrastructures, but the redistribution of social power on the ground in ways that could not be predetermined in advance. Our separate studies each show that particular neighbourhoods and residents are

more vulnerable to wider infrastructural politics and change, such as the compounded impoverishment and social exclusion experienced by Mandela Park residents in Cape Town, or the state's cutting of Rafinagar's piped water in the name of addressing scarcity in Mumbai. In Delhi, Saroj Bagh faced unique political and ecological vulnerabilities, as opposed to other similar colonies, as it was disproportionately impacted by inter-state politics. In the everyday lives of city-dwellers, vulnerabilities become further siphoned (and produced) through particular gender, ethno-religious, racial and class politics that shape differentiated forms of embodied hardships in relation to infrastructure.

These findings offer challenges to how we theorise infrastructural politics at the global urban level, moving us away from over-arching narratives of singular economic systems and divisions between public and privately provisioned services to a more fluid understanding of the diverse practices and inequalities that shape urban worlds. They reveal plurality within and not just between cities that are both geographical and infrastructural in nature, and as such offer possibilities for connecting the heterogeneity of urban life and politics to more global understandings of the urban condition.

Second, and related, our IUCs reveal that despite the apparent commonalities shared by similar neighbourhoods (and even residents in the same household), very different urban worlds and associated politics exist. As IUCs illuminate the diverse embodied experiences of urbanism across scales, they point to the empirical and theoretical imperative to epistemologically open up "informal settlements" and the "urban poor" to reveal a far wider array of both processes and experiences and the way they are relationally produced. This opening is critical not only for revealing urban diversity, but for building knowledge and theory that addresses the plurality of life experiences of groups that are too often lumped into slum life and assumed to face similar problems, interventions and futures.

Finally, IUCs bring visibility to the unique and diverse pathways that egalitarian urban development and progressive change can occur for differing communities and spaces in the city. Learning the city in this context is a prompt to draw out the particular and localised experiences of different neighbourhoods in relation to infra-structure that mobilise some of the debates taking place on comparative research between cities and situate them firmly within particular cities, offering new potentials for future studies of comparative urbanism. While the case studies in the article are based on work in larger cities of the global South, we can equally see benefits of IUC working in various urban contexts and scales from towns and small cities through to city-regional agglomerations. From such a

perspective new political horizons open up that derive from the recognition of the diversity of experience, of the multiple ways in which communities and the state seek to invest in and reconfigure urban infrastructure and the varied outcomes of such processes. From within the many worlds of Mumbai, Delhi and Cape Town emerge distinct ways of being urban in terms of dealing with the present, living together, negotiating conflict, politicising conditions and imagining futures. These are immensely rich resources for critical urban research and for developing alternative urban pathways, and IUC is one useful tool in this agenda.

## Note

1. Pseudonyms have been used for the names of the settlements.
2. On August 29th, 2016, the Delhi Jal Board announced the board's approval for the "Jal Adhikar Connection" that would enable residents of illegal colonies to apply for a legal water connection.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Funding

This work was supported by the Economic and Social Research Council [RES-062-23-1669]. Jonathan would like to acknowledge funding from the Leverhulme Trust.

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