Life at the urban margins:

sanitation infra-making and the potential of experimental comparison

Abstract

How is life at the urban margins made and remade? In this paper, we examine this question in relation to 'sanitation urbanism', and through attention to what we call 'infra-making', defined as the interstitial labour of human and non-human agencies and atmospheres that take place in the production of forms of sanitation. We do so through close engagement to sanitation at the margins of two very different cities across the global North-South divide: Turin and Mumbai. Despite the apparent impossibility of comparing such different cities, in the paper we develop a form of 'experimental comparison' that is oriented at understanding the everyday making of specific urban processes around urban sanitation. We argue that a comparative focus on how urban life at the margins is made and remade is important for critical urbanism. Our experimental comparison leads us to a discussion of the relationship between specification and generalisation, in which the latter is positioned not as an end-point but as an informant serving to enlighten understanding and intervention in specific contexts.

Introduction

Sanitation is a fundamental feature of the city and urban life, and is central to how the modern city emerged and is contested. At the urban margins, sanitation practices differ widely according to the city, social group and contextual dynamics considered. From histories of inappropriate sanitary facilities to the everyday ways people cope with the inadequacy of those facilities, conditions change widely across latitudes and contexts. This variety demands a heterogeneity in the theoretical, methodological and analytical terms adopted to confront sanitation. In particular, a key challenge is to compare and learn from different cases (McFarlane and Robinson, 2012; Ward, 2008), and to ask: how can urban understanding respond to the multiple ways urbanites around the world cope with the lack of proper sanitation?

In this paper, we argue in favour of a 'sanitation urbanism' attentive to local contexts, histories and condition. We seek to understand sanitation at the margins in two very different urban contexts across the global North-South divide. What holds common across the different cities is to a shared and straightforward approach: to examine how things works, why they are in place, and what they mean. Such an approach to how ordinary urbanisms at the margins operate have of course journeyed on something of a controversial terrain. The post-colonial insights of the 'ordinary city' approach (Amin and Graham, 1997; Robinson, 2006) and the processual analytics of assemblage or ANT's urbanism (Brenner et al, 2011; Farías and Bender, 2010; McFarlane, 2011; Simone, 2011) have been criticised for their stress on the specific, their apparent lack of critical verve, and for their ability to engage in constructive comparative urbanism. On this latter point, Scott and Storper (2015: 12) argue for the impossibility of meaningful comparison if one does not take into account the 'systematic regularities in urban life that are susceptible to high levels of theoretical generalization'. The comparative post-colonial

'gesture' advocated by Robinson (2011b) is, others have argued, inadequate because it ends up in a 'primarily introspective enterprise' (Peck, 2014: 179). Peck (2014: 170) argues that much of the 'comparative gesture' has been 'pursued less by example and more by way of visionary editorial declarations and principled conceptual correctives'.

We respond to these arguments by offering a concrete exemplification based on the comparison of two cases of sanitation at the margins: one concerning homeless people in Turin and the other related to informal settlement residents in Mumbai. We argue that a comparative focus on how urban life at the margins is made and remade through changing relations between infrastructure, atmosphere, social relations regulation, and inequalities, is important for critical urbanism. We maintain that differences matter, that heterogeneity is worth sticking with rather than passing over to the end point of generalization. We do not argue against generalization, but reposition it. Hetereogeneity stretches and unsettles the categories we use, from sanitation and infrastructure to atmosphere and marginality. We seek out resonances across our cases but we emphasise uniqueness and contextuality, and this leads us towards the end of the paper to a discussion of the relationship between specification and generalisation, in which the latter is positioned not as an end-point but as an informant there to enlighten understanding and intervention in specific contexts.

We proceed by, first, describing what we have labeled 'experimental comparison', before moving on to the core theoretical tenets of our approach to the urban margins, focused on the everyday making of infrastructures brought forward to sustain sanitation in adversarial conditions. We conceive this making of infrastructure through the more expansive term, *infra-making*, defined as the interstitial labour of human and non-human agencies and atmospheres that take place in the production of alternative forms of sanitation. The lessons that can be

learned from this experimental comparison are then discussed, along with the strengths and limits of the proposed approach. We conclude by reflecting on the implications for conducting critical urbanism.

Turin and Mumbai: an experimental comparison

A recent train of thought in comparative urbanism asserts the need for distance from a paradigmatic understanding of cities, which arguably reproduces knowledge around the 'usual suspects' of Western urbanism and promotes instead a grounded and post-colonial understanding of urban phenomena across the world (McFarlane, 2010; Robinson, 2014; Ward, 2010). Although scholars have worked in the direction of this disenfranchised comparative urbanism for a while (Pickvance, 1986; Robinson, 2004; Roy, 2003; McFarlane and Robinson, 2012), urban studies are still arguably rather parochial in their approach to comparison (Gough, 2012; Robinson, 2011b). More can be said and done to provoke a more critical and engaged approach to the new comparative urbanism methodologically (Peck, 2015). If comparison is thought of as a strategy to unsettle and destabilize knowledge and theory as it is produced in order to reconstruct and develop new lines of inquiry (McFarlane, 2010), how might that operate in practice? One route is to examine less well trodden terrains of comparison in order to advance understandings of the contemporary urban.

This is the sense in which we use the term 'experimental comparison'. 'Experimental', first, because we purposefully sought out to compare radically different contexts that have seemingly little in common. Such a move serves to destabilise the tendency in urban studies to compare similar things, or to compare nominally different contexts only to highlight the similitude between their urban processes. 'Experimental', second, because we sough to compare

not so much cities but the everyday making of specific urban processes around urban sanitation. This does not mean considering practices without relating them to wider city histories, structures and agencies, because these wider processes are always present, shaping and acting in and being responded to, in the everyday urbanisms we examine. Our approach is to take those practices, and not analytical abstraction such as 'the city' *per se,* as a frame of comparison. And third, we name our approach experimental comparison because it is an effort to reveal *at the same time* 'interconnected trajectories' (Ward, 2010) *and* differential patterns. This focus on both the interconnections and the differentials means that our experimental comparison afforded us an opportunity to learn about both specific contexts and to consider tools to foster critical urban thinking. In this regard, we believe that experimental comparison can bring to the fore two levels of interconnected critical knowledge - one around the specificities of the analysed contexts and one in relation to generalisations that we understand not as analytical devices to theory-making, but as devices to orient further critical reflection on the specifics of the cases.

In this regard, the idea beyond our experimental comparison is to compare things to learn from them, not to explain things on the basis of their comparison. We are not arguing, then, that, in comparing sanitation at the margins of Turin with sanitation at the margins of Mumbai, the latter would allow us to better explain the former or vice-versa. Experimental comparison consists of learning about wider urban processes (such as sanitation) without diminishing their contextual specificities. Following Simone (2010: 279), this is an attempt to affirm and engage 'forms of articulation' amongst different urban experiences 'that otherwise would have no readily available means of conceptualization'. It is about grounding abstractions not by reducing differences, but by learning from the multiplication of difference; such multiplication can foster alternative urban imaginaries and futures (Jacobs, 2012).

Turin and Mumbai have arguably little in common, and the practices of sanitation at the margins of the two cities are shaped by different urban histories and patterns. Turin, capital of the Savoy reign and the first capital of Italy, followed a path similar to many cities in the West: driven by strong industrial economy in the 60s and 70s, confronting heavy de-industrialisaiton and economic stagnation in the 80s and 90s, and re-shaped by the event-led cultural economic approach of the early 2000s (Governa and Saccomani, 2004; Santangelo and Vanolo, 2010; Vanolo, 2008). Nowadays, with less than 1 million inhabitants, Turin is a rather provincial city in the global scenario: on a different scale from the 13 times more inhabited capital city of Maharashtra, Mumbai, a global financial, cultural and political hub, and a strong attracting pole of migration. Mumbai, too, has experienced waves of industrialization and deindustrialisaiton, but it's economy – largely informal, but with a massive globalized service and finance industry – is of a very different sort and scale from Turin's (eg D'Monte, 2002; Patel and Masselos, 2003). Considered from the standpoint of traditional urban studies, the two cities are seemingly incomparable. Yet, we argue that, considering the nuances of sanitation at the margins, a productive comparison is possible; this is a comparison that teaches us about the struggle for sanitation in the contemporary urban world and that can provoke our imagination regarding a different politics of sanitation.

The comparison is focused on sanitation at urban margins, but the margin is not a universal. The margins are produced and experienced in different ways in different cities – this, indeed, is what makes the comparison as a basis for understanding sanitation both important and challenging for thinking about sanitation and the city. By 'margins', we have in mind groups forced to the economic, cultural, and political edges of urban society, located there because of the inequalities of the urban world they live in, not because of their own actions. As Janice Perlman

(2004) has argued, the term marginality is sometimes used inter-changeably with 'social exclusion', at other time in connection to curtained citizenship rights (eg. Holston, 1999), or even 'capabilities deprivation' (drawing on Amartya Sen). Others use the term 'advanced marginality' (Wacquant, 2008) to denote the combination of neoliberal exclusion and punitive criminalisaiton of stigmatized urban places. While Perlman had argued in 1976 in *The Myth of Marginality* that marginality was a 'myth' in that favelas in Rio were not separate from society, but fully integrated, even if they were economically exploited and socially stigmatized, by 2004 she used the term to describe the changing forms of exploitation in favelas, from growing violence and inequality to stigmatisaiton and a reduced sense of community life. In 2010, in *Favela*, she distinguishes between material, cultural, historical, socio-prychological, and political dimensions of marginality, which she takes to be mutual, reinforcing, and differentiated across favelas. In this paper we understand these dimensions of marginality as processes that cannot be singled out but need to be traced and understood from their every day (re)making (Lancione, 2016).

The form of marginalization is different in the two contexts. In Mumbai, a profoundly unequal real estate economy, state and private demolition and policing, religion and gender, and the cultural politics of a caste system marginalise millions of people into informal settlements (Graham et al, 2013). Residents of informal settlements occupy an economic margin, but some informal settlements are more politically included (eg those with political ties through religion or ethnicity to dominant political structures) than others. Within informal settlements, there are differences by income, caste, religion, ethnicity, gender, and age, that are important for how connected people are to economic or political processes in the city, and for how exploited or excluded they are, and these conditions change over time. In Turin, if sanitation at the margins has historically been experienced in particular by internal waves of migrations from the South of

Italy, today it has mainly to do with a relatively small population of homeless and migrant people expelled (or never included) from the economic, cultural and political life of the city. The experience of this marginalisation varies across different people and over time. The life conditions of recent waves of war refugees and those of earlier (and still coming) economic migrants are different from, for instance, long-term Italian homeless people. The same goes with differences related to gender, age and personal capabilities, which are deeply entangled with one's own everyday practices at the urban margins. The nuances of sanitation marginalization for different individuals and groups will come through our case studies.

One final comment to make methodologically is that this paper wasn't the product of a research project that sought to compare everyday sanitation in the two contexts. It was only after researching everyday life at the margins in the two cities separately that we came to see the connections around sanitation – both the similarities (eg in the ethnographic focus on the everyday that we privileged as a means for understanding the making and politics of urbanism) and the differences (eg in the scale and nature of the sanitation practices used), and, finally, in the potential of experimentally bringing the cases together in order to learn more about sanitation experiences on the margins globally: what they are, how they operate, how they might be responded to. If we had developed the comparison within one project framework, we would of course have befitted from the sustained comparative discussion over time and in relation to specific empirical moments. However, our conversations suggested to us that there is value in the retrospective experimental comparison we examined. Just as comparison needn't confine itself to the 'usual suspects', we see no reason why it should confine itself to particular methodological approaches, and we hope that our intervention generates more experimental comparisons developed retrospectively, or within a single project framework, or as a conceptual examination,

or in some other form of provocation (see, for instance, Benedict Anderson's 2016 discussion on comparison).

The infra-making of sanitation

An urban mecanosphere of people and things – from sidewalks, soup kitchens and shelters in Turin, to water pipes, shared toilets, and inadequate dwellings in Mumbai – shape the day to day experience of bodies and infrastructural relations in the making. Infrastructure is embodied and sensed as much as it is wired and piped, felt as much as it is technical, lived as much as it is supplied (Larkin, 2013; Amin, 2014; Graham and McFarlane, 2015). Recent scholarship has highlighted the incremental (McFarlane, 2008; Silver, 2014), provisional (Graham, 2010; Piertese and Hyman, 2014), vulnerable (De Boeck, 2012), connective (Simone, 2004), always re-configured (Chattopadhyay, 2012), and lively (Amin, 2014) nature of socio-material urbanism. These interventions invite urban ethnographers to trace the processes comprising urban contexts, subjects and politics from a new critical angle: one that blurs boundaries, redistributes agencies and is attentive to powerful nuances and processes (Lancione, 2016), that examines *how*, in the mingling of bodies, matters, atmospheres, affectivities and power, sanitation comes to the fore (Desai et al, 2014), and which considers how sanitation might be delivered in more socially just ways in different places. This is an invitation to examine what people do and how they do it, to consider the resonances and dissonances across urban space, and to learn from and stay with heterogeneity.

Our focus is on 'infra-making' rather than infrastructure. By infra-making, we wish to signal the central role that infrastructure – the pipes and drains, toilets and changing rooms, soup kitchens and side-walks – plays in shaping everyday sanitation experiences, but we also want to

highlight that sanitation is made through more than these material configurations. Infra-making signals the relations between these vital material staples and the forms of labour, atmospheres and affects that co-compose everyday sanitation. We are interested in the *oeuvre* that marginalised urbanites put in place in re-designing the city to carve out the basic staple of sanitation that they have been denied. This is a process of connection and disconnection between one's own body and a city's machinic materialities and atmospheres that affects both the city and the marginalised urbanite: it is an infra-making between the two, through which both are co-constituted a producer and produced. By 'atmosphere', we are referring to the "shared ground from which subjective states and their attendant feelings and emotions emerge" (Anderson, 2009: 78, 80): "the concept of atmosphere is good to think with because it holds a series of opposites – presence and absence, materiality and ideality, definite and indefinite, singularity and generality – in a relation of tension". In the context of everyday sanitation experiences, atmosphere is an important part of the changing relations between people and things and how they are shaped by mood and affects. Atmosphere here is also political: it informs the ways in which the marginalized – the homeless, residents of informal settlements – both describe or think about themselves and others, and the ways in which they are described by others (the state, the media, the middle classes, etc). Infra-making does not only speak - as the accounts of infrastructure and assemblage mentioned above do - of the more-than-human mingling making up life at the margins, but highlights how these processes are a matter of constant, laborious and tiresome junctions and disjunctions between one's own wishes, capacities, opportunities, and the vast arrays of agencies and powers at play in the city.

In infra-making, people are both connected and disconnected, and re-connected and re-disconnected. Think of a homeless woman washing herself in a hidden corner of a public park:

her connection to the place is a simultaneous disconnection from what that place has been designed for and for whom it has been designed for. In this connection/disconnection, there is the infra-*space* where practices and performances of sanitation at the margins are constantly (un)made. Following De Boeck (2015: 52), we may think as this space as a *knot* of conjunctions and disjunctions, which simultaneously expresses 'the idea of interlinking, connecting, border crossing [or], on the contrary, express acts or states of disconnection, of the untying of integrative links'. 'Infra' becomes, in this, an in-between, a signifier of the laborious spaces where the city and its marginal subjects are continuously made and re-made. It is this 'infra', and not 'the city' that we investigate in the case of Turin and Mumbai, and this that we are claiming as terrain for experimental comparison.

Between shelters, public baths and river banks: homeless sanitation in Turin

As research is increasingly showing, a closer look at how homeless people are in their everyday life allows one to reconstruct dominant (and normative) imaginaries surrounding them. This is the first step not only in re-imagining homelessness, but also in rethinking the politics of sanitation for homeless people themselves (Cloke et al, 2010; Desjarlais, 1997; Gowan, 2010; Lancione, 2015). Take, for instance, Daniele, an ex-bricklayer who worked for several years in his own business, which he eventually lost along with his family and 'home' because of intense gambling and betting activities. At the time of my (Lancione) research in Turin (2009–11), Daniele epitomised many characteristics of the 'canonical' long-term homeless; he was dependent on private and public services to sleep and get-by, he was constantly going after public institutions for financial help, and, after more than five years of street life in Turin, he knew his way around the city like no housed urban dweller possibly could. However, Daniele was also and

foremost an inventive, emphatic and resourceful human being. One of the things Daniele loved the most, especially when he was spending his time in a public park in front of the main train station of Turin (Porta Nuova), was to approach the numerous pedestrians passing-by. He was not aggressive, and by no means violent: Daniele was both interested in seeing how people would react to his approaches and jokes, and, in the eventual financial opportunity arising from such endeavours. More often than not, the starting point for his approach consisted in asking people to judge and comment on his appearance. This is a reconstruction derived from field-notes of one of the repertoires usually deployed by Daniele:

> 'Hey! Hey, come here… You, look, - Hey! You, stop for a second, please, like that. Just a second. Have I scared you? No? Good! Listen… Only a second, don't worry. Look at me [gesturing with hands all over his tall body], look at my face. Yeah, yeah, look at my face. Do I seem like a homeless man [barbone] to you? Look at me! I am better shaved and better dressed than you are! [Both laughing]. I am just joking, uh! No harm. And now, hey! No no no! Don't go yet… I've cheated, you know that. I am homeless, you know that don't you? I have seen you around here before, you know me… I mean no harm… but if you can… 20 cents… perhaps you can help me… I don't know, fifty cents, not much… So I just can go there inside, and get a coffee, something warm, you know…'

This and other similar repertoires employed by Daniele were usually highly successful. They tell the story of a man who knew how to capture someone else's attention and how to stimulate their sense of pity in order to turn a trafficked public park in front of a train station into a viable cash opportunity. But this story tells also of Daniele's pride in his appearance, a personal

look to which he devoted the utmost importance and care. Although Daniele had various health troubles, such as diabetes and hepatitis, which made him look sick, and despite the street life that he was living every day, Daniele was always carefully dressed and clean. He was aware of the current fashion-trends and loved to spend his free time looking for bags (one of his favourite items) or caps in one of the largest open-air markets of the city (Porta Palazzo's Market). Since he could not afford to buy clothes and accessories, he obtained such items mainly through one of the charities distributing second-hand clothes for free to people in need. Daniele spent a considerable amount of time choosing the best clothes available from these charities, often entering into negotiation with the volunteers managing the distribution or with other homeless people in order to get what he considered to be 'the best'. Besides clothes, Daniele was also spending a great deal of time and effort to shaving, grooming and showering himself using the public facilities available in the city. As he told the researcher: 'I have to wash myself everyday… I have to change myself… I have to look good or I am not a person, a human being!'. For Daniele, infra-making consisted of extravagant performances and heterogenous spaces, people and infrastructure in the city, and oriented toward one main goal: to remain clean while being home-*less*.

Daniele may be seen as one extreme end on the canonical spectrum of homelessness, since homeless people are usually depicted as dirty, badly dressed and not caring for their hygiene. Although Daniele's attention to detail and care in dressing are quite unique, the same cannot be said in relation to the need to 'feel clean' that the vast majority of homeless people I encountered in my work were expressing and working to achieve. Homeless people's struggle for sanitation in Turin consisted of being disconnected from the commodities of housed everyday life and being connected to city spaces not designed to accommodate their sanitary needs. Those

spaces, therefore, are momentarily disconnected from their canonical use and are turned into opportunities for *making sanitation happen*. This is infra-making, with its bodies, materialities and affectivities at play in the everyday life of marginalised urbanites.

Before turning into the granularity of this infra-making, it is worth highlighting a bare but fundamental fact. If, as Gandy (2005: 28) has put it, the home has become 'a complex exoskeleton for the human body with its provision of water, warmth, light, and other essential needs', home-*less* people find themselves deprived of this exoskeleton. What replaces it is life on the street; life in spaces that have been thought, designed and constructed for all purposes but to dwell. The impact that such disconnection and re-connection have upon the individual is violent (Robinson, 2011); there are no doors to close in the public spaces of the city, no warmth, no toilet to flush, no towels to dry with after a shower (if there is one). In the infra-making that comes to the fore in the assemblage of one's own body with those spaces, one becomes unavoidably dirty, but strives for cleanliness against the odds. This is what the American anthropologist Robert Desjarlais (1997) has called 'the experience of homelessness', where 'experience' is not conceived 'as a universal, natural, and supremely authentic entity […] but as a process built sharply out of cultural, historical, political and pragmatical forces' (page 10).

In following, observing and tracing the experience of homelessness, one discovers that, what at first may seem like a deliberate choice—for example, taking less care of one's own appearance—is instead the surface of complex processual layering. Many of the homeless people encountered had the opportunity to use a decent bathroom only in the early morning and late evening—the moments during which they were respectively leaving and entering their shelters. In those moments they were supposed to wash themselves, use a toilet and take care of their appearance, but they had to do so through permanent negotiations of the available spaces,

constant queuing, and the unavoidable exposure to others' bodily smells, fluids and noises. The infra-making here was one of permanent negotiation, argument, pushing and being pushed and constant effort. Accessing a toilet in a shelter is not only matter of waiting, but also of ensuring that their belongings - left under the bed that one occupied during the night in a room with at least other six people - are safe, and to move fast, wash fast, and be ready to leave the shelter no later than 8am. The assemblage of the shelter is dense, shrunk in time and space; there is simply no room, not enough facilities and no time to properly take care of oneself. As the literature has clearly showed—and without diminishing the overall important role of shelters—the experience emerging from such spaces is one characterised by stress, frustration and anonymity, and the shelters are definitely not one designed with sanitation in mind (Evans, 2011; Johnsen et al, 2005; Lancione, 2014; Snow and Anderson, 1993). Having said this, the experience of those sleeping in a shelter in Turin was far better than the other people experienced—the ones sleeping in rusty and cold wagons at the train station, those crumpled in overcrowded 'emergency' containers put up by the city during the cold seasons, and those hiding in abandoned buildings, cars, or shacks. For these people, the access to any form of 'decent' toilet was even more precluded.

One possibility for them (and for all the other homeless people in daytime) was the public bath managed by the city of Turin. Standing as a reminder of its industrial past when many working class houses did not have toilet facilities, Turin counts five public baths located outside the inner centre of the city. In order to access these services for free, homeless people needed to obtain specific nominative 'access cards', allowing access to the bathrooms only once. Valerio, a short-term homeless man, was very proud anytime he was able to obtain one of those cards. One day he explained that in order to obtain a card, he had to queue for hours in one of the charities

distributing them (these were available also through public social workers); he had to partake in counseling sessions where private issues were discussed, and then he had to plead with the person distributing the cards in order to get more than the two granted to him. The affective atmospheres brought forward by infra-making discouraged many homeless people from even trying to get those cards, especially in the case of people living on the street for a long time who preferred either to avoid the public bath or to obtain cards via bargains with other homeless people. That particular day Valerio was proud of his brand new card both because he was now able to have a proper shower and he had the opportunity to wash his favourite pairs of trousers, which he did not want to throw away. Moreover, Valerio was happy because, for at least a week, he did not have to look for new tickets.

Time is central in the making of sanitation at the margins: both in the ways one decides to spend it, and in allowing or not allowing someone to take care of her/himself. If one sleeps in a shelter, having to commute to the other side of the city to eat in a soup kitchen, while looking for a job and taking care of counseling meetings and other forms of help (like the collection of second-hand clothes), the day quickly passes-by before it is already time to queue for the night shelter again (which, in Turin, could happen as early as 5pm - Lancione, 2014). Valerio's relief is symptomatic of the struggle to access a public bath and maintain proper personal hygiene: an endeavour deeply rooted in the social and material infrastructure of the city (Cloke et al, 2010), which both provides spaces of opportunity and wears people down, gradually leading them to take less care of themselves (Snow and Anderson, 1993).

Besides shelters and public bathrooms, homeless people try to take care of themselves in the most disparate spaces in the city: public parks, fast food toilets, train wagons, and any other available bathroom that did not require payment (the number of which, like the number of

publicly available toilets, has steadily decreased in the last years). Homeless migrants and refugees, who were often living outside the shelter system due to a lack of valid documentation and proof of identity, while also lacking the language skills and experience to effectively navigate the city, occupied a variety of inhabited spaces and displayed inventiveness that is not possible to cover in this paper. Nevertheless, both the industrial past and even the geomorphology of Turin were constantly (re)made and (re)appropriated to carve out slices of everyday life. In the first case, large, abandoned factories had been occupied by refugees seeking asylum or migrants looking for jobs in the city (and, more recently, the ex-Olympic village was occupied for the same purpose too). As witnessed during fieldwork observations, no sanitary facility was available in those large, empty, and cold rooms populated only by scattered mattresses on the ground. There the infra-making of sanitation was a triangulation between old broken toilets, abandoned rooms, newspapers, rain water collected with a plastic bottle, and little more. In the second case, all three major rivers of the city—Po, Dora and Stura—had populations living and performing everyday sanitation on their banks at the time of my fieldwork (and some still today). The case of the Roma people that have lived for years alongside the river Stura, ranging from 200 individuals in the mid-2000s to more than 400 in recent years, was the most evident. There people have not only dwelled in self-made shacks for lack of better opportunities, but washed themselves, their kids, their clothes, cooked and fulfilled their metabolic needs either with the (polluted) water of the river or through water taken from nearby public gardens or fountains (Rosa, 2016).

As we will see in the case of Mumbai, the kind of infra-making performed is not only dependent on space, time, personal abilities and material dispositions, but it is also interwoven with one's own gender. It was usually easier for a homeless man to urinate in public spaces,

while for women it was difficult to find appropriate spaces to do so. Turin—like most other cities —provides very few public spaces that are, at the same time, hidden and safe; a remote corner in a public park might be good for privacy but bad for personal security. As a homeless women reported, activities like changing sanitary napkins during the menstrual cycle are incredibly difficult to undertake without proper protection and means. Besides finding the right spaces to change, homeless women also had to find resources in order to buy (or to get for free) those provisions, and they had to do so while being constantly exposed to environmental conditions that could both alter the regular menstrual cycle and facilitate the emergence of specific infections and diseases. In relation to the latter point, homeless women in Turin found it particularly difficult to deal with sexually-related issues due to the shame that was associated with them. As one woman told me, sometimes it is just easier 'to wait' for the problem to pass, or to try to find the money to buy the medicine, rather than to enter a counseling room and confront the issue with a doctor, or a volunteer, who may be perceived as judgemental (Liebow, 1993). Even if, in Turin, the number of homeless women is very low due to the dedicated services that the city provides to them, sanitation for the ones on the street is still matter of investing a considerable amount of emotional and physical energies, time and financial means.

Sanitation at the margins of Turin was constructed in the mediation between one's own needs and the available services, through long and extenuating walks from one to the other side of the city in order to eat, sleep and use a free toilet, and under the skin of its decaying industrial architecture and beautiful parks. What emerges between these arrangements is the desire of homeless people (women and men, Italian and migrants) to remain clean. To its merit, the city of Turin, through its public and private (mostly religious) institutions, offers multiple services to its homeless population and still tries to keep them working in the face of welfare cuts and an

augmenting homeless population (increasingly made of refugees for the most part). However, most of these services are designed without considering that *they are* (and not only function as) the 'exoskeleton' of a homeless individual. This exoskeleton is, however, dispersed, fragmented and difficult to hold together. One could think about it as a sum of dots and strings scattered all over the city that homeless people have to weave together *every day*, being constantly connected and dis-connected in order to construct their own provisional sanitation-net. Such an endeavour requires an enormous mental and physical labour that homeless people have to obtain from other means. The consequence being that in order to learn, comply and work with the system put in place to help them, these people must become institutionalised by its requirements, timing and topographies, which the government fails to grasp and adequately respond to (Lancione, 2015; Lyon-Callo, 2000).

Sanitation infra-making in Mumbai

While we now shift context to Mumbai, the centrality of infra-making to the multiple operations of sanitation in everyday life remains. As in Turin, the making, sustaining and unmaking of sanitation – which connect bodies, subjectivities, infrastructures, and urban atmospheres to the wider city – atmosphere looms large. Infra-making is not just a political economic question, technical configuration, or resource based politics, but a sensorial processes. Or, better, the ways in which sanitation is experienced and emerges as political is in part linked to the senses.

Sameera, for example, a resident of Rafinagar, one of the poorest and most marginalized neighbourhoods in the city, felt life would be easier if there was a bathroom in her house, but she didn't want to have one in her home – 'it will smell in the house',

she said. She wanted the infrastructure, of course, but only if the smell could be contained. She added that she has an aunt in nearby Lotus Colony with a larger house and a toilet, but the arrangement works well there because there is a wall separating the toilet and living space, so 'there is no smell'. Or take this example from Reshma, who had a relatively good water supply, to the point that she was sometimes able to sell water to residents. Upon moving to Rafinagar, she said, her immediate struggle was one of dealing with atmosphere and unclean materials: 'I could get a bad smell from their bodies…Their [water] containers used to remain dirty. I would keep their containers far and fill water in them for them. And I would complain to my mother about having to give them water'. Others living nearby frequently complained that the quality of the water supply was constantly shifting, and this was often expressed in relation not just to water pressure but to the smell and colour of the water. Water would sometimes 'stink', people said, which meant either using it for non-drinking purposes – although that was a luxury not all could afford – or locating, whether through neighbours or through rumour, better quality water from other parts of the neighbourhood or nearby places. In 'legalised' neighbourhoods residents sometime take water samples to the municipality to complain – in non-legalised neighbourhoods like Rafinagar, it is all the more difficult to get the local state to listen or, indeed, smell.

Where infrastructure is fragmented and precarious, it presses on the senses and the body atmospherically. Its absence is smelt, felt, heard, and as such generates a sense of immediacy and often anxiety. Farida lives in Rafinagar. Her husband lost his auto rickshaw to the bank, and now rents one, and she can no longer depend on his earnings: 'Some days', she said, 'he will give [me] Rs. 100, sometimes Rs. 80, sometimes Rs. 180,

sometimes he won't give anything… I have to pay the light bills, send the children to school… I have to run the full house'. In an effort to preserve water and save money, Farida scolds her children if they wet the bed – which results in additional washing - and wakes up her youngest at 1am to go the toilet. Farida and her family cannot use the latrine in the house because the water shortage means she can't keep it clean. Instead, Farida uses what she called the 'Rs. 1 toilet' on the main road, a private toilet block which, while in poor condition, is more appealing than the municipal toilet block which is even worse, and in any case which is located near an area next to the mosque where men socialize and sometimes make women going to the toilet feel uncomfortable.

As in Turin, what emerges is a landscape of highly varied patterns of sanititon infra-making, where infrastructure is vital but as a relation to not just things but atmospheres, regulations, social differentiation, and inequality. In Mumbai that variation is all the more intensified and stark. For example, recently a new water treatment plant was opened on the edge of Rafinagar. The small plant, paid for not by the state but but corporate social responsibility funding, provides a limited privision of subsidized clean water in the area. The plant – *Jal Jeevan (Water is Life)* – is constituted through a corporate-investment in infra-making. It is run by a local women's group. The woman explained that in an area where water pipelines are often contaminated by sewage, the plant becomes vitally important. The water is purchased from municipal water tankers twice per day. It is then purified through an impressive-looking piece of machinery at the back of the small store through several stages of filtration: a sand filter to remove visible matter, a carbon filter to remove oil or colour pollutants, and then ultra-filtration blocks to remove micro remnants. Then it is treated in the UV section to get rid of any final

contaminants. In order to maintain the cleanliness of the water, residents are required to use the Jal Jeevan plastic containers and not their own.

The plant is located across the road one of the entrances to the city's largest garbage ground, Deonar, which Ranfinagar juts up against, and where many residents work (Figure 1). Here, a little piece of purification and sanitation is defended, and the women are constantly cleaning the plant, which smells faintly of disinfectant. The plant is a highly particular sanitised infra-making in the area, made up of a distinct assemblage of machinery, rhythm, atmosphere, symbolism, and regulation. It reveals the limits of the state in providing necessary support, and the work involved in working towards being clean and sanitized even in the isolated spaces where the infrastructure appears to push towards enhancing conditions. Of course, this is a selective infra-making; many residents further into the neighbourhood, or living along the garbage ground and who are usually poorer, do not use the facility, and live a different kind of sanitation marginality from some of their nearby residents. The water is only marginally more expensive than other sources of water in the area, but this is a neighbourhood with one of the highest child mortality rates in the city, where families often have to choose between buying clean water, food, and medicine.

Figure 1: Water and garbage in a landscape of sanitation infra-making (at end of document).

Infra-making in Rafinagar is material, atmospheric, corporeal, sensory, socially differentiated, and changeable. As water provisions change over time in quality and quantity, calculations on how much water to use for washing clothes and utensils, or whether to wake infants in the middle of the night to go to the toilet because there isn't

enough water to wash bed linen, become more or less important. Conditions change over the course of days and nights, and over the year as the monsoon and summer create distinct challenges. For example, residents often build makeshift latrines in anticipation of the monsoon rains. Materials – jute, wood, sack cloth, and so on – are recast from their existing use in a new context as a fundamental but temporary exoskeleton, possessing 'informed materials' (Barry, 2005) with new agencies. When the rains arrive, the neighbourhood floods in parts, generating a temporary intensification of illness and disease hazards as well as sensory ecologies, and making the daily journeys to privately run toilet blocks difficult. The toilets, which are very difficult to keep unclean given the density of use in poor materials, attract flies and mosquitoes, are often unsafe – especially for children, who on occasions fall into the pits below - and require ongoing maintenance. Over time, toilets may be improved with other materials that are longer lasting, and in that move a lock may appear to police access. Infra-making is made through a series of small anticipations and refabrications from the stream of everyday life. As in Turin, *time* matters.

This temporal variation is accompanied by important spatial variation – between toilets (e.g., municipal versus private), quality and quantities of water pressure, and across neighborhoods (e.g., houses located near open drains versus those located a little further away) (Anand, 2011; Bjorkman, 2015; McFarlane *et al*, 2014). The question of how to sustain life bleeds into the question of what everyday life is in precarious urban contexts: a life sustained through working with the fragments of urbanism, infrastructure in particular, becomes inseparable from the ongoing reassembling of transitory and atmospheric urbanism and their social relations: *infra-making*.

Processes of infra-making reflect more multiple trajectories of building infrastructure and housing in Rafinagar that happen over time, sometimes months, sometimes years or decades, and in contexts of often regular set-backs and demolition, and patchwork interventions by a variety of actors from states and private companies to residents and civil society groups. The everyday is a space of repetition and often labourious assemblages structured by relations with the state, by local power relations including the power of local leaders, and by materials that are mediated by those relations. Residents know, however, that this world of infra-making is not reliable, that it may for example be made political in the act of infra-making – the enactment in fact of a set of infrastructural imaginaries driven around notions of the 'world city' (e.g. see Graham, Desai and McFarlane, 2014; Roy and Ong, 2011) – or that it may itself collapse due to the effect of the monsoon or heavy use. They are acutely aware too that it is not 'modern', that it has failed to provide the necessary relations between senses, body, materials and ecology that other infrastructures in the city provide, as one women put it: 'There is a world of difference between this and a *pukka* [brick-built] toilet. This one remains a bit open, there is a fear of children falling, there is fear that it will get washed away in the high tide, there is a fear that it will break.' Infra-making here only takes you so far, and the configurations it produces are often vulnerable.

Infra-making sanitation is a precarious and sociospatially differentiated urbanism that allows at least some measure of capacity to sustain urban life, and even they sometimes fail or are simply demolished. In relation to and in the absence of material infrastructures, infra-making is both a radically different set of stories in Mumbai and Turin, and a shared vital entry-point for understanding how urban life is (un)made. It is

vital that understanding the relations between sanitation and life at the margins retains this heterogeneity rather than side-steps it. In the next section, we examine what we have learned from this experimental comparison in relation to sanitation, to comparative thinking, and to critical urbanism.

Learning from experimental comparison

The richness and value of the experimental comparative approach was to push us in ways of thinking about contemporary urbanism that begins with the heterogeneity of urban infra-making. These ways of thinking move toward a grounded form of comparative urbanism that instantiates its critical position by valuing contextuality and difference. Four directions in particular stand out.

First, in the practices and spaces of everyday life, infra-making is assembled in precarious ways, in spaces which are neither merely bare life nor formal citizenship (Chaflin 2014). What our comparative stories teach us is that urban things - infrastructures, affective atmospheres, regulations, machines, pipes - are vital to how urban life is made possible. As De Boeck (2012b: np) has put it, there is no 'one public realm, one res publica, but a diversity of publics and public spaces, things (material infrastructures), words (verbal architectures), and bodily functions. Together, all of these elements make up the social machine of the public realm as the sum of different collective experiences in which individual survival is made possible or, by contrast, is constantly made impossible'. To focus on the nuances of infra-making is to populate the many 'res-publica' of the contemporary urban, in their more-than-human affiliations, capacities and potentialities (Lancione, 2016). The 'homeless' and the 'informal settler'

are subjects, as Swati Chattopadhyay (2012: 138) has put it, 'not merely produced through discourse but formed in the process of inhabiting urban space, in the act of reading, witnessing, congregating, and moving through urban spaces'.

Second, and following on, our comparison shows that differences matter. This may sound a little simplistic, but what we're saying is that urban research has much to gain from sticking with the heterogeneity. The differences between Turin and Mumbai, or at least the cases of infra-making we've selected for this paper, stretch and unsettle any stable understanding of what sanitation 'is'. And so the temptation may be to look for a more singular abstraction. Our experimental comparison made us see: rather than reduce and simplify, we should multiply the differences, see that sanitation is changing in both space and time at the urban margins, entangled in ways that re/disconnect atmosphere, materials, people, and the wider city. Sanitation is usually defined as the safe disposal of human waste, but our paper has come to show that it is so much more, instantiated through quite different cultures around the body, entangments with infrastructure, social inequalities, and urban atmospheres, all of which take different forms within let alone between cities. This does not mean that sanitation is everything and anything. But it does mean that differences matter, they expand and push how we think about what sanitation is and signifies, and how the urban world is lived. In this sense, there is no 'a' logic, 'a' cause and 'a' solution to the problem of sanitation in Turin and Mumbai, but a set of processes that, if juxtaposed and analysed in their (un)making, can productively bring to the fore new insights on how sanitation is assembled at the margins.

Our attention to difference leads to the third point: experimental comparison is about learning from the (un)making of sanitation rather than in producing an overarching

theory of sanitation. We aim for a form of knowledge that values context and finds resonances with different places in oder to orient better political action in those contexts. In Table 1 we have summarised this though working with the double outcomes of *specification* and *generalisation*. The kind of critical urbanism that we bring to the fore consist in holding and operationalising these levels together to contribute to a politics of sanitation foucssed on specific cases and problematics. Generalisations matter, but not as end-points in theory production.

Table 1. Experimental comparison: in-between specification and generalization

	Specification	Generalisation
	Infra-making practices	*Lived experience*
Turin	Homeless people caring for their appearance and health build a geography that encompass (and often conflict) with the 'official' homeless city.	Sanitation at the urban margins in Turin and Mumbai is (infra-)made by everyday experiences of continuos *displacement*, forceful *negotiation* and unvoidable *exposure*, which are related to ordinary affects of *exhaustion*, *stress* and *shame*.
Turin	Sanitation in the shelters is limited by the lack of privacy, spaces and time.	Sanitation at the urban margins in Turin and Mumbai is (infra-)made by everyday experiences of continuos *displacement*, forceful *negotiation* and unvoidable *exposure*, which are related to ordinary affects of *exhaustion*, *stress* and *shame*.
Turin	Caring for oneself is mediated by infrastructures, gender, legal status and the fragmented nature of the urban 'exoskeleton'.	Sanitation at the urban margins in Turin and Mumbai is (infra-)made by everyday experiences of continuos *displacement*, forceful *negotiation* and unvoidable *exposure*, which are related to ordinary affects of *exhaustion*, *stress* and *shame*.
Mumbai	The precarious infrastructure of the informal settlement presses on the senses and the bodies.	Sanitation at the urban margins in Turin and Mumbai is (infra-)made by everyday experiences of continuos *displacement*, forceful *negotiation* and unvoidable *exposure*, which are related to ordinary affects of *exhaustion*, *stress* and *shame*.
Mumbai	The little pieces of sanitation available must be defended, although they are always partial and selective.	Sanitation at the urban margins in Turin and Mumbai is (infra-)made by everyday experiences of continuos *displacement*, forceful *negotiation* and unvoidable *exposure*, which are related to ordinary affects of *exhaustion*, *stress* and *shame*.
Mumbai	There are multiple trajectory of building infrastructure that affect how sanitation is structured in relation to the state, local power relations and available materials.	Sanitation at the urban margins in Turin and Mumbai is (infra-)made by everyday experiences of continuos *displacement*, forceful *negotiation* and unvoidable *exposure*, which are related to ordinary affects of *exhaustion*, *stress* and *shame*.
	Politics	
	Contextual knowledge and praxis informed by generalisation across cases but prioritising focus on specific cases and problematics	

At the level of specification, in both cases marginality is fundamentally a denial of the basic staples - adequate services for homeless people, social housing, or appropriate sewage and water facilities. These staples are vital, and we need to remain vocally and actively critical of the trends of privatisation characterising much of the urban world both in the Global North and South which point precisely in the opposite direction - that of reducing the already enclosed sphere of the available 'commons' (Amin

and Howell, forthcoming). The reality of unequal access to basic urban services is a hallmark of inequality in cities globally, and in most cities is growing still (McFarlane *et al*, 2014). The configurations of infra-making point to a grounding of urban life shared by many urbanities around the world, but they are first and foremost contextual endeavours.

In Turin, it was only investigating the infra-making practices needed to access the public baths of the city that we have been able to highlight the importance of - and hence the political question related to - the interrelation between the timing of services and the broader urban machine. Public baths, in this regard, are not enough if they are not made to work for a highly mobile population that has limited time and resources at hand. In Mumbai, the problem is not only that of not having a toilet, but of avoiding smell and the atmospheres of inadequate sanitation – atmospheres which radically shift between the garbage ground, hanging latrines, open drains, and the Jal Jeevan plant, and which are differently encountered by different people over time. These need to be considered alongside resistance to a city politics that excludes and violently demolishes housing and infrastructure based on religion and class. The politics of infra-making show that it's not enough simply to roll out the infrastructure, even if that is vital. Timing, convenience, changing atmospheres, forms of regulation, and patterns of labour (eg around the garbage ground), are just some of the issues that come to the fore through close attention to heteoregenous sanitation infra-making.

At the level of generalisation our experimental comparison signals the presence of a number of share grounds between homeless people in Turin and informal dwellers in Mumbai. These are related to how sanitation functions as a power-play around smell, or how it connects to health, or how it repeatedly deepens gender politics in the city, or how

it requires huge and ongoing levels of labour for those involved just to create some reasonable level of distance between the self and waste or to create a publicly acceptable level of cleanliness and appearance. We can identify at least three bodily experiences that resonate between the analysed cases (Stewart, 2007).

The first is the experience of continuous displacement: bodies are constantly moved by, from, through and with the city in their effort to assemble sanitation at the margins. There is an affect of *exhaustion* that emerges from this experience, one related both to the everyday labour of being homeless in Turin - moving between parks, public baths, train stations and shelters – and in Mumbai of carrying water, cleaning clothes and homes, building and maintaining toilets or drains, and so on, the burden of which fall on women and girls. Second, there is the experience of forceful negotiation: spaces and behaviours are never taken for granted and they cannot be, because of the socio-material limits of each context. The particular affect that emerges from forceful negotiations taking place in the two contexts is one of *stress*, which which we mean, expansively, an ongoing pressure and strain that ebbs and flows accoriding to changing circumstance. Infra-making is vulnerable to the actions of public and private authorities, or changes in social relations or infrastructural conditions (eg water pressure or broken down toilets), and uncertainty is a frequent presence. Third, there is the experience of unavoidable exposure: bodies are turned increasingly public in their bathing in an European urban river or in sharing a flimsy public toilet in India. The affect here is one of *shame*, powerfully gendered whether for homeless women and their difficulties during the menstrual cycle in Turin and women in Rafinagar attempting to avoid being seen answering natures call.

Displacement, negotiation and exposure signal just three of the the many bodily experiences (infra-)making up the shared ground of sanitation at the margins in Turin and Mumbai. These experiences are not, however, detached from the specificities generating them: in generalising them we offer an analytical ground for critical reasoning which must then return to the level of specification for political praxis (Flyvbjerg, 2001). Generalisation is less an end-point and more an informant to specific contexts.

Lastly, at the intersection of specification and generalisation a further point about the value of experimental comparison comes to the fore: both cases of infra-making demonstrate that while the capacity of people to reinvent the city is remarkable, this capacity is almost completely ignored in policy making outside of the usual hum-drum romanticisation of the 'entrepreneurial slum dweller' or 'wily homeless person', clichéd and usually male imaginaries that are presumably supposed to communicate an admiration for the resourcefulness of the poor. Such rhetoric, and we find plenty of it in both cities, is patronizing at best, and a means of obfuscating where responsibility lies for addressing poverty at worst. Can we imagine an urban politics that takes those capacities into account, but which does not collapse into the usual tropes of romanticized entrepreneurialism? Are there ways of recasting the political field as a pluriverse through which universal provision remains a political litmus test, but in which the specific needs of people living along garbage grounds, or struggling for sanitary towels in an informal settlement in Mumbai or the streets of Turin, might become the catalysts of flexible, context-specific policies? Can geographical differences inherent to infra-making become not the add-ons to policy positions, but the means through which policy is understood? Might the right to the city be understood as a right to infra-making? Can difference be a

starting point rather than a problem to be overcome? We believe that in holding specificities and generalisation at the same level our experimental comparison generates resources to begin to think through these questions.

Conclusions

If debates on urban infrastructure have pushed how we understand the life, politics and capacities of relations to urban materials, we have sought to advance this terrain by examining how urban life at the margins takes place through the more expansive terrain of infra-making. We have sought to foreground the role of the body, the senses, and atmospheres – too often underplayed in accounts of urban infrastructure and its relation to the city - in the making and unmaking of urban life. We have proposed an experimental form of comparative urbanism based on a grounded understanding infra-making in two very different contexts across the global North-South divide. Our aim has been to show that comparative urbanism has much to offer in valuing the everyday life and heterogeneities of today's cities. Comparison here is about learning from the specificity of each case while at the same providing generalisations that orient critical thinking in relation to context.

Experimental comparison is a resource for understanding the urban world in movement, unfolding in its heterogeneous articulation. In juxtaposing the sanitation's infra-making in Turin and Mumbai we have arrived at a set of specifications and generalisation that are critical because, by encountering heterogeneity at different urban margins, they they bring to the fore "a questioning rather than an acceptance of the world as it is" (Marcuse 2009, p.185). The experiences that form our generalisation are tools to

enhance further specifications - namely, investigation of the everyday mingling in-between bodies, infrastructures, atmospheres and more, and for how to respond in ways relevant to the lives of different people. We do not reject big theory and big claims, but here we have sought a different kind of critical urbanism, one that is about tracing how bodies, matter, atmosphere, social relations, and inequalities are knotted together in their (dis)connection and, from there, to highlight paths to concrete interventions and change. Our research is very pragmatic in this sense, and carries forward a hope for more positive articulations of urban life (Lancione, 2014; McFarlane *et al*, 2014). Experimental comparison is one methodological attempt to generate questions, stretch and challenge understandings, and inform contextual futures: difference-making as a tool to produce critical forms of knowledge in an heterogenous urban world.

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