



**LABOURING**

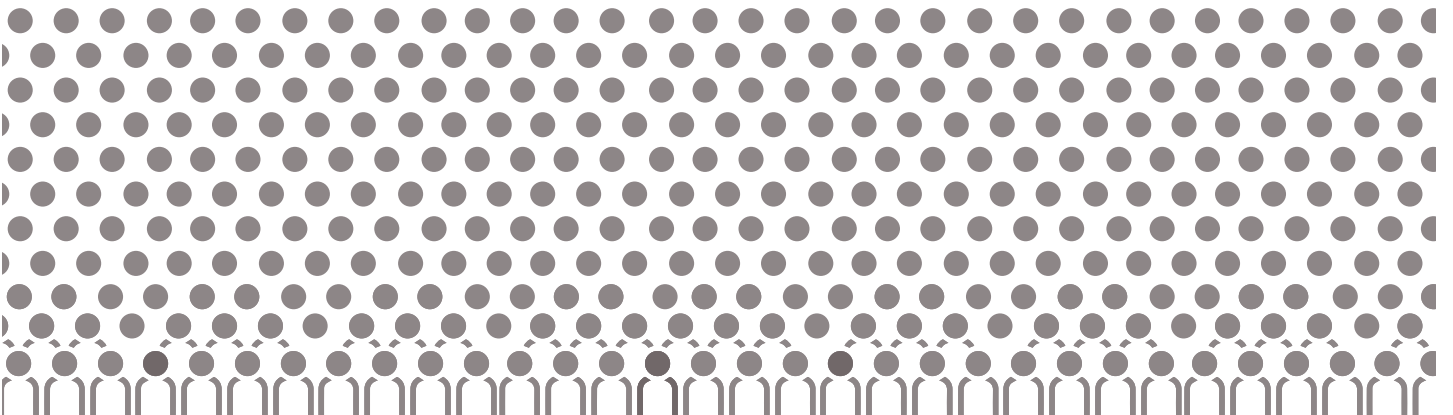


**URBAN**

**INFRASTRUCTURES**



A digital  
magazine



## About this magazine

The workshop and this magazine were co-organised by Hanna Rusczyk, an early career researcher from the Institute of Hazard, Risk, and Resilience (IHRR) at Durham University, Kathleen Stokes and Alejandro De Coss, PhD students from the Manchester Urban Institute at the University of Manchester and the Department of Sociology at the London School of Economics (LSE), respectively. Our theme and objectives emerged through discussions at several recent events: the Materiality and Infrastructural Politics sessions at the International Urban Conference (African Centre for Cities, February 2018); the Infrastructural Labour and Livelihoods session at the Infrastructures for Troubled Times symposium (University of Brighton, June 2018), and the Speculative Infrastructures workshop (University of Sheffield, September 2018).

From these events, we identified a small but growing intellectual community of postgraduate researchers and early career scholars who are exploring new ways of understanding labour within urban infrastructures and geography. The Labouring Urban Infrastructures workshop took place in Durham (UK) on June 6-7, 2019, and brought together some of these scholars for an open-ended discussion around labour, infrastructure, and the city. Over two days, 16 participants co-produced a digital magazine which translates research into narrative form and aims to speak to academic and activist audiences.

### Participants

Cecilia Alda-Vidal	Catalina Medarde	Kathleen Stokes
Lourdes Alonso Serna	Nate Millington	Anshika Suri
Alison L. Browne	Aidan Mosselson	Yaffa Truelove
Alejandro De Coss	Niranjana Ramesh	Joe Williams
Prince Guma	Hanna A. Rusczyk	Austin Zeiderman
Omar Jabary Salamanca	Anu Sabhlok	
Hara Kouki	Jonathan Silver	

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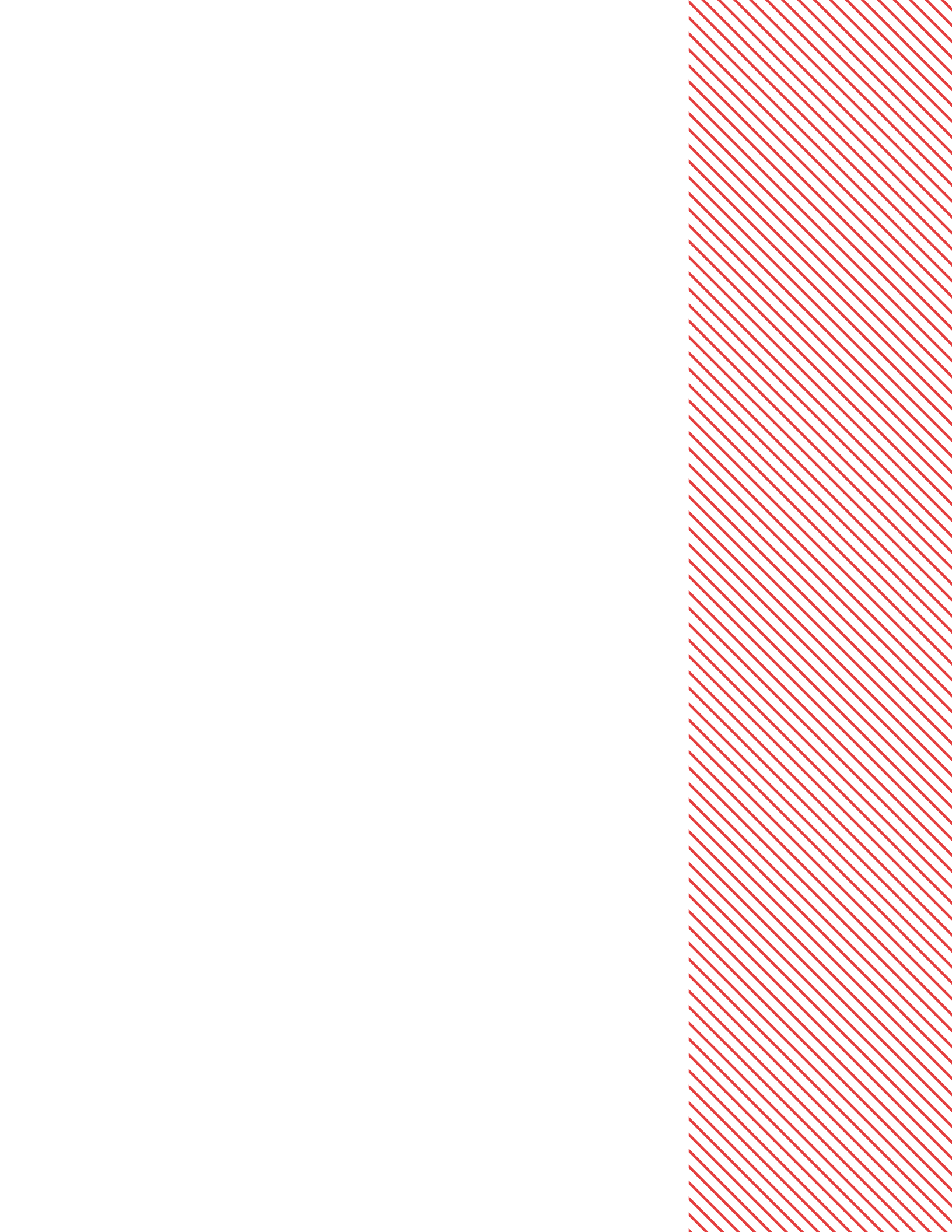


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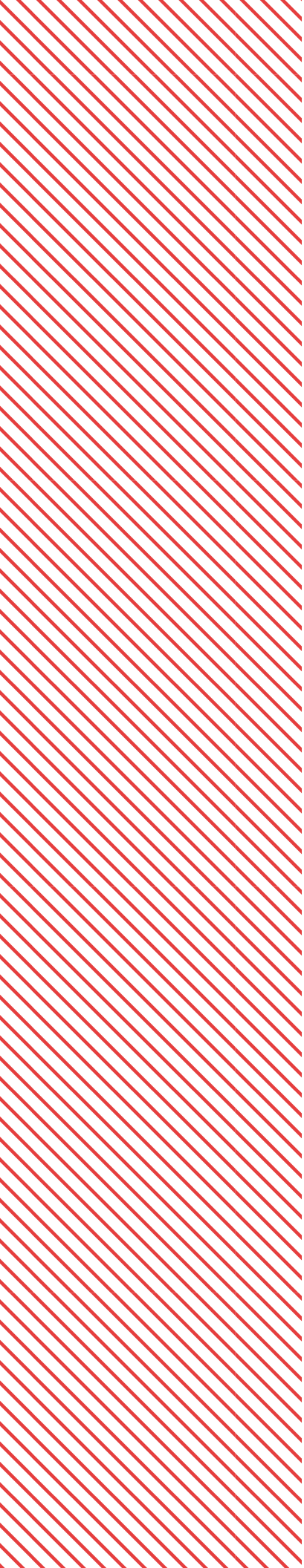


Collective Statement

# Labouring Urban Infrastructures

From the ‘infrastructural age’ to crises of care, infrastructures have taken a paramount place within contemporary discourse and debates. Promises of better futures; the ruination of projects past; increasingly automatised ways of consuming and producing; intensifying socioeconomic inequality and splintering urbanisms – our lives are constantly being made and remade through infrastructures. As policymakers and residents have become increasingly cognisant of the monumental influence of infrastructures, scholarly inquiry has thoroughly reframed how we understand socionatures, political ecologies, and the many processes and practices that shape urban life. Amidst of this burgeoning research, increasing attention is being drawn to the work and workers of infrastructure. This magazine looks to deepen and broader discussions on these questions.

Our intention here is to reassert the role and value of human life, effort, work, and experience into contemporary analyses of infrastructural processes and practices. This goal is simultaneously scholarly and political. We argue for a broader understanding (and recognition) of labour within infrastructural politics, processes, and formations. We question how, when, and why infrastructural work and labour is rendered (in)visible, and view the governance of this (in)visibility as inherently political. By challenging these infrastructural narratives, practices, forms and processes, we draw attention to how labour relates to questions of care, temporality, inequality, and the (re)making of urban worlds.



This magazine reflects a moment of exploration and exchange amongst researchers. It is the cumulative product of a two-day workshop at Durham University in June 2019. We came together not as scholars of labour, but predominantly interested in urban and infrastructural lives, governance, economies, and imaginaries. We collaboratively reflected upon our ways of thinking and analysing infrastructural labour over two days. As such, this magazine is not complete, perfect, or static. The ideas presented within will continue to evolve as we reframe and reconsider labour within our own studies and across our different fields of research. We hope, however, that our arguments and reflections can help to broaden current conceptualisations of infrastructural labour, raising its visibility - where appropriate.

As you read the following interventions, we invite you to question how labour is made visible and represented within infrastructures, and the urban more generally. To encourage reflection across the individual contributions, we also offer short collectively written interludes which identify a lens or approach that emerged from the workshop discussions. While not exhaustive, we deploy capital, notions of (in)visibility, and feminist approaches as entrypoints for locating and theorising infrastructural labour. Furthermore, the three different tables of contents are designed to entice you to read the contributions in different ways.

Indeed, we are left with more questions than answers at the end of this process. While many of our studies and reflections are located within 'the urban,' our conversations during the workshop and in this magazine have foregone a deep analysis of this terrain for the time being. In future, we might explicitly ask, how does the urban condition make experiences of labour and infrastructure different? Equally, how does temporality unveil or obfuscate relations, positionalities, and processes of infrastructural labour? We hope you find this magazine thought-provoking and stimulating. Enjoy!

## A Subaltern Travelogue: Labouring Narratives From the Indo-Tibetan Border Roads

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What stories can a mundane conglomeration of gravel and tar tell us about international politics and labouring bodies? What is the relationship between migrant bodies, road infrastructures and national identity? Where does urban India travel to in order to fulfil their desires for leisure, cool air and spectacular landscapes? In this project, I explore connections between the political-economy of the nation-state – its defence and its development with the socio-cultural process of labour migration. In that sense, my work moves swiftly across spaces and scales to show how the scale of the body is intimately tied to the scale of the nation-state (and vice-versa), that fixity and mobility are embedded in each other and that international politics and gender binaries are mutually constituted.

As advertised by the Indian ministry of Roads and Transport in its brochures, roads are “the signatures of modern India.” Moreover, the material connectivity that a road provides, transforms the geography of border regions in multiple ways – by linking the local, to the national, to the global – bringing in the military, the tourists, a sense of belonging to a nation, a centralization of control, extraction/distribution of resources, and a consumer culture. Just as road infrastructures enable the travel of people and ideas they themselves are enabled by an invisible network of travel undertaken by migrant labourers.

Urban Indians find the Himalayan region to be an ideal escape from the summer heat. One of the more popular destinations are small towns and villages in the upper Himalayas having been made accessible by multi-lane national highways, tunnels, bridges and rural connectivity roads through

governmental policies focussing on “defence and development.” There are numerous online travelogues by the urban Indian middle class or foreign tourists that describe the experience of travelling along the Indo-Tibetan border roads. These travelogues, often describe upper Himalayan regions as “remote,” “dangerous,” “untouched” and so on effectively erasing the labour of all those who travelled precariously to enable that the tourists may have smooth roads and seamless connections between these high mountain valleys. This contribution to the digital magazine is envisaged as a subaltern travelogue – that tells the stories of the 100,000 or so seasonal labourers who travel every year to work as road labour in the upper reaches of the Himalayas for India’s Border Roads Organization (BRO). Their life stories; seasonal journeys; meanings given to their temporary homes in the border areas; the dangers and perils of their work, the attempts



Figure 1.1. Awaiting recruitment

to create a sense of the community in an alien landscape; lifestyles and cultural idioms carried over (and back) from their villages in central India; the lives of the children who travel each year with the parents, the recipes of the meals cooked.....all of this and more will form the content of the travelogue.

I see this alternative travelogue as a political tool to claim a space for the labouring force within the nation's discourse in which so far, they have been invisible. Through the travel narratives of the migrant labour I

attempt to piece together an alternative story of nation-building. Travelogues for me are a way to inquire into the way we imagine, represent and construct the world around us and our place in it. Despite being the agents for 'development' and 'defence' of the nation-state and the region, the migrant labour is conspicuous by its absence in any local, regional or national history. The BRO advertises its role in the nation's development and defence through various sign boards that dot the border landscape. BRO sign boards claim that it "creates, connects and cares" for the nation; that they "tame the mountains" and that "BRO works today for your better tomorrow." BRO is composed of a combination of GREF (General Reserve Engineering Force) employees and personnel on deployment from the Indian army. This uniformed force forms the decision making and supervisory structure of the BRO while the on-site work is done by the seasonal labour. The labour is transitory, has no scope for permanent employment or access to benefits and their experience does not count (since the contract begins afresh every 179 days). They continue to remain 'unskilled'. Coming from 'overpopulated' states of Jharkhand and Bihar in India they are seen as dispensable, surplus labour – unaccounted for in the BRO's congratulatory discourse. This intervention aims to recognize, acknowledge and write back into history the role of the CPL in "building the nation." A shift towards the narratives of the migrant labourers employed to construct the border roads, brings our attention to the assemblage that surrounds these roads and to the bodily, visceral practices that are integral to defending and developing the nation-state – not the explicit and advertised militaristic body but that of the circulation of labour. For this magazine, I put forth a visual introduction to the travelogue.



Figure 1.2. *Reversing the gaze*



Figure 1.3. *Road levelling in progress*





Figure 1.4. Road cutting in progress

## Film, Labour and Infrastructure: Speculative Revisions in the Archives of Modernity's Excess

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*How marvellous to be able to look at what one cannot see  
-- Jean-Luc Godard, Histoire(s) Du Cinéma, 1988*

### Rivers of Modernity

The late Omar Amiralay, Syria's most hailed dissident documentarist, began his career, like other prominent filmmakers<sup>1</sup>, with a non-fiction film focused on the promise of infrastructure. His Film-Essay on the Euphrates Dam (1970) celebrated Hafez al Assad's construction of the Euphrates Dam, also known as Dam of the Revolution. This engineering feat, the pride of the Ba'ath party and symbol of the country's modernization, was part of a series of Soviet supported dams built along the Euphrates Basin to develop the north-eastern area of the country by facilitating water distribution and electricity in rural areas.

The documentary begins with a long sequence of close-ups on welders, engineers, crane and steam shovels operators, boat pilots, truck drivers and other workers. The images are in sync with an absorbing tune of Arab flute and drum tones that infuse frenetic rhythm to this powerful choreography of workers and machines. Amiralay foregrounds the intimacy, intensity and rhythm of work against the breath-taking scale of the machinery and the construction site, a composition where workers appear as cogs in the larger mechanical apparatus of the Dam. Subsequent scenes portray peasants working arid lands with their bare hands and modest agriculture tools in ways that contrast with and disrupt the fast pace of the Dam's development and progress. Building a bridge between these two seemingly distant worlds, the film closes with uniformed

school children drawing an illustration of the Euphrates Dam – an innocent, creative and forward-looking transition to modernity through education, work and machines.

Film-Essay is reminiscent of the work of Soviet formalist and realist documentary filmmakers such as Dziga Vertov. A pioneer Marxist documentary theorist and director, Vertov understood the production and distribution of film-making as a rhetorical strategy to reveal (not represent) the abstract forms of capitalist domination, a medium for workers to see one another so that a close, indestructible bond can be established among them.<sup>2</sup> In this spirit we can read the way Amiralay visualizes infrastructure as a factory, a lively industrial workplace with its disciplining rhythms. Distant from the city, in a landscape that blurs the boundaries between urban and rural, human and machine, the Dam constitutes a powerful (if temporal) site of massive employment and production, an incubator of the new socialist (wo)man. Amidst the scaffolding of the Dam, workers appear as an intelligible yet silent mass, a testimony to the labouring of infrastructural modernity in the context of pan-Arabism and the politics of socialist transformation and nation building in the region.

The film's form and function, in its embrace of the social-materiality of infrastructure, is distinct yet comparable

1 See for instances *Arrival of a Train at La Ciotat* by The Lumière Brothers (1895); *The Eleventh Year* by Dziga Vertov (1928); *Operation Béton* (1958) by Jean-Luc Godard; *La via del petrolio* (1967) by Bernardo Bertolucci.

2 See Vertov, Dziga. *Kino-eye: the writings of Dziga Vertov*. Univ of California Press, 1984.





Figure 2.1. Captions from Film-Essay on the Euphrates Dam by Omar Amiralay (1970)

to other contemporaneous Arab cinematic representations (fiction and non-fiction) committed to the ideological project of glorifying labour and the awesome power of all things technological. For instance, the Aswan High Dam in Egypt, another tour-de-force of Soviet technological engineering and Egypt's grandest project in modern history, is one of the most emblematic and mediatized infrastructural projects of this era. Beyond Arab states committed in principle to socialism, the mobilization of the technological sublime was extensive to other states and (public and private) corporations in the region who had similar interests in mediatizing their modernization achievements through film.<sup>3</sup> Moreover, throughout the early and mid-twentieth century, audio-visual representations of industrial modernity were so similar in their apotheosis of infrastructure that they often ended up blurring the divisions of the

different ideological and material projects that produced them. Drawing on a wide range of archives, including film, Susan Buck-Morss argues that "the historical experiment of socialism was so deeply rooted in the Western modernizing tradition [and technology] that its defeat cannot but place the whole Western narrative into question ... Socialism failed because it mimicked capitalism too faithfully."<sup>4</sup> Not only did Soviet cinema integrate the logics of Taylorist and Fordist production and the assembly line in industrial films of this era, the very engineering projects filmed by committed filmmakers such as Vertov were often built with Western technical and financial support.<sup>5</sup>

Thirty years after Film Essay, following the collapse of the Zeyzoun Dam, which killed dozens of people and ruined thousands of lives, and the revelation of an official report that had predicted the dam's fate, Amiralay returned to the Euphrates Dam to produce

3 See Damluji, Mona. "Visualizing Iraq: oil, cinema, and the modern city." *Urban History* 43, no. 4 (2016): 641-641

4 Buck-Morss, Susan. *Dreamworld and catastrophe: the passing of mass utopia in East and West*. MIT press, 2002 (p.xii, xv)

5 Sutton, Antony C. "Western Technology and Soviet Economic Development, 1917 to 1930." (1968) (p.201)



**Figure 2.2.** Captions from *A Flood in Ba'ath Country* by Omar Amiralay (2003)

his last film, *A Flood in Ba'ath Country* (2003). The documentary deconstructs the triumphalism of Film-Essay questioning Syria's modernization project and the effects of the Euphrates Dam in the small village of Al-Mashi. The film opens with the same long sequence from Film-Essay followed by a close-up of an elderly man sitting in a boat over the lake Assad, beneath whose waters stand his inundated village, narrating the displacement of former residents from the Euphrates valley:

One day, they came and filled in the lake,  
we watched our homes submerge and be  
washed away, taking our memories with  
them.

In another scene, young students dressed up in military uniforms for the occasion and led by the school master read out loud a text entitled *The History of a River*:

In my country, we change the lives of rivers. We re-invent rivers, indeed, on 5 July the Euphrates awoke to find that Syrian Arabs had moved him, bed, blanket and all to a new address. I understand the sadness of the rivers, when we oblige them to leave the cradle of their childhood, the places of their past loves and old friendships but I also understand the revolutions that want to master nature for the good of man. On 5 July the Euphrates moved into his new school to learn to read and write and to make love in a new way with the fields and trees. On the school doorstep, the president grabbed from the river his cloak of clay and cut his hirsute hair. He gave him some green ink and a pen a notebook so he could begin his new story. He declared, in changing course, that the dam was not solely the work of Syria but an act of national liberation which clearly means that the Syrian dam belongs in part to Palestine. On 5 July was born in Syria Euphrates Man, the man of victory. Remember this date.

A Flood in Ba'ath Country is a significant exercise in self-critique that subverted Amiralay's previous account of Syria's modernization project in Film-Essay. When brought into conversation, these films constitute an effective indictment against the regime's development program, its revolutionary fervour and the detrimental effects of industrial modernization on the peasantry. Taken together, these films also contribute to making visible traces of a rich national infrastructural archive, an audio-visual repository concerning imaginaries of man's conquest of nature, the remaking of subjects and nature through work, the sublime capacities of modern machines and technology, the promise of rational science and education, or the displacement and violence resulting from infrastructure development. Amiralay's critical revisionist montage notwithstanding produced an incomplete image, an imperfect archive that also hints to an invisible, whose traces are held in it as an unresolved unfolding.

### Excess in and Beyond the Frame

Longstanding considerations about the tensions between the visible and the invisible, between the represented and the (un)representable, contribute to our understanding of both film and infrastructure as mediums that exceed their own limits, continually figuring a surplus and an absence. In this sense, Amiralay's project, like other audio-visual and textual registers of infrastructure, can be understood as something provisional, a tension caught up between the visible and the invisible. As Jean-Luc Godard implies in the quote opening this essay, we must acknowledge the limits of the visible. Both Film-Essay and A Flood in Ba'ath Country can thus be read for what is always in excess, in the frame, passing unnoticed for its banality rather than its appalling singularity, and off the frame, wherein lies an evacuated world of dialectical relations. This excess acquires visceral materiality in the bodies and communities that are displaced

by infrastructure but also in the flesh of the workers that build failed utopias of modernity. It is here, in the absent social histories and experiences of the past that we encounter not only processes of exploitation, extraction and circulation, but also the constructed social divisions and hierarchies—sexual, gendered, racial, ethnic, national, economic and legal—that capitalism's infrastructural modernity has historically (re)produced among workers, waged and unwaged. Excess not only delimits those experiences that constitute yet remain outside of modernity's territory; it underpins the metabolic geographies of infrastructural modernity.

Like the Aswan High Dam, the Euphrates Dam was the embodiment of a failed Arab project of socialist modernity which sought to control the means of production so vital to overcome imperial and colonial forms of rule. Hydraulic and other pharaonic nationalist engineering undertakings in the region however need also be accountable for the excess and abstracted human and non-human costs of these violent assemblages. The Euphrates Dam and Lake Assad not only led to the displacement of an estimated 60,000 to 70,000 people, the majority being Kurds denied right to property citizenship, loans, employment and state benefits. It also advanced a racialized and gendered division of labour which led to deeper poverty, further exploitation and loss of freedom.<sup>6</sup> The Aswan Dam and Lake Nasser in Egypt do not fare better: the construction of the Dam was also conceived as a war against nature and a class-based society, its victims assumed as unavoidable collateral effects of modernity. Even though there are no accessible official accounts on the number of workers that died during its construction, estimates are in the thousands.<sup>7</sup> Moreover, since the 1960s, more than 50,000 Nubians (100,000 if including Lake Nubia in Sudan) were expelled from their land after promises of a right of return following the completion of the High Dam were broken. This displacement and irreparable destruction of culture, known as the bitter occurrence, is still at the heart of

6 Galié, Alessandra, and Kerim Yildiz. Development in Syria: a gender and minority perspective. Kurdish Human Rights Project, 2005.

7 Mossallam, Alia. "“We are the ones who made this dam ‘High!’” A builders' history of the Aswan High Dam." Water History 6, no. 4 (2014): 297-314.

Nubians' struggle and demands for their right of return.<sup>8</sup>

Large infrastructural projects of this era effectively became incarnations of socialist modernity, veritable assemblages enmeshed into a vast militant audio-visual archive committed to the promise of technology for the redemption of the masses. Yet, despite political cinema's commitment to revealing the connections between the worker and the factory, bodies and production, this record was profoundly mediated by a technological sublime (read: determinism) saturated with concrete abstraction, which reproduced and misrepresented one of the key features of capitalism that Karl Marx critiqued: the reification of the tool by which the tool is made into the agent controlling the labour of the worker.<sup>9</sup> Perhaps it is here, in the connection to capitalist aesthetic formations and ideologies of production, that lies the critical moment that marks the gradual disappearance of the worker and the factory from cinema,<sup>10</sup> a rupture with the foundations of the moving image best represented in those 45 iconic seconds captured by the Lumiere brothers in *Workers Leaving the Factory*.

### Labouring an Imperfect Archive

The invisibility condition of worker and factory in cinema is illustrative of the current moment in infrastructure studies where the fetishization of the object, the thing, and matter often leads to a neglect of those that actually build, develop and maintain infrastructure. What then can we learn about infrastructural modernity from an exploration of national audio-visual archives, about its contradictions and eventual demise? How can this scattered material constitute a valuable testimony about the builders of material worlds in the context of nation building in the region and beyond? In what ways can an understanding of infrastructure as factory, freed from the spatial and temporal constraints that delimit the historical form of the factory, provide an entry

point not only into representations of labour but most importantly about the worker's condition and struggles? What are the ways, if any, of intervening in these archives to map the concrete abstractions of labour, freedom, race, gender, finance and nation to understand the historical relationships that make possible these abstractions in the first place? And how to account for and work through the excess held in these audio-visual archives to debunk fossilized images of the working class and its workplaces while recognizing that these past projections still weigh heavily on current understandings of labour? And, finally, how can this exercise recover a political potential not only in relation to history but, more urgently, to the present?

Revealing that which is in excess of infrastructural modernity entails a thorough understanding of what has largely remained invisible from political struggles throughout history in the region. This exercise will certainly produce an incomplete picture, an imperfect archive, that produces its own invisibility but perhaps one with a much wider significance and sensible position from where to think about forms of recovery and restitution while also considering alternative forms of infrastructural modernity premised on a relational understanding of technology that is critically grounded on notions of care.

### Acknowledgments

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8 Janmyr, Maja. "Nubians in Contemporary Egypt: Mobilizing Return to Ancestral Lands." *Middle East Critique* 25, no. 2 (2016): 127-146.

9 Marx, Karl. "Capital: Volume 1: A Critique of Political Economy (Penguin Classics)." (1992).

10 Przywara, Adam. "The Disappearance of the Working Class from the Cinematic Screen." *Widok. Teorie i praktyki kultury wizualnej* 21 (2018): 162-179.



## Questions Around Infrastructural Labour in the Provision of Water and Sanitation Services in Global South Cities

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Artwork: Catalina Medarde

In 2015, 2.1 billion people globally lacked access to safe, readily available water at home and 4.5 billion people did not have access to safely managed sanitation (WWAP, 2019). In the face of these figures, the international community committed - as part of the Sustainable Development Goals (SDGs) agenda - to ensure universal and equitable access to water, sanitation and hygiene by 2030. In many global South cities, large-scale, centrally planned, water and sewer networked systems are being questioned as the way forward to achieve this goal.<sup>1</sup> Several reasons are pushing the sector to turn towards a more diverse portfolio of infrastructures. Large scale and centrally planned water and sewerage systems require a massive financial investment for their construction, maintenance and operation. Questions around ecological sustainability of these systems concern the high-demanding and non-efficient use of environmental resources. Furthermore, these centrally planned networks have demonstrated a lack of flexibility to adapt to the rapidly changing socio-material dynamics of cities and failed to respond to the needs of low-income populations.

Studies on infrastructures from a social sciences perspective have questioned the success of centralised systems in providing universal or equal services. In global South cities, the majority of the population have never had access to centrally planned infrastructures.<sup>2</sup> Residents' daily realities of access include a variety of often off-grid, self-help, co-produced or informal technologies and arrangements.<sup>3</sup> These more diverse infrastructural solutions are starting to be

incorporated or consolidated into formal urban plans in a variety of ways.

In water supply, for example, water kiosks have become a highly replicated model to increase access figures in low-income urban areas. In sanitation, centralised sewers are being substituted by faecal sludge management (FSM) approaches. Such non-centralised systems are extremely labour intensive. The smooth operation of water kiosks is sustained by kiosk attendants who oversee the selling of the water, including opening and closing taps, collecting payments from customers, or dealing with quarrels between customers. FSM relies on the manual labour of local workers to empty and transport the content of latrines and septic tanks to wastewater treatment plants.

### Labours & diversity within increasingly heterogeneous water and sanitation systems

Interest in infrastructural labours stemmed from socio-technical conceptualizations of urban infrastructures that have explored the multiple ways people engage in the everyday making and remaking of infrastructures.<sup>4</sup> Among these, scholars have recognised the manual labour that keeps urban infrastructures functioning (e.g. drain cleaners, waste pickers, water network operators). While this labour is often invisible and devalued, it is interwoven in the reproduction, or contestation, of uneven access to services and broader urban rights.<sup>5</sup>

1 Lawhon, M., Nilsson, D., Silver, J., Ernstson, H., & Lwasa, S. (2018). Thinking through heterogeneous infrastructure configurations. *Urban Studies*, 55(4), 720–732.

2 Kooy, M., & Bakker, K. (2008). Splintered networks: The colonial and contemporary waters of Jakarta. *Geoforum*, 39(6).

3 Ahlers, R., Cleaver, F., Rusca, M., & Schwartz, K. (2014). Informal space in the urban waterscape: Disaggregation and co-production of water services. *Water Alternatives*, 7(1), 1–14.

4 Silver, J. (2014). Incremental infrastructures: material improvisation and social collaboration across post-colonial Accra. *Urban Geography*, 35(6), 788–804.

5 Fredericks, R. (2018). *Garbage citizenship: vital infrastructures of labor in Dakar, Senegal*. Durham and London: Duke University Press.

Looking at the operation and maintenance of water supply networks in cities such as Mumbai or Lilongwe, scholars have shown that everyday decisions and routines of utility employees or plumbers can re-direct urban water flows, excluding or including particular residents.<sup>6</sup> This calls for further research about human labour in relation to the running and maintenance of other modes of service provision. How do the activities of workers such as kiosk attendants or cesspool emptiers enable or disable access to water or sanitation? Or how do they modify the material infrastructures in unexpected ways? These and the questions we outline below could help to illuminate everyday dynamics of access to water and sanitation in the context of new infrastructural planning realities.

Alternative modes of provision are often promoted on the grounds of the opportunities they offer for the creation of jobs and livelihoods for local populations. However the labour involved in these new jobs is barely subjected to protocols, regulations or control and little is known about the working conditions that are created in the sector. This neglect for the everyday realities of the new armies of labourers, and their needs and rights, contrasts with protests of NGOs and activists who have called attention to dreadful conditions in which cesspool emptiers or manual scavengers work in urban areas of India, Bangladesh or Kenya. As they have denounced, these workers face risk of stigmatisation, are poorly paid and often work without protective gear risking their lives in the cleaning of sanitation facilities.

Gender and feminist questions around the infrastructural labours that sustain water and sanitation provision is another area that offers possibilities for further research. The water and sanitation sector has traditionally been dominated by a tenacious divide of the labours that it entails in public/masculine/productive – private/feminine/reproductive often epitomised in the male engineer and

the female water collector. This has worked to invisibilize both the importance of repair, maintenance, and care activities to sustain functional infrastructures, and the participation of women in a variety of activities and occupations that are often devalued. As research has shown, women's low-waged or voluntary labour is often engaged in the care and operation of water and sanitation facilities such as public toilets or kiosks. This calls us to move our considerations of labour beyond the productive-reproductive divide and raises questions around the gender stereotypes, meanings and subjectivities attached to these labours.

A different question relates to water and sanitation utilities and municipal governments embracing ideals of modernity and automatization of the sector through smart city approaches. In Kampala, for example, the water utility and the municipality are piloting a mobile GIS app to connect providers of cesspool emptying and transporting services with potential customers. In Lilongwe, the water utility has recently set-up the “e-Madzi” project which aims at automatizing the operation of kiosks through the use of a pre-paid electronic payment system. Projects such as these will undoubtedly change labour dynamics and relations in the sector.

The cartoon in the following pages is based on research by the authors exploring the gendered labours, meanings and intersectional relations that shape the functioning of the water kiosks system operating in the low income areas of Lilongwe, Malawi and engages with some of the questions outlined above. As a low-cost solution for the provision of water to low income neighbourhoods, water kiosks rely on their construction as gendered spaces of water labour. Not only are they perceived as female spaces because they are more frequented by women who are responsible for the domestic labour of water collection but also the labour required for their operation is framed as being more suitable to women. The feminisation of

6 Alda-Vidal, C., Kooy, M., & Rusca, M. (2018). Mapping operation and maintenance: an everyday urbanism analysis of inequalities within piped water supply in Lilongwe, Malawi. *Urban Geography*. 39(1), 104-12.

these water labours has material implications for women working as kiosk attendants who, despite having an income opportunity and the possibility to build on social relations, have to deal with low paid jobs and the physical and emotional risks of working odd hours to ensure both neighbours' access to water and the financial viability of the system.

In-depth consideration of the diversity of labours involved in new modes of water and sanitation provision is crucial to understanding at the expenses of whose work and livelihoods access is increased and the SDG6 is delivered. This line of inquiry also provides an opportunity to grasp new labour dynamics and relations that sustain contemporary life in global South cities.

## Gender relations and infrastructural labours at Lilongwe's water kiosks

Researched and written by Cecilia Alda-Vidal, Alison Browne & Maria Rusca  
Illustrated by Catalina Medarde

In the periphery of Lilongwe, as in many other cities of sub-Saharan Africa, access to water is a challenge.

In the city center people have taps at home, here we buy water from kiosks. Before we used wells and suffered from cholera and other diseases.

Water from the kiosk is better, but expensive. And there are frequent shortages.

There are over a thousand kiosks here.

They are managed by Water User Associations (WUAs) and part of the wider urban water system of the Municipal Water Utility.

Due to gendered social norms water collection is perceived as a female responsibility. More than 800 women are employed as kiosk attendants making up the totality of the labour force for kiosk operation.

Water kiosk

The system of kiosks depends on women whose bodies and work fill in for the absence of piped water connections to homes.



In each kiosk there is an attendant, we have to make sure kiosks are open on time and collect the payments from customers.

Working as a kiosk attendant is a unique opportunity for women to earn an income, but the WUAs also rely on women as cheap labour.

I'm happy because before I couldn't find a job, at least now I can pay for school fees and buy shoes for my kids, but the salary is not enough.



To say the truth, they claim that men misappropriate funds and are short tempered with customers, but they are aware that men won't accept a salary of few kwacha. This is why only women become attendants.



**Figure 3.1.** *Cartoon on gendered labours, meanings and intersectional relations shaping the water kiosks system operating in low income areas of Lilongwe, Malawi (Page 1 and 2).*

Opening hours and proximity to their homes make the job compatible with women household chores.

The kiosk offers a space to cultivate social networks.



Attendants are expected to adapt their schedules to the frequent shortages to ensure their neighbours access water.



To sustain their operational costs WUAs should sell a minimum water volume every month. Opening the kiosks at night compensates for the selling hours lost during shortages.

WUAs are managed by an elected group of powerful members of the community who are usually men.

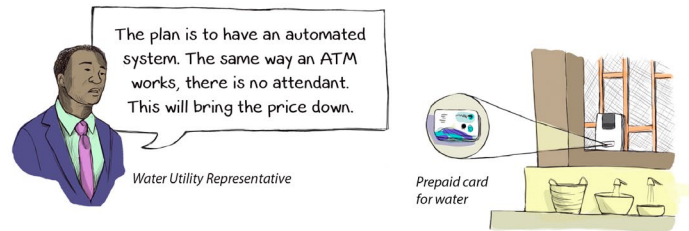


It is not fair that the board and the executive committee receive monthly salaries. They just get their money and don't consider the people burnt by the sun at the kiosks.

As quoted in Velzeboer, 2015



The employment of women is celebrated as part of an empowerment agenda. Paradoxically, ways of reducing reliance on womens' labour are being explored.



**Women, and their roles within water kiosks, are invisible but taken for granted in the planning and running of water infrastructures in the Low Income Areas (LIAs) of Lilongwe. A deeper consideration of the gendered politics and labours involved in these infrastructures is essential given the significance of kiosks in the global achievement of water access and gender equality.**

Based on: Alda-Vidal, C., Browne, A.L., and Rusca, M. (forthcoming) Gender relations and infrastructural labours at the water kiosks in Lilongwe, Malawi.  
To learn more about the system of kiosks and the challenges to access water in Lilongwe's LIAs - Watch the documentary [Lilongwe Water Works?](#)  
- Or visit [here](#).

This research was conducted in the framework of the PhD project of the first author, funded by the Sustainable Consumption Institute, University of Manchester. The cartoon has been partially funded by the Society and Environment Research Group in the University of Manchester's Geography Department.

MANCHESTER  
1824  
The University of Manchester

CATALINA  
MEDARDE  
ILLUSTRATION

**Figure 3.2.** *Cartoon on gendered labours, meanings and intersectional relations shaping the water kiosks system operating in low income areas of Lilongwe, Malawi (Page 2 and 3).*





Interlude

## **Feminist Approaches to Infrastructure**

What does taking a feminist approach to the study of labour in infrastructures mean? We address this question in the essays in the following section, not by having committed to a feminist framework at the outset, but by having arrived at this standpoint due to the nature of our enquiries and driven by what we endeavour to make visible in and about infrastructural work. In other words, we set out to argue that the very undertaking to investigate the myriad acts of labour that go into making, running and maintaining infrastructures cannot but be a feminist project.

A departing point for all these contributions has been to shed light on the whole universe of mundane practices, trivial patterns and everyday routines embedded in infrastructural labour: this is understood beyond the productive and reproductive divide and unfolds in a way that challenges the conventional focus of infrastructural studies on material artefacts, systemic flows and technological innovations. Addressing infrastructural labour through a feminist lens means paying attention to all the work needed for provisioning, preserving, repairing, maintaining and caring for that which sustains our lives in cities.

The perspective adopted here, thus, highlights the convergence of lived experiences with urban configurations and, as a result, allows human bodies to become visible in infrastructural labour. It opens up avenues for exploring how bodies - in their racialized, classed, gendered, aged forms - constitute infrastructural systems. Such an approach challenges the prefigurative and performative role of people in/as infrastructure by revealing the ways embodied labour is embedded in large infrastructures, knowledge practices, urban lives.

Broadening our understanding of how urban infrastructure works, also leads us to challenge the ways we conceptualize labour. Seen from a feminist standpoint, infrastructural labour exceeds the conventional confines of industrial working hours and becomes apparent in shifting, temporary or irregular forms of affective work, remote work, gig-work, night work. Challenging temporality as compartmentalized, fixed and universal opens up possibilities for exploring how working hours affect people's bodies, relationships, life schedules, economic practices and the urban fabric itself. A feminist standpoint also necessitates paying attention to the unremunerated work that goes into caring for, repairing and maintaining labouring bodies.

A caring and careful look at all the ordinary and extraordinary work that makes up infrastructures means developing a processual, relational and indeed subaltern understanding of infrastructures: this is inherently a feminist approach that can fundamentally transform the politics of what and how we see.

## Working at Night: Taking Care of the Day

Hara Kouki

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Durham, UK*

Last year, while taking care of a family member, I had to spend many days and even more nights in various hospitals around the city of Athens. Interrupting my daily routine meant, among other things, becoming familiarized with the parallel world of all these people taking care of patients during nights, of all these night nurses, mostly women and in many cases migrant workers, who float in-between our normal life schedules.

That was the way I was introduced, thus, to the routine of all those people working at night around the city, women and men who keep our hospitals functioning, guard factories and public buildings, transfer the food we buy in the morning, monitor sewage systems, power stations and computer server hubs, clean our offices, drive us home afterwards, fix broken ticket machines in tube stations, allow us to cancel lost credit cards, care for those of us who are in need of emergent care. Street cleaners, lorry drivers, security guards, shopkeepers, nurses, taxi drivers, cleaning ladies, police officers, caregivers: people who do not sleep at night but work in low-paid jobs, for temporary or informal contracts. This whole sum of workers remains invisible, stranded and silent, even if it 'binds us to the world in movement and keeps the world practically bound to itself'.<sup>1</sup> The maintenance, cleaning, repair, checking or restocking of industries, hospitals, markets or infrastructures in the cities require staff to work long after services have closed to the public and produces a working culture that serves as the connecting thread of our daytime lives, caring for our cities while we sleep: Who are these people? Do they choose to work at night? What does it mean for their daytime life? Do they relate with each other?

How is the city lived and enacted during night by them? How is their labour connected to power politics? Is it fragile, temporary, contested? How has it changed through time and how does it change the city and urban lives? Is night work different depending on different (daytime) contexts? What would that mean bringing to light night work?

Night has been understood as this hidden and marginal space that either obscures acts of repression or alternately leads toward enactments of subversion or liberation.<sup>2</sup> It has also been read through the lenses of night time economy and the diffusion of new forms of entertainment and consumption, as associated with neoliberal urban policies.<sup>3</sup> Night has served, as well, as a formidable entry point to engage with processes of urbanization.<sup>4</sup>

What (more) would that mean understanding night, and more specifically working at night, as an infrastructure of the day? To begin with, reading this universe of different workers through the lenses of infrastructure means to recognize the assemblage of practices, technologies, people, sites, materials, dreams, and affects that come together to constitute 'night labour' as the invisible fabric that sustains our days in the city. Approaching this question from the standpoint of maintenance and repair leads to noticing all those people, spaces, and moments that have been absented or silenced; it also entails asking what kind of mobility or stillness, absences or relations, (gendered) hierarchies and feelings night labour is made of. Delving into this radically different temporality means exploring ever-changing shifts, paying attention to silence, tiredness, sleeping during the day and making

- 1 Berlant, Lauren. 2016. "The commons: Infrastructures for troubling times." *Environment and Planning D: Society and Space* 34(3): 393–419.
- 2 Palmer, Bryan. 2000. *Cultures of Darkness: Night Travels in the Histories of Transgression*. New York: Monthly Review Press
- 3 Van Liempt, Ilse et al. 2014. Introduction: Geographies of the Urban Night. 52(3): 407–421.
- 4 Shaw, Robert, 2018. *The Nocturnal City*. London: Routledge.

sense of how irregularity becomes normality during the night affecting human bodies and relations.

The idea of ‘people as infrastructure’<sup>5</sup>, though, might lead to the romanticization of invisible communities and their strategies of survival; at the same time, prioritizing practices of ‘care’ could result into the idealization of the ethos of maintenance and social reproduction.<sup>6</sup> Yet, it is not easy to exoticize night labour when seen as infrastructure: on the one hand, it means attending to how it is itself made of gender, racial, class and political inequalities, whereas, on the other, it makes us see maintenance and care not simply as an add-on to its shaping; both inequalities and caring coexist as constitutive of an invisible ecology that is responsible for continuing our world. Stable dichotomies are dissolved, and we become more uncertain, as night labour challenges understandings of fixed working hours and life schedules, visible inequalities and specific spaces of resistance.

Reading night work as an infrastructure that maintains the day means understanding the relations and technologies through which the visible (day) and the invisible (night) are separated, connected and managed in the social life of our cities. This might enable us to see and narrate the urban and the political differently.<sup>7</sup>



Figure 4.1. *Night Nurse, Athens* (Credit: Maria Fotou)



Figure 4.2. *The Day, Athens* (Credit: Maria Fotou)

5 Simone, AbdouMaliq. 2004. “People as Infrastructure: Intersecting Fragments in Johannesburg.” *Public Culture* 16(3): 407–429.

6 Mattern, Shannon. 2018. “Maintenance and Care.” *Places*, Nov 2018. Retrieved March 26, 2019 (<https://placesjournal.org/article/maintenance-and-care/?cn-reloaded=1>)

7 McFarlane, Colin and Stephen. Graham (eds). 2014. Introduction, in McFarlane. C. and S. Graham (eds) *Urban infrastructure in Context*, New York: Routledge.

## Response to Image: Women as (Invisible Labouring) Infrastructure

Hanna Ruszczyk

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My contribution starts from an understanding that:

“Increasingly artists and writers from different parts of the world have been examining their own local histories: cultural and artistic, as well as personal and political. The[se artists] have been employing subjective testimonies, expanding the possibilities of an aesthetics of evidence to question hegemonic narratives that have historically been one sided and exclusionary.”

These sentences introduce the spring / summer 2019 issue of *AFTERALL* (published by the research centre of University of the Arts London).<sup>1</sup> The publication has tried to foreground how geopolitical realities impact artistic production differently. My specific engagement with art is an attempt to understand the context and enquiry arising from such spaces. My contribution to the magazine is based on a response to a Nepalese handmade card. It is an attempt to show how hegemonic narratives of infrastructure have been exclusionary towards women and their role in the care and maintenance of the city.

“Sociopolitical conditions at each place constitute divergent historical experiences and understandings of the work of art, its medium, materiality and meaning, all of which might shift once presented elsewhere.”

In Bauer’s foreword,<sup>2</sup> she also focuses on colonial blind spots. I am interested in the hegemonic blind spot related to the role of women. Sometimes I argue that women’s

bodies are the actual infrastructure of cities similar to Truelove’s intervention in this magazine. Sometimes I argue that women provide care and maintenance thus allowing cities to continue functioning.

In the last days of my November 2017 research trip to Nepal, I was wandering through the streets of Sanepa, Lalitpur (one of the three kingdom cities of Kathmandu Valley) looking for gifts for my family and friends. In a bookstore, I chanced upon this handmade card (Figure 5.1).



Figure 5.1. Handmade card of a house

1 Bauer U.M. (2019) Foreword. *AFTERALL* Spring/Summer 2019 A Journal of Art Context and Enquiry. London. Page 2

2 Ibid





**Figure 5.2.** *Handmade card of a woman building a house*

I thought ‘invisible laboured infrastructure’ is clearly of importance for this Nepalese artist. This artist and I were thinking through similar issues. During this particular research trip, I was not only sharing my PhD findings,<sup>3</sup> but I was also conducting new research into the changing urban risk governance landscape of Nepal. Nepal is radically changing. Municipal elections had taken place in the spring of 2017, the first in twenty years. In 2014, there were 58 municipalities. By the end of 2017 there were over 750 municipalities. I was interested in changing forms of being and living in cities. It was in this context, I was considering

how relevant my conceptual vocabulary of labouring infrastructure was to what I had seen and heard during the previous three weeks in November.

Lauren Berlant questions, “what kind of form of life an infrastructure is.”<sup>4</sup> She argues that “infrastructure is not identical to system or structure, as we currently see them, because infrastructure is defined by the movement or patterning of social form. It is the living mediation of what organizes life: the lifeworld of structure.”<sup>5</sup> This response to the image of a handmade card utilises the understanding of infrastructure as living and giving structure to life in urban spaces such as Nepal that are temporally, spatially and materially changing in ways we are just beginning to understand. Infrastructure is “by definition invisible, part of the background for other kinds of work. It is ready-to-hand.”<sup>6</sup> Always there. Invisibility that supports or allows other tasks to take place.<sup>7</sup>

During an interview with a women’s group, this is the description a member gave of the activities undertaken:

“We solve problems in the community and resolve disputes. We support children who cannot access schools due to lack of money, we intervene in domestic disputes as well as attempt to address alcohol and drug abuse in the community. The women’s group cleans the roads. We do a lot of work but it is unseen [by the local authorities]. The major issue is that the municipality does not want to communicate with the women’s groups. We are working for them, the government, [doing their work] but they still not seeing it”.

- Dilu, member of a women’s group in ward 4

Women’s unpaid labour occurs not only within the family but also in the community through the provision of neighbourhood care and what

3 Ruszczyk H.A. (2017) The everyday and events: understanding risk perceptions and resilience in urban Nepal. Doctoral Thesis. Durham University (UK). <http://etheses.dur.ac.uk/12440/>

4 Berlant L. (2016) The commons: Infrastructures for troubling times\*. *Environment and Planning D: Society and Space*. [Online] 34 (3), 393–419. Available at: doi:10.1177/0263775816645989. Page 393

5 Ibid

6 Star S.L. (1999) The Ethnography of Infrastructure. *American Behavioral Scientist*. 43 (3), 377–391. Page 380

7 Ibid

should also be considered municipal services. These forms of urban infrastructure provide a mechanism for considering the significant role women enact in the urban. In the global South, Chant argues:

“Women make significant contributions to urban prosperity through a wide range of paid and unpaid labour, including building and consolidating shelter and strategizing around shortfalls in essential services and infrastructure.”<sup>8</sup>

For example, in Nepal, women’s groups are essential to environmental and cleanliness efforts in their neighbourhoods. Women are responsible for the regular sweeping of streets and the on-going gathering of rubbish at pre-defined municipal collection points. The local authorities and neighbourhood groups pressure wives and women’s groups’ members to serve as laboured infrastructure in the city.<sup>9</sup> Women are the city’s unpaid maintenance workers and serve as “essential infrastructure”<sup>10</sup>sustaining the city. This social infrastructure allows the local authority to reallocate its funding from street cleaning to the provision of physical forms of infrastructure such as paved roads.

Bodies, care and maintenance are fundamentally important to broadening understandings of infrastructure. Women’s bodies are a form of laboured infrastructure that is managed by those in power to fulfil their urban aspirations and not necessarily the aspirations of women. The local authority informally demands this infrastructural labour but, as Dilu’s words show, it also requires this infrastructure to be invisibly managed.

Drawing attention again to my engagement with the handmade card in the beginning of my contribution, women and their invisible labour are essential to ensuring that not only the infrastructure of the home is sound and is kept in liveable condition, but women provide this identical function for cities in

Nepal. When considering infrastructure in the city, it is straightforward to think of the built environment.



Figure 5.3. Women’s group Bharatpur, Nepal

I argue to broaden what we conceptualise in terms of infrastructure to include not only the physical but also gendering labouring, social and economic infrastructure of the city. Through this broadened interpretation of infrastructure, gendered aspects of the city and women’s actions can be made visible. Women as infrastructure should become “distinct objects of inquiry”<sup>11</sup> because even though this type of infrastructure does not leave visible traces on the ground for researchers to follow, it is fundamentally important to the functioning of homes and cities throughout the world.

- 8 Chant S. (2013) Cities through a ‘gender lens’: a golden ‘urban age’ for women in the global South? *Environment and Urbanization*. [Online] 25 (1), 9–29. Available at: doi:10.1177/0956247813477809. Page 9
- 9 Ruszczyk H.A. (forthcoming) Gendered Invisible Urban Resilience. In: Allen A., Twigg J. and Burayidi M. (eds.). *Routledge Handbook on Urban Resilience*. Routledge.
- 10 Elyachar J. (2010) Phatic labor, infrastructure, and the question of empowerment in Cairo: Phatic labor. *American Ethnologist*. [Online] 37 (3), 452–464. Available at: doi:10.1111/j.1548-1425.2010.01265.x. Page 455
- 11 Ibid

## The Body as Infrastructure: Gender and the Everyday Practices and Labour of Water's Urban Circulation

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In cities of the global South such as Delhi, large-scale infrastructural networks of water, sewerage and sanitation only service an estimated 40-70 per cent of the urban population.<sup>1</sup> For these cities, infrastructural development often deviates from urban plans, and in the everyday is co-produced by the mundane practices, material interventions and labour of residents who go beyond the centralized network to access critical services such as water and sanitation.<sup>2</sup> For example, in Delhi more than half of the city lives in informal settlements that lack centralized connections to the public water supply, due to a policy of the water board (Delhi Jal Board) that excludes these urban spaces from the network due to their “illegality”.<sup>3</sup> Across the cityscape, residents in these neighborhoods instead depend on a combination of unreliable state tanker deliveries, private water sources (such as bottled water, sachets and private tanker deliveries), handpumps and tubewells as key infrastructures to access daily water. However, each of these differing infrastructural configurations requires the labour of the body itself to ensure that water indeed flows to households and reaches each family member. From waiting untold hours for water tanker deliveries to arrive, to competing to fill water and carrying heavy water containers across entire neighborhoods, the labour of the body subsidizes the failure of the centralized supply to reach the urban majority. While ordinary practices such as waiting for, and carrying, water appear to be rather visible in the city, constituting a daily routine particularly for women in informal settlements, this water labour is undergirded by a state erasure of the critical sources, modalities, and practices that actually make water flow in the city. These

modalities of access, requiring the labour of the body to circulate water, are largely absent from state narratives concerning Delhi's water past, present and future. With this erasure comes the invisibility of the gendered and racialized bodies that work to make water flow in the city: the mundane acts that compensate for the inadequacies and limited spatial reach of state-provisioned infrastructures.



Figure 6.1. *Women Collecting Water from Tubewell pipes Delhi*

With regard to extracting water beyond the network – from tubewells, handpumps, and water tankers – women's bodies literally act as infrastructure. Their bodies are the material by which water in India's capital is made to circulate and arrive within homes. As such, women's bodies act as a “prosthetic” to the grid,<sup>4</sup> a substitute for water pipes and pumps that works to replace or extend them through the physicality of finding, transporting and

1 Ahlers, R., F. Cleaver, M. Rusca, and K. Schwartz. 2014. Informal space in the urban waterscape: Disaggregation and co-production of water services. *Water Alternatives* 7 (1): 1-14.

2 See also: Desai, R., McFarlane, C., & Graham, S. (2015). The politics of open defecation: informality, body, and infrastructure in Mumbai. *Antipode*, 47(1), 98-120. Furlong, K and Kooy, M (2017) Worlding water supply: thinking beyond the network in Jakarta. *International Journal of Urban and Regional Research* 41(6): 888-903. Graham, S and McFarlane, C (eds) (2015) *Infrastructural Lives: Urban Infrastructure in Context*. Routledge.

3 Delhi Jal Board Act (1998) Section 9 (1) (A)

4 Truelove, Y. (Under Review). Embodied Infrastructure: Towards bodies that ‘matter’ and a corporeal geography of infrastructure.



making water flow. This gendered practice and reproductive labor constitutes the socio-material sub-strata of everyday water provisioning. In this brief essay, I argue that conceptualizing the body as infrastructure helps to make visible the unequal labor, practices, and performances that enable the circulation of critical urban resources such as water. Beyond bringing attention to the actually-existing infrastructures of water's circulation, this conceptualization provides a further window into everyday forms of infrastructural violence and urban inequality as embodied in the socio-material relations of everyday city life.

Not just “any” bodies act as water infrastructure in the city. The functioning of Delhi's diverse water infrastructures – including wells, tanker deliveries, standposts, and internal tubewell pipes – enrolls (and relies upon) gendered, raced, and classed bodies in order for water to be secured and ultimately reach household members. As dominant gender ideologies place household water management as part of feminized reproductive labor, this gendered division of labor produces immense physical and psycho-social burdens for poor women with harmful and (infra)structurally violent rippling effects. Women may wait hours for tanker or tubewell water to reach them, search for alternate sources in nearby communities when these water sources fail, barter with employers for buckets of water, and undertake the physically exhausting haul of transporting containers of water through long and narrow settlement lanes until they reach their homes. Furthermore, within water's micro-circulation, women are also the first to go without water when household supplies dwindle. As household water managers, women instead prioritize quenching children's thirst and providing baths and clean clothes for their husband and children over and above their own needs.

For example, in a 5000-person informal settlement in South Delhi in 2016, women regularly waited for both tubewell water to flow (controlled by a local leader) and for state

tanker deliveries to erratically arrive in the road outside their settlement, regularly losing 2-3 hours a day to this task. Often times, if water failed to arrive after 3 hours, women would begin a search for alternate sources, either buying sachets of water from a local vendor, or “borrowing” water from neighbors or employers. Waiting and searching for water interrupted, and at times altogether stopped, women's paid labour, producing compounded pressures and hardships. This includes not just the lost hours of work and income associated with the time given to procuring water, but for the spiraling consequences of such labour. For example, as women's daily routines were hijacked by the quest for household water, showing up late for work or missing work altogether resulted in women sometimes losing their jobs and/or reductions in their negotiating power with employers, who penalized women by withholding wages and increasing demands on their workload. Some women withdrew their daughters from school to instead be sent as their own replacements at work sites. These daughters' paid labour afforded their mothers more security of income in the wake of devoting substantial unpaid hours to ensuring household water flows. Furthermore, the onerous task of hauling heavy buckets across settlement lanes to their homes created back, shoulder and even arm injuries, with some women reporting chronic pain as an unavoidable consequence. Relying on uncertain configurations of water access also created rippling problems that resulted from water contamination, which could arise not only from poor water quality at the source, but also from transferring water through its everyday infrastructures of plastic buckets, pipes (inserted into tankers to suction water), and water storage devices. Episodes of diarrhea, reported by household members to be monthly, resulted in further hardships including paying for doctors' visits, obtaining medicine, and caring for the sick.

For Muslim men in the same small informal settlement, their intersectional gender, class, and ethno-religious positions placed them at an unusually compounded disadvantage.



Having left behind their wives to tend agricultural land in rural Bihar, these men took on the normatively feminized labor of water procurement due to the absence of other female household members. As these men migrated to Delhi specifically to earn money working 12-hour shifts on construction sites, they were unable to spend morning hours waiting for tanker water deliveries. As a consequence, Muslim men reported having no viable form of water access within the neighborhood, and having to walk 2 kilometers to another settlement where tubewell water could be filled in small containers and carried on their shoulders home. Some men said they could not manage to procure enough water to cook food, let alone bathe and wash.<sup>5</sup> Here, the bodily practices of compensating for the city's lack of water provisioning serve to further reinscribe intersecting gender, class, and ethno-religious axes of power. Infrastructure in this case becomes a means by which city-dwellers are marked and subjected to particular gender, class, race relations that compound inequities.

As specific gendered, classed and racialized bodies work to subsidize the water network in Delhi, this labor reveals highly situated experiences of infrastructural violence. Rogers and O'Neill (2012: 404) conceptualize infrastructural violence, stating:

"Infrastructure is not just a material embodiment of violence (structural or otherwise), but often its instrumental medium, insofar as the material organization and form of a landscape not only reflect but also reinforce social orders, thereby becoming

a contributing factor to reoccurring forms of harm."<sup>6</sup>

Bringing visibility to the specific bodies and embodied practices that work to circulate Delhi's water for the urban majority reveals the ways infrastructural violence is maintained and reproduced in the everyday. In particular, gendered and racialized infrastructural labor to procure water results in deepened forms of material deprivation, hardship and unequal rights to the city itself for particular social groups. Infrastructural violence emerges not only the material deprivation leveled on residents through their exclusion to equitable access to resources such as water, but through the violence of embodied compensation practices that arise to address such deprivations, and ensure water's urban circulation. The recurring forms of harm associated with the infrastructural labor to circulate water disproportionately affects specific gender, class, and ethno-religious groups, and also seeps into wider processes of urban exclusion. As particular bodies provide an invisible infrastructure that enables urban life to persist, this infrastructural labor burden reinforces residents' highly unequal experiences of differentiated rights to urban resources, space, and citizenship in the city.

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5 Truelove, Y. 2019. "Gray zones: The Everyday Practices and Governance of Water Beyond the Network," *Annals of the American Association of Geographers*. Truelove, Y. 2016. *Incongruent Waterworlds: Situating the Everyday Practices and Power of Water in Delhi*. *South Asian Multidisciplinary Academic Journal*, 14.

6 Rodgers D and O'Neill B (2012). *Infrastructural violence: Introduction to the special issue*. *Ethnography* 13(4): 401-412.

## Women's Everyday Encounters with Urban Infrastructure Regimes: Tracing an Intersectional Relationship

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Darmstadt, Germany

Joyce<sup>1</sup>, a woman in her early fifties, lives in Mlalakua informal settlement in Dar es Salaam. She starts her day by counting the empty plastic 10-litre water bottles stacked outside her toilet.

Living in an informal settlement with inadequate WASH infrastructure, Joyce like many women in the global south, is responsible for fetching water for drinking and sanitary usage. However, with limited DAWASA<sup>2</sup> piped water and sewerage connections in Mlalakua, Joyce undertakes various informal economic activities to try and gain purchasing power to mediate infrastructural inadequacy. Most days though, she sells food as a street vendor.



Figure 7.1. Shared toilet in Mlalakua, Dar es Salaam

Every morning, Joyce proceeds to count the pieces of 'Cassava' left in the wooden basket in her kitchen, while water mixed with sugar boils on the fire stove outside in the makeshift veranda. As the water turns to syrup, she starts cooking 'Mandazis'<sup>3</sup>. Around 12pm, Joyce and the other women residents from Mlalakua, armed with their freshly made Mandazis and boiled Cassava with pili-pili sauce<sup>4</sup>, setup their spots on the University Road, just before the Survey bridge that runs over the Mlalakua river. Soon, their roadside stalls are crowded with students from the nearby Ardhi University and University of Dar es Salaam, Bajaj<sup>5</sup> drivers, Dala-Dala<sup>6</sup> riders and often also people leaving the newly constructed shopping mall 'Milimani City' across the road, all of whom stop to grab a plate of homecooked food. Business is brisk, especially on a hot summer day in February 2016 and women like Joyce feel empowered through the money earned.

In the evening when she is returning home, Joyce stops to buy water. With one bucket of water (roughly one 10-litre plastic jerry can) costing 100 TSH<sup>7</sup>, Joyce uses the money she earned from selling home cooked sweets and food, for purchasing water from a house owner with a DAWASA connection in Mlalakua. However, with limited DAWASA connections, the lines are long and can often lead to taps being locked by owners. Furthermore, with limited water and inadequate sanitation infrastructure, most women like Joyce often forego drinking water at night, to avoid using the shared toilets. It doesn't help that these shared toilets also induce a fear of violence, especially when accessed at night, with Joyce recounting other women being attacked

- 1 Name changed, information gathered through semi-structured interview conducted with women residents of Mlalakua during fieldwork in February 2016.
- 2 Dar es Salaam Water and Sewerage Authority
- 3 East African donut like sweet
- 4 Hot pepper sauce
- 5 Three wheeled autorickshaw
- 6 Local mini-bus
- 7 Tanzanian Shilling

by men hiding behind trees enroute to the toilet. Nonetheless, despite her hesitation to use these toilets, Joyce along with other women residents; is also responsible for cleaning and maintaining these shared toilets, thereby partaking in additional unpaid labour (alongside their household work). This highlights the complex interweaving of an oppressive infrastructural inadequacy leading to potential empowerment through participation in informal economic activities, within the everyday lives of women in the rapidly morphosing cities of the Global South.

arduous, and disliked by women<sup>8</sup>, there is little research highlighting the everyday routines of women and their intersection with urban infrastructural inadequacy and subsequent involvement in informal labour. Earlier studies have also highlighted how women's everyday encounters and embodied experiences with technological artefacts are rarely recognised<sup>9</sup> despite technology being a significant site of gender negotiations where identities are constructed and deconstructed<sup>10</sup>.



**Figure 7.2.** A water kiosk in Kibera, Nairobi

Hence, women like Joyce, often stand on an intersection of multiple categories namely–poverty, infrastructural inadequacy, gender violence, (un)paid labour, amongst others. The outcomes of their (i.e. women residents of urban informal settlements) everyday embodied practices emphasise the daily contestations, negotiations and coping mechanism they employ to mediate gender inequality in urban infrastructure regimes and how they relate to the informal economy. Although water collection is a gendered landscape within the cities of the Global South, and has been portrayed within the development discourse as oppressive,



**Figure 7.3.** Women washing clothes at shared water tank in Mathare

Therefore, an intersectional lens can help strengthen investigation into the injustice against women through infrastructural inadequacy by analyzing the complexities, intricacies, and diversity of embodied and lived experiences of women. The voices

- 8 Van Houweling, E. (2015). Gendered water spaces: a study of the transition from wells to handpumps in Mozambique. *Gender, Place and Culture*, 22(10), 1391–1407. <https://doi.org/10.1080/0966369X.2014.970140>
- 9 Faulkner, W. (2001). The technology question in feminism: A view from feminist technology studies. *Women's Studies International Forum*, 24(1), 79–95.
- 10 Lohan, M. (2013). Men, masculinities and “mundane” technologies: The domestic telephone. In E. Green & A. Adam (Eds.), *Virtual Gender: Technology, Consumption and Identity*. London and New York: Routledge, Taylor and Francis Group.

and experiences of women residents can provide an avenue to investigate how gender inequality in informal settlements (manifested in the varied relationships women establish with WASH infrastructure) could also be seen from the lenses of women's ambiguous relation with technology (as users but removed from design). As intersectionality stresses the interwoven nature of multiple categories like race, class, gender etc., it has emerged as a concept to theorize on and empirically analyze the relationship between different social categories<sup>11</sup>. Additionally, an intersectional analytical lens also exposes multi-layered structures of power by engaging with "the conditions that shape and influence the interpretive lenses through which knowledge is produced and disseminated".<sup>12</sup> Moreover, intersectional approaches since their origin have demonstrated an assertive role in demanding diversity in the voices of the women as subjects and to further their inclusion within other disciplines as well. Lastly, women's unequal access to critical infrastructures has been largely neglected in the debates on intersectionality. Hence, through this analytical lens on interpreting and translating infrastructures, gendered scripts within urban city and infrastructure planning can be made visible, thereby exposing how women and their bodies have become a socio-political tool within urban infrastructure regimes.



**Figure 7.4.** *Shared toilet in Mlalakua, Dar es Salaam*

11 Cho, S., Crenshaw, K. W., & McCall, L. (2013). Toward a Field of Intersectionality Studies: Theory, Applications, and Praxis. *Signs, Chicago Journals*, 38(4), 785–810. Retrieved from: <http://www.jstor.org/stable/10.1086/669608>

Crenshaw, K. (1991). Mapping the Margins: Intersectionality, Identity Politics, and Violence Against Women of Color. *Stanford Law Review*, 43(6), 1241–1299.

Valentine, G. (2007). Theorizing and Researching Intersectionality: A Challenge for Feminist Geography. *The Professional Geographer*, 59(1), 10–21

12 Cho et al., 2013: 804.





## Interlude **Capital (and value)**

What does capitalism look like from the deck of a ship on the Magdalena River, or from the perspective of a temporary worker constructing wind farms in Oaxaca, a waste picker in Pretoria, a Kenyan railroad worker putting in rail lines, or a young person operating a phone charging business in Kampala?

To pay attention to infrastructural labour is to make visible the dynamics that underpin the expansion of capitalism as an uneven process of exploitation, exclusion and alienation. It necessitates focusing on variegated forms of labour - and their articulation along lines of race, class, gender, and geography - that go into the making of contemporary global life.

Seeing through these labour relations and the eyes of the workers who are making, maintaining, and servicing existing infrastructures can destabilize how we come to think about infrastructure and capital. An attention to labour as a situated, geographically-specific mode of engaging with the material world can generate new political imperatives, articulations, and challenges from the periphery. We understand periphery to refer to the variegated subject positions that make up contemporary labour dynamics across infrastructure, and the multi-scalar geographies of contemporary geopolitical restructuring from the Belt and Road Initiative to a global Green New Deal or the digital world.

The contributions that follow engage with differently with the various topics related to capitalism and value-making. They also ask numerous questions that seek to deepen our understanding of the various processes and practices that intersect in labouring capitalist infrastructures. For example, what kind of labour is required to make value? What kind of invisible / unpaid / subsidized labour is necessary to make value? What do deskilling and the removal of labour from infrastructures mean for work; is delabouring necessarily a bad thing?

It is also crucial to consider how the very definition of labour excludes and renders invisible the labour of social reproduction. Unpaid labour of care and maintenance, often done by women, is crucial for capital reproduction. Feminist approaches that highlight whose labour counts help to question labour as exclusive of the sphere of value production.

## Labour Tensions in the Age of Infrastructure: The Belt and Road Initiative in Kenya

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Infrastructure development is arguably coming to define the *modus operandi* of globalisation and urbanisation in the twenty-first century. Over the last five years we have seen a proliferation of visions for trans-continental infrastructure mega projects, including the G20 Global Infrastructure Hub, the EU Connecting Europe and Asia Strategy, the Manta-Manaus Corridor in South America, and the International North-South Transport Corridor between India, Russia and Iran.<sup>1</sup> These visions for mega-infrastructure connectivity aim to facilitate the global circulation of people, capital and things, connecting centres of production and consumption with distant landscapes of extraction, and reconfiguring relationships between countries and regions, public and private.<sup>2,3</sup> Crucially, the construction, operation and maintenance of global infrastructure spaces require vast movements of labour, which is creating new forms of migration, cultural exchange and tensions between domestic and international workforces in host countries.

The most extraordinary of these infrastructure-led development visions, in terms of scope and ambition, is China's Belt and Road Initiative (BRI). Launched in 2013, the BRI provides the strategic vision for investment of close to a trillion dollars in projects connecting China to 125 countries in Africa, Asia, Europe and South America, through a series of overland corridors and maritime trade routes. Mega projects like the BRI are seen by financiers and donor countries as a profitable and relatively stable way to ground surplus liquidity in the built environment, and by host countries as an opportunity to remedy historical under-investment and bridge the infrastructure gap. Together, this is leading to what Kanai and Schindler<sup>4</sup> call an "infrastructure scramble" in parts of Africa and Southeast and Central Asia.

The jobs, economic opportunities and transport connectivities bound up with the construction and operation of projects associated with the BRI are also driving new forms of labour migration. Chinese construction companies will often bring in labour to host countries. For example, Eximbank has been scrutinised for placing conditions on certain deals for BRI finance requiring the employment of a proportion of Chinese workers on projects. Such policies have caused concern, particularly in African countries, that infrastructure projects are not benefitting local populations and that domestic workers are being left behind in terms of skills, education and employment opportunities.<sup>5</sup>

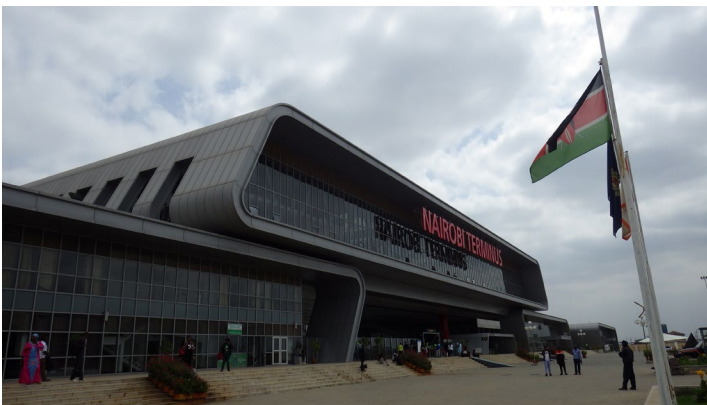


Figure 8.1. SGR Nairobi terminus

- 1 Schindler S and Kanai JM (2018) US sparks new development race with China – but can it win? The Conversation, accessed at <https://theconversation.com/us-sparks-new-development-race-with-china-but-can-it-win-105203> on 27/06/2019
- 2 Hildyard N and Sol X (2017) How infrastructure is shaping the world: A critical introduction to infrastructure mega corridors. Counter Balance.
- 3 Wiig A and Silver J (2019) Turbulent presents, precarious futures: urbanization and the deployment of global infrastructure. *Regional Studies* 0(0): 1–12. DOI: 10.1080/00343404.2019.1566703.
- 4 Kanai JM and Schindler S (2019) Peri-urban promises of connectivity: Linking project-led polycentrism to the infrastructure scramble. *Environment and Planning A: Economy and Space* 51(2): 302–322. DOI: 10.1177/0308518X18763370.
- 5 Sautman B and Hairong Y (2016) The discourse of racialization of labour and Chinese enterprises in Africa. *Ethnic and Racial Studies* 39(12): 2149–2168. DOI: 10.1080/01419870.2016.1139156.



Figure 8.2. View from SGR train

Although numbers are very fluid, there have averaged around a quarter of a million Chinese workers in Africa for the last decade.<sup>6</sup> These are largely concentrated in a handful of countries, which are subsequently experiencing changes to the workforce, particularly in the construction sector. To be sure, large infrastructure projects can provide employment for local workers and can drive up wages. Yet, this is not always the case, and there are persistent concerns about labour rights and safety connected to Chinese infrastructure development in Africa.<sup>7</sup> Of course, the extent to which Chinese infrastructure projects benefit local labour in African countries depends not just on Chinese investors and companies, but also on local context, including governance, institutions and workforce.<sup>8</sup>

Inadequate attention has been paid to how globally articulated infrastructure networks, like the Belt and Road Initiative, are creating new types of social, cultural and economic

interaction between internationally mobile labour and domestic labour, and the manifold tensions this involves. In Kenya, these issues have become particularly prominent in recent years. Kenya is a key strategic focus of Belt and Road investment, and the Mombasa–Nairobi corridor is seen as a gateway for Chinese investment in East Africa. Recent media reports in both local and international press suggest that there is growing public resentment in Kenya about a perceived lack of employment opportunities connected to infrastructure projects and imbalance in pay, labour rights and working conditions between African workers and the estimated 40,000 Chinese workers in the country.<sup>9</sup> There have also been some high-profile examples of racist behaviour of certain Chinese employers.<sup>10</sup>

Much of the debate in Kenya has centred around the Mombasa–Nairobi Standard Gauge Railway (SGR). This \$3 billion investment, largely financed by Eximbank, is seen by proponents of the BRI as the flagship

6 CARI [China-Africa Research Initiative] (2018) Data: Chinese workers in Africa. <http://www.sais-cari.org/data-chinese-workers-in-africa> (accessed 25/04/2019)

7 Kirchherr J, Disselhoff T and Charles K (2016) Safeguards, financing, and employment in Chinese infrastructure projects in Africa: the case of Ghana's Bui Dam. *Waterlines* 35(1): 37–58. DOI: 10.3362/1756-3488.2016.005.

8 Xiaoyang T (2016) Does Chinese Employment Benefit Africans? *Investigating Chinese Enterprises and their Operations in Africa*. *African Studies Quarterly*; Gainesville 16(3/4): 107–128.

9 Cannon, B. (2019) Is China undermining its own success in Africa? *The Diplomat*. <https://thediplomat.com/2019/02/is-china-undermining-its-own-success-in-africa/> (accessed 25/04/2019)

10 Goldstein, J. (2018) Kenyans say Chinese investment brings racism and discrimination. *The New York Times*. <https://www.nytimes.com/2018/10/15/world/africa/kenya-china-racism.html> (accessed 25/04/2019)

project in East Africa, but has been labelled the ‘lunatic express’ by others concerned about the huge price tag and Kenya’s ability to service the associated debt. An exposé last year of working conditions on the SGR found numerous cases of discrimination of Kenyan workers. These included different rules for Chinese and Kenyan workers (for example, around breaks and use of mobile phones), separate transportation to and from work, a lack of training and progression opportunities for Kenyan workers (made more challenging by the fact that some of the operator’s systems are only in Chinese) and unequal pay.<sup>11</sup>

While such findings are troubling, it is sometimes difficult to discern clearly between legitimate concerns about discrimination and media hype. Indeed, research conducted by the China-Africa Research Initiative at Johns Hopkins suggests that concerns over the viability of Kenya’s SGR and labour relations are more a problem of Kenya’s internal politics, rather Chinese investment practices.<sup>12</sup> Nevertheless, such debates call on us to consider the ways in which ambitious global visions for infrastructure-led development like the BRI are deeply rooted in local societies and cultures.



Figure 8.3. China Aid in Kenya

11 Wafula, P. (2018) Exclusive: behind the SGR walls. Standard Digital. <https://www.standardmedia.co.ke/article/2001287119/exclusive-behind-the-sgr-walls> (accessed 30/04/2019)

12 Wissenbach, U., Wang, Y. (2017) African politics meets Chinese engineers: the Chinese-built SGR project in Kenya and East Africa. China-Africa Research Initiative, Johns Hopkins University.



## Forced Migrants' Enrolment in Infrastructural Labour: Selfhood, Emplacement and Displacement

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This contribution reflects on the infrastructural experiences of forced migrants living and working in the Yorkshire region. My research explores the various forms of infrastructure that shape forced migrants' experiences, from those that help them establish presence and viable urban lives, to those that regulate, discipline and continue to marginalize them. Here I discuss refugees' experiences of labouring, focusing on interview participants who are employed in distribution centres, warehouses and factories. These interviewees are entangled in infrastructural systems that are at the heart of the contemporary British economy and everyday urban life. At the same time, they are displaced from everyday urban life. The research findings I draw on pose a number of questions for how we think about labour, infrastructure and forms of emplacement/displacement. Particularly, I will discuss the following themes: the significance of labour for people's sense of self and claims to belong; how labour contributes to patterns and processes of displacement; and the intermeshing of infrastructure and social hierarchies in contemporary Britain. Throughout this contribution, I bring the labouring body into focus, and emphasise the embodied labour that goes into making infrastructural systems. Often, this labour is unseen and unacknowledged. Bringing this type of work into view is part of the feminist politics and practice that this section of the magazine is concerned with.

### Labour, belonging and claiming space

Forced migrants face difficult challenges not only in arriving in Britain, but establishing viable lives once they have arrived and

secured the right to stay in the country. After navigating treacherous travel routes and a hostile immigration regime, the difficult work of reconstructing life begins. The two most important steps in this process are improving English language abilities and gaining employment. Although people who have been granted refugee status are eligible for public support, they are encouraged to find employment and become self-sufficient.

Neoliberal ideology ties notions of selfhood, dignity and virtue into ideals of entrepreneurialism, productivity and endeavour.<sup>1</sup> The virtuous working-class subject is one who is hardworking, self-made and shuns welfare or dependence on public welfare. This deeply problematic ideology has permeated everyday life, and plays a significant role in mediating people's identities. Refugees settling in Britain are interpolated into this system, and demonstrate that they have absorbed its lessons. At the same time, they also demonstrate the independence, pride and agency that gaining employment can confer.

For example, one interviewee recounted how she was pushed to find work, rather than remain on benefits, despite lacking any formal qualifications and having minimal English skills. She recalls the advice she was given thus:

Some people told me "You need to work, it's good for you, because if you are not working it's bad. You can stay to benefits but it's not good [being on benefits]. You have to help other people if you are working, cos you are still young."

1 Jason Read, "A Genealogy of Homo-Economicus: Neoliberalism and the Production of Subjectivity," *Foucault Studies* 0, no. 0 (February 1, 2009): 25–36.

Based on this advice, she accepted work as a cleaner in a factory. The work is onerous, physically demanding and forces her to deal with unpleasant waste matter. At the same time, she takes pride in the job, because, as she points out, it is hers, and allows her to gain some degree of independence. With pride and determination, she relates:

But so many people, if they are cleaning for one day say, "Ah, I can't come again!" Because if you see the rubbish and the overall [requirements of the job], you say, "Ah, it's disgusting, I don't want to come again!" But because it's my job, that's why I stay there.

Another interviewee demonstrates how finding work helps him feel at home in Britain. When asked if he feels he belongs in Sheffield he responds, 'Yeah, I would say so, 'cause now I'm working here, and I do volunteering.' Here he is emphasising the importance of labour as a form of engagement with and contribution to society. This type of engagement, and the forms of belonging it enables, is even more important in the face of persistent racism and accusations about migration placing a strain on public resources. One interviewee living in Barnsley and working in a distribution centre for an online clothing retailer recounts how he was able to counter racist abuse, because he is employed. He described an occasion in which a British man verbally attacked him in public, telling him, 'Go, go back to home; you're just here to eat benefit.' He countered this by telling the man, 'I'm paying tax, I'm not getting benefit, I'm paying tax!' Being able to refute this claim and validate his presence in the country gave him confidence to challenge the man and declare his right to belong. He recalls ending the argument by asserting himself and fighting back: "Shut up," I say. I say, "I have one life, I want to be free! I will stay here; I will live here."

### **Labour and displacement**

However, whilst labour provides platforms to establish identities and claim place, it also

works within a system that displaces forced migrants from the everyday life of the city. Distribution centres and factories operate on near-continuous time schedules. They majority of interviewees who participated in my study work long, difficult shifts, predominantly over night. Shifts running from 18:00 till 06:00 or 23:00 till 09:00 were the norm. Working these anti-social hours is exhausting and prevents people from engaging in other activities and platforms which are arranged to promote sociability and provide opportunities to interact. These activities are as important as wage labour for establishing social relationships and allowing people to create forms of belonging; however, patterns of labour prevent people from participating in them.

Shift work conditions people's daily rhythms and schedules and forces them to adjust their lives and body clocks to the patterns of work. Interviewees describe their working routines and the effects they have on them as follows:

It starts 6 and finishes 6. You have to get tired [working these hours] because you need to sleep. You don't feeling well because all night you're working without sleep, that's why you are tired.

It's difficult, cos the body needs to be asleep at night time, but I'm working. So we find difficulties in that. Sometimes you feel sleepy or very lazy; there's nothing to do, you just have to carry on.

Because they live on differing schedules and perform physically taxing labour, people are prevented from engaging in other activities outside of work. Several interviewees spoke about being unable to attend volunteering sessions or participate in social activities, such as singing in choir or playing football. Thus, whilst the British government pushes an agenda of 'integration', placing the burden of adjusting and adapting to a new society on migrants, patterns of labour frequently prohibit them from engaging in the avenues designed specifically to foster communal

relationships. These patterns also restrict people's abilities to utilise the city and get to know people and places outside of work. Facing long commutes, sometimes lasting two hours or more, people have to plan their days and geographies according to work schedules. They are thus displaced from everyday life in the city and confined to the spatial and temporal margins. One interviewee describes his experience of working late shifts as follows:

[I travel] one hour with bus, it's very boring. And then 8 hours [at work] is too long... Sometimes it feels lonely, but it's work. If you want something you have to make sacrifice, or you need to...no pain no gain.

### Labour and emplacement

Shift work also prevents forced migrants from attending classes to improve their English or gain new skills. This means that it is very difficult for them to move out of the difficult, unpleasant, physically taxing jobs that they find in distribution centres and factories. The patterns of displacement described above therefore produce other forms of emplacement, establishing forced migrants' positions in the spatial, social and temporal order. When asked about what job they would do if they could choose, many interviewees were unable to articulate any aspirations, and stated simply that they just need a job, no matter what kind. Some did have ambitions of improving their situations; one interviewee hoped to acquire a license for operating machinery that would enable him to work in the construction sector. Others had long term plans or dreams of studying to become engineers. Others, however, were just focussed on their immediate situations, and demonstrated severely restricted horizons of aspiration, stating simply, as one interviewee did, "I cannot choose. Any job I can do."

To compound their marginalisation, interviewees noted that there aren't any opportunities to gain new skills at their workplaces, and that they are given only

the most rudimentary training. Their opportunities to gain social mobility through work are therefore minimal, just as the odds of gaining qualifications through studying are heavily stacked against them. At the same time, the labour that they perform is physically taxing, and is not feasible as a long-term career. Working as a picker in distribution centres was described as particularly demanding and damaging on the body. Pickers are tasked with gathering items for boxing and shipping. They are given electronically generated lists of items, which they have to locate in the immense warehouses, pack into trolleys and then deposit for packers. People doing this work are on their feet for the duration of their shifts and are encouraged to work as quickly as possible. As one interviewee described:

Picking, you wear some gloves, you pick the clothes and put in the trolley. Your turn round all day. I start 7 in the morning and finish 7 at night. You have the list. You run. When they need clothes, sometimes the colour is the same, sometimes they're not all the same, all the places [where items are stored in the warehouse] you can't choose. Where is this jacket, where is this trouser?! Sometimes you finish, you have to run.

Interviewees who have done this work spoke about intense swelling on their feet, painful backs and joints from bending and general feelings of exhaustion. One interviewee glumly summed up the short-term nature of these jobs, the physical tole they take and the way they establish people as disposable labour commodities as follows:

[The work puts strain on your] backbone, spine, cos you're bending 8 hours...You can work maybe three years, then after that, you can't work. If you work for three years, after that, what you going to do? You should move but you can't move [i.e. gain promotion] there. You're stuck. You have no class [education], you have ok money, you've already spent your money...what you going to do? The company, they don't want you. Some of them they improve;

if they have knowledge, they have to  
[promote people]. But like me, because of  
this situation, how can I learn? How can I  
improve?

Another captures the relentlessness of the job,  
and the emotional as well as physical strain it  
places on people:

I cannot feel good. When I came home,  
I cannot walk, because my feet is too big  
[swollen]. And then all is very big, and  
then pain. When you saw me, I cannot do  
anything. And then morning, you wake up  
and go again. It's very hard.

### **Conclusions and reflections**

Forced migrants are entwined in infrastructural systems. Their labour helps ensure that regimes of commerce and consumption keep on running smoothly. This labour is generative, as it is part of the ongoing work of repairing and maintaining lives that have been disrupted by circumstances that forced people to flee their homes. At the same time, it is labour that comes at a cost, keeping people confined to the spatial, social and temporal margins, and exacting harsh tolls on their bodies. Thus, being embedded in these infrastructural systems also requires care, repair and maintenance to be ongoing projects, where the health and vitality of the body cannot be taken for granted, nor can emotional sustenance and feelings of comfort and community be easily sustained. There is thus a very human side to infrastructure, one that needs to be foregrounded and carefully examined. What we see when we examine infrastructure, and consequently how we feel or understand it, depends very much on the perspective from which we look. Taking the view from those in the bowels of the machine, the cavern of the warehouse, the backend of the factory opens up new vistas for understanding what infrastructure enables, but also what it constrains.



## **'Gone With the Wind': Jobs and Wind Energy in the Isthmus of Tehuantepec, Oaxaca**

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I visited the Isthmus of Tehuantepec for the first time in 2012. At that time wind farms were mushrooming in the region. Spanish companies were bringing their workers to deploy the infrastructure alleging the lack of experienced workers locally in the construction of wind farms. Some sectors of the local population were annoyed with the Spanish workers and utility company. Many claimed that the harvesting of wind energy was a 'second conquest,' in which the Spanish were again dispossessing people from their territory and natural resources<sup>1</sup>. Others, mostly landholders who had leasing contracts with energy developers, viewed this emerging energy sector in a positive light. Nevertheless, they still complained that jobs were not for the local *istmeños* (the population from the Tehuantepec Isthmus). Pepe, a landholder in La Ventosa, commented:

The Spaniards are turning into a plague. They get all the jobs that we are also capable of doing. They are not engineers. The only thing they do is drive a car around the wind farm, and that's it, and [the company] doesn't give us an explanation or any information about this. They say that these workers come for a short time, but I don't believe it. Not long ago we knew that a new batch of Spaniards would come to work, and we wrote a letter to the company demanding jobs for our people, and this is how we got around 25 jobs.

In 2017, when I returned to the region for a 6 months of fieldwork, there were already 22 wind farms in 5 municipalities producing electricity for the industrial and retailing

sectors. When I first started my research on 'the politics of wind energy in Oaxaca,' I had not considered issues of labour, but participants always highlighted the conflicts over jobs as central to the politics of wind energy. They often narrated how they had to organise to fight for/demand jobs for the local population and how important these jobs became for the local economy as agriculture diminished as the main/primary source of income. They also expressed their disappointment on how permanent jobs in wind farms were scarce once they started operating.



**Figure 10.1.** *Wind Labouring*

<sup>1</sup> Soledad, C. (2018) *Bettina Cruz y la lucha por el viento*. Retrieved June 27, 2019, from <https://www.jornada.com.mx/2018/06/10/opinion/014a2pol>



Figure 10.2. Wind Labouring

Land in the region has parcelled over the years, there is a majority owning small plots (between two and five hectares), and a few with large extensions. Companies rent land for periods between twenty and thirty years (but contracts can renew for another term). When companies surveyed the region in search of land, they assured people that wind energy would produce new jobs. Some of these companies even included a clause on employment in their leasing contracts. When the companies did not comply with these contracts, they started bringing workers from Spain. The local *istmeños* organised to reclaim jobs, and they got a few back. After pressure from a group of landlords, combined with the negotiation of the *comités de propietarios*<sup>2</sup> (committees), and *bloqueos*<sup>3</sup> (road blockages), wind farm companies ceded jobs to the local population. Most of the companies agreed to the landlords' petition and handed over to the committees their allocation of jobs (or a number of jobs) during the construction and operation of the wind farm infrastructure. However, jobs remain a permanent source of conflict for two reasons. First, wind power is not labour intensive. The construction of wind farms is the phase that requires a large number

of workers, but jobs are short term and low skilled. Once wind farms are built, they just need a handful of engineers and technicians to operate. Second, the allocation of jobs is enmeshed in the landlords' power geometries, by which I mean the economic and political differences among landlords themselves, and the conflictual relations among them. That is in the region there are landlords with more sources of influence, such as political or economic influence, which give them more bargaining power with companies and government offices. Most of these landlords with influence are members of the committees and they have managed to get control over jobs, and they distribute them at will.

In the informal arrangement between companies and landlords, jobs would be granted to landholders and their children or other family members if they needed a job.

Only as a second order of preference are jobs distributed to the local population. That is to say, committees mainly keep jobs either for their relatives and friends. Landlords will also ask for money in exchange for jobs, or they auction the vacancies to the highest bidders.

2 A committee is a group of landholders that are in charge of dealing with energy developers on a daily basis. As the group of landholders in a polygon (how the area of a future wind farm is locally known) can get to even one hundred, landlords found that it was better if they had a delegation to deal with an energy developer.

3 Bloqueo is a form of protest widely used in the Isthmus of Tehuantepec, in involves the obstruction of a road or a public office. It has been widely used as a form of protest against authorities, but now it is also used with energy developers.

I came across some of these practices when I interviewed an engineer who explained the following:

- I asked one of the landlords to 'recommend me' to work for a company. That was the only way to get a job in the sector because the company already had its staff, but the company had an agreement with the landlords to hire the people they recommended.
- How many of the 'recommended' workers were hired?
- We were 30.
- All of them to assemble the wind turbines?
- Yes,
- Is it true that landlords ask for money from the workers that they 'recommend' for a job?
- Well [...] we talked about it beforehand; I had to give him back 200 pesos per week.
- For how long?
- For a year.
- Did you think of not doing it once you got the job?
- No, I promised I would do it.
- Did any of the other workers do that too?
- Yes, all of us, we all knew, and we agreed to it.

In contrast, other landlords never get their children to work for a company. Mary, a landlady, commented that:

My son is an IT engineer; after he graduated, he did an internship for a wind company. I wanted him to work in the wind farm that occupies part of my land, but then the committee decided to auction the vacancies, and they would collect the money and divided it equally among us all. I did not agree to it, but the majority did, and I don't have money, it is even ridiculous to pay for my child to get a job. Then, my child had to move to Mexico City to find a job.

Those who got a job in the assemblage of wind farms are the ones that substituted the Spanish workers of the early days. Contrary to the claim of energy developers that there was not skilled

labour in the area, there are engineers and technicians trained in the local universities (mainly the technical universities, locally known as Institutos Tecnológicos). They are as qualified as the foreign workers, but they generally tend to get lower wages. They are the lucky ones for which wind energy brought a job; some of them are now working in other parts of Mexico assembling more wind farms. However, jobs did not flow with wind energy, simply because the deployment of wind farms is not labour intensive. In a context where jobs are scarce, the few available positions become a source of conflict, which in the case of the Isthmus of Tehuantepec, is enmeshed in relations of control and resistance that have shaped the region.



Figure 10.3. Wind Labouring

## Salvage Economies in South Africa

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There is no recycling and no waste management without the labour of hundreds of thousands of people around the globe. To put your refuse into a bin is to enter into a labour-intensive economy where materials are collected and redistributed, and where commodities are salvaged, remade, and resold at scales that move from the local to the planetary. Labour, and the cost or condition of labour, is often one of the deciding factors that determines if materials can or will be recycled.

Unlike other infrastructures where much of the movement of materials occurs through fixed, material infrastructures such as pipes and wires, the movement of waste tends to involve human labour. Workers collect waste products, transport them, and in the case of recycling they sort and clean them. In South Africa, it is estimated that up to 90,000 people are employed as waste pickers or material reclaimers, yet these labourers - who do not just collect, but also source, sort, and transport - are often invisible. The South African recycling economy generates billions of rands per year, yet it is out of sight to many. The work of waste, the necessary care work of turning the residues of a crisis-prone planetary economy into new materials and uses, is predicated on workers who are often undervalued and underappreciated.

Indeed, the work of recycling - the necessary labour to turn trash into use - is often reliant on workers who have been rendered redundant by the broader global economy. As a result, waste collecting is an example of the “counter-geographies of survival”<sup>1</sup> that mark the lives of many in the context of increasing dispossession and ongoing accumulation

dynamics. Waste connects economies of subsistence with sophisticated global value chains; it is an example of what Anna Tsing calls “salvage accumulation.”<sup>2</sup> It is also a multi-billion dollar industry that enrolls waste reclaimers in South Africa with recyclers in Southeast Asia and elsewhere.

Accumulation via the margin—waste work, in a sense—is increasingly critical to the form of contemporary capitalism as it operates in the contemporary city. Recycling in South Africa is a massively profitable industry, but it occurs in the shadow of state devolution, structural adjustment, and massive unemployment. As the scope and scale of the economy suggests, processes of salvaging and scrapping are not marginal; they are instead essential to the shape of contemporary life and the nature of contemporary capitalism. Theorizing the economy from the margin - at the urban periphery, at the waste bin, at the landfill, at the foreclosed home - offers insight into broader processes that mark the contemporary economy, that draw in the pericapitalist frontier into capitalism but also are representative of the shape of contemporary capitalism more generally. Contemporary capitalism is marked by uncertainty: precarity is systematic, lives are increasingly decoupled from fixity, and ruination stalks the worlds we inhabit.

Take, for instance, Ananya Roy’s account of a 2017 eviction in Chicago:

The attempted eviction by Charter One Bank can be understood as an instance of speeded-up extralegal forms of foreclosure. But the financial gains to be made from

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- 1 Sassen, S. (2010). A savage sorting of winners and losers: Contemporary versions of primitive accumulation. *Globalizations*, 7(1-2), 23-50.
  - 2 Tsing, A. L. (2015). *The mushroom at the end of the world: On the possibility of life in capitalist ruins*. Princeton University Press.



such a pre-emptive eviction are trivial: at best the collection of mortgage insurance. The predation of a reactivated market in troubled home mortgages is not necessarily at work here, not as yet at least. The Lee home, like others that have been foreclosed in this part of the South Side, would most likely lie vacant, boarded up, and be quickly looted and stripped. Nor is Auburn Gresham in the crosshair of new plans and projects for urban growth and expansion that might require a blank slate strategy of emptying out homes.... Their home is city's end, its neatly trimmed hedges and quiet streetscape transformed by mundane practices of loan fraud and mortgage insurance payouts rather than spectacular processes of primitive accumulation.<sup>3</sup>

In spite of its apparent banality, this is a process of scrapping, of salvage. To speak of contract sales and waste picking in the same sentence may seem counterintuitive. They are, however, both forms of accumulation that are predicated on ruins. In the case of Chicago, these are the ruins of the Fordist dream of homeownership, made impossible by the realities of racialized dispossession, redlining, and other predatory practices of real estate speculation. Waste, too, is formed by ruins: the material remainders of a society oriented around consumption, the materials of an

environment that is entirely unsustainable but in which environmental futures are predicated on expansion and growth. The ruins of the wastescape are more direct, however: they are the livelihoods in the margins in the city, the waste pickers whose bodies are rendered superfluous through new technologies of valuation, the continuing enclosure of the few options for survival that remain. Waste and ruination are intimately linked.

Recycling, the conversion of waste materials into new products, is constitutive of new economies and new forms of value that are presently remaking the city. Tracing the forms of value that inhere in waste work invites consideration of the complex politics of contemporary economic geographies of production and extraction in a context of increasingly precarious work. An attention to salvage – and the forms of accumulation that it produces, the economies generated by the secretion of specific waste materials, the economic geographies of ruination—allows for deeper articulations of the processes of primitive accumulation that are reconfiguring contemporary economies. To understand contemporary capitalism, it is critical that we pay attention to the margin.

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3 Roy, A. (2017). Dis/possessive collectivism: Property and personhood at city's end. *Geoforum*, 80, A1-A11.

## In the Wake of Logistics

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I'm awakened by the piercing blast of a warning siren. A few moments later, two diesel marine engines begin to roar. My bunk starts to vibrate, its metal frame clanging against the wall. I take a quick look around to orient myself and then glance at my watch. It's just before five o'clock in the morning and I'm lying in my berth on the *Perijá*, a commercial riverboat belonging to Colombia's oldest fluvial transport company, the *Naviera Fluvial Colombiana*. I pull myself out of bed, throw on some clothes, and ascend to the *Perijá*'s upper deck. The captain, catching sight of me, barks out a friendly good morning.

For nearly one hundred years, the *Naviera Fluvial Colombiana* has been plying the Magdalena River, which connects Colombia's Andean interior to its Caribbean coast. The *Naviera*, as most people call it, owns a fleet of thirteen *remolcadores*, or towboats, which guide convoys of *barcazas*, or barges, upriver and down. These barges, when lashed together by wire cables, resemble the landing strip of an aircraft carrier, and they can transport all manner of things, from dry bulk on their decks to liquid cargo in their tanks (to visualise this scene of infrastructural labour, see [here](#)). The *Perijá*, one of the shipping line's most formidable vessels, frequently powers convoys of eight barges, sometimes more.

At the helm is a serious man with a powerful build, authoritative voice, and penetrating eyes. He and his crew of eighteen men (and riverboat crews are invariably male) live and work together in close quarters—towboats are ten meters wide by thirty-six meters long—for twenty-one-day shifts, followed by seven days of shore leave. While onboard, crewmembers

either work from sunlight to sundown or, when conditions permit, around the clock. Though most hail from the Magdalena River's lower reaches and not strictly the coast, all are *costeños*—the racialized category of regional affiliation attached to the inhabitants of northern Colombia's tropical lowlands. The identity of the *Perijá*'s workforce is not incidental to the work they perform—the articulation of race and labour has powered riverboat transport since the colonial period, and that persists today.<sup>1</sup>



Figure 12.1. Towboats

On days like these, the captain begins by issuing orders to the boatswain and head mechanic. While the crew's manoeuvres follow a well-recognized chain of command, they are ultimately determined by factors ranging from the technological specifications of the vessel to the environmental conditions of the river

1 Much of the analysis here, including the concept of “articulation,” is indebted to the work of Stuart Hall (1980, 2016) and to other scholarship in the black radical tradition on race and labour (Du Bois 2007; Johnson 2017; Kelley 1996; Robinson 2000; Roediger 2007).

to the commercial imperatives of the shipping line and its clients. The Naviera is one of a handful of companies moving cargo between Barranquilla and Cartagena on the Caribbean coast and Barrancabermeja approximately 630 kilometres inland. A key component of the distribution network linking Colombia to overseas sites of production and consumption, the Naviera's operations are calibrated by the logic of logistics, which seeks to control the movement of goods through space, on time. The labour performed by the crew of the Perijá reflects the imperative of smooth and uninterrupted flow that governs the logistics industry—an increasingly important domain of contemporary capitalism worldwide.

Today is an ordinary day for the riverboat crew, except that we're not yet on the river. We've spent the last two days floating in the Bay of Cartagena while our barges were being emptied of 60,000 barrels of crude oil. We are now making our final trip between an anchor buoy, where we had tied up overnight, and the loading pier of Ecopetrol, the state oil company. Jutting out into the bay, the pier is an assemblage of hoses, pipes, valves, pumps, and walkways, which connects to a vast refinery complex—Colombia's second largest after the one in the riverport of Barrancabermeja, where these barges were filled ten days ago. Now that the last drops of oil have been sucked out, the Perijá will reassemble its convoy of empty barges and repeat the same journey again.

From my perch on the Perijá's upper deck, I take one last look at this peculiar waterscape—a critical link in the petroleum industry supply chain. Immediately visible are the gas flares and distillation columns of the oil refinery and the maritime tankers being filled just offshore. Through the acrid haze, I can make out other components of the logistics network connecting Colombia to international markets: the ship-to-shore cranes of nearby container terminals; the towering silos and floating docks of a cement plant; the refrigerated storage facilities of food importers; the gated offices and warehouses of

a duty-free zone; a security checkpoint manned by the Colombian Navy's marine infantry. I can see Cartagena's skyline glistening on the horizon some twenty kilometres away, while the logistical infrastructures surrounding me here are nearly invisible from its exclusive hotels and luxury boutiques. The day there has yet to begin, whereas the Perijá's crew has been active for hours—a microcosm of the relationship between the capital accumulation expressed in the city's built form and the logistical labour on which it depends.



Figure 12.2. *Waterscape from Perijá's Upper Deck*



Figure 12.3. *Cartagena's Skyline from Perijá*

Our convoy of towboat and barges, now discharged and reassembled, begins to cross the bay and ascend the Canal del Dique—a waterway dug initially by the Spanish in the sixteenth century to connect the strategic seaport of Cartagena to the Andean interior. As we navigate through the suffocating heat and dense vegetation, I'm reminded of the backbreaking work that went into digging the canal, whose chief objective was to reduce travel times between Spain's mainland colonial possessions and its transatlantic fleet. This work was performed initially by enslaved indigenous and African laborers, and it was their descendants who powered the rafts going to upriver mines and plantations and returning with valuable goods to be loaded onto galleons bound for Europe. Along the banks, remnants of haciendas built by white settlers testify to the importance of the river to the historical and ongoing development of racial capitalism in the Americas. Beginning in the colonial period and persisting to the present day, articulations of race and labour have structured the work of fluvial transport along the Magdalena River, which now occupies a central role in Colombia's burgeoning logistics industry.

What happens if we approach capitalism from the deck of the Perijá and other infrastructures of global logistics, such as loading docks, customs offices, storage facilities, and distribution centres, which are frequently sited at the periphery of cities or in the transport corridors connecting them? These infrastructures are usually located at a distance from urban centres, and our understanding of capitalism shifts when we take them as our point of reference.<sup>2</sup> For example, the social world I came to know on the Perijá disrupts conventional representations of the global economy, which depict a world of nodes and vectors through which things move quickly and without interruption. Locating ourselves among the infrastructures of the logistics industry, we see that this smooth space of fast flows is a fantasy of the industry itself.<sup>3</sup> Stefano Harney and Fred Moten call this “the fantasy

that capital could exist without labour.”<sup>4</sup> From the deck of the Perijá, this appears more an elusive goal than an accomplished fact.

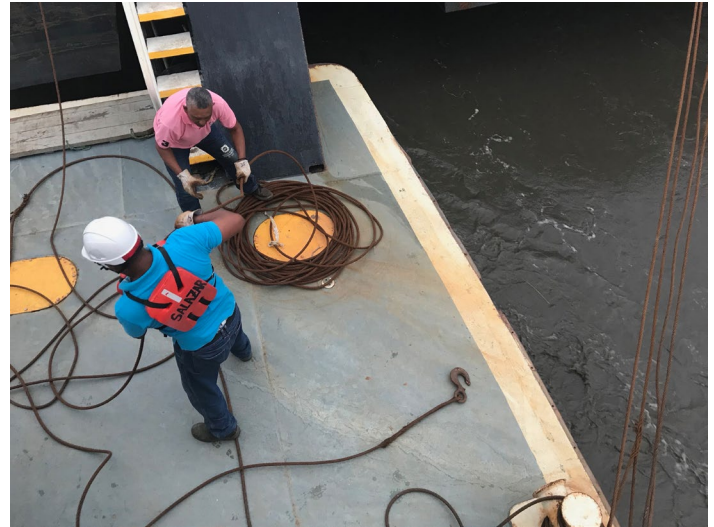


Figure 12.4. Deck of the Perijá

The analytical imperative of attending to logistical infrastructures is underscored by Charmaine Chua, Martin Danyluk, Deborah Cowen, and Laleh Khalili, who argue that logistics—in “its pursuit of speed, efficiency, reliability, and flexibility”—draws upon historical configurations of power that have long underpinned capitalist modernity.<sup>5</sup> They note that although the “logistics revolution represents a paradigmatic shift in the operations of capital, it also marks the continuation of centuries-old processes of imperial circulation and colonization.”<sup>6</sup> In particular, they argue, the “Atlantic slave trade, which depended on a network of intercontinental commodity chains, was a precursor to present forms of large-scale, integrated capitalist production.”<sup>7</sup>

With this in mind, there is reason to engage with representations of capitalist modernity such as the 1840 [painting](#) by J. M. W. Turner commonly known as “The Slave Ship,” but originally entitled “Slavers Throwing

2 Toscano, Alberto and Jeff Kinkle. 2015. *Cartographies of the Absolute*. Alresford: Zero Books.

3 Toscano, Alberto. 2018. “The Mirror of Circulation: Allan Sekula and the Logistical Image.” *Society and Space* 1–21.

4 Harney, Stefano and Fred Moten. 2013. *The Undercommons: Fugitive Planning and Black Study*. New York: Minor Compositions. Page 90.

5 Chua, Charmaine, Martin Danyluk, Deborah Cowen, and Laleh Khalili. 2018. “Introduction: Turbulent Circulation: Building a Critical Engagement with Logistics.” *Environment and Planning D: Society and Space* 36(4):617–29. Page 625.

6 Ibid, Page 619.

7 Ibid, Page 620.



Overboard the Dead and Dying, Typhoon Coming On.” This painting was based on the true story of the Zong—an eighteenth-century slaver whose captain dumped his perishing human cargo overboard so that he could collect insurance money on lost “property.” It was exhibited initially to coincide with an anti-slavery convention held in London, and has ever since, as Paul Gilroy recalls, “provided so much moral ballast for the indictment of racial capitalism.”<sup>8</sup>

From Herman Melville’s *Moby-Dick* and Benito Cereno to C. L. R. James’s *Mariners, Renegades and Castaways*, ships, boats, and the aquatic spaces they traverse have opened up critical perspectives on modern capitalism. The same is true for images like Turner’s, or recent engagements with related themes, such as Sondra Perry’s digitally immersive [“Typhoon Coming On,”](#) which in the words of a critic “reboot[ed] the Zong massacre for the present day,”<sup>9</sup> or Kara Walker’s [“Middle Passages”](#) and Ellen Gallagher’s [“Bird in Hand”](#) and [“Watery Ecstatic.”](#) By aesthetically immersing us in the racialized depths of hydro-history, these texts and images perform

“wake work,” the analytic Christina Sharpe gives us for interrogating “the continuous and changing present of slavery’s as yet unresolved unfolding.”<sup>10</sup> Following Sharpe, I want to ask what a view from the deck of the Perijá “calls on ‘us’ to do, think, feel in the wake of slavery.”<sup>11</sup>

If one of the foundational moments of modern logistics—perhaps its fullest expression—entailed the expropriation of racialized labour across transcontinental networks of circulation and accumulation, the commercial riverboat and other logistical infrastructures remain key sites for analysing the global economic order.<sup>12</sup> Pursuing this line of inquiry from the deck of the Perijá allows us to position ourselves analytically, to paraphrase Sharpe, in the wake of logistics—that is, to examine the linkages between the logistics industry and the ongoing history of racial capitalism in the Americas. The centrality of fluvial transport along the Magdalena River to that history cannot be overstated, but the key question is how the historical articulations of race, labour, and infrastructure manifest today.

8 Gilroy, Paul. 2018. “Where Every Breeze Speaks of Courage and Liberty’: Offshore Humanism and Marine Xenology, or, Racism and the Problem of Critique at Sea Level: The 2015 Antipode RGS-IBG Lecture.” *Antipode* 50(1):3–22. Page 17.

9 McLaughlin, Rosanna. 2018. “Sondra Perry: Typhoon Coming On.” *Frieze.Com*.

10 Sharpe, Christina. 2016. *In the Wake: On Blackness And Being*. Durham: Duke University Press. Page 14.

11 Sharpe, Christina. 2016. *In the Wake: On Blackness And Being*. Durham: Duke University Press. Page 20.

12 Harney, Stefano and Fred Moten. 2013. *The Undercommons: Fugitive Planning and Black Study*. New York: Minor Compositions. Page 92.



Interlude

## **The (Re)production of (In)visible Infrastructural Labour**

Scholars have frequently conceptualised infrastructures according to a register of visibility and invisibility. While perceived as opposites, these poles are not mutually exclusive or simply given. They are relational outcomes of political and socio-material practices and processes. As such, normative ideals about infrastructural invisibility have been queried and questioned, showing how infrastructural visibility is neither a deviation from the norm nor a characteristic exclusive to cities in the Global South. Amidst prolonged austerity and long-standing processes of material ruination, infrastructural functioning and breakdowns have been made visible in urban spaces across the world.

At the same time, future imaginaries of progress, connection, and surveillance and control are being built around proliferating infrastructural projects. We encounter large-scale assemblages that link territories far apart, sprawling logistical chains, and technologies that reconfigure how life is regulated at the scale of the body. These infrastructures are made visible or invisible not only as material characteristics, but as part of political and aesthetic projects that are transforming urban livelihoods and processes.

These infrastructures, as projects and processes, both spectacular and inconspicuous, are in turn made and maintained through labour practices that often remain invisible. From the warehouses of late capitalism to the railways and roads that herald new spaces of capital accumulation and reproduction, from spaces of care to sites of capital accumulation, labour is fundamental to the work that infrastructures do.

In this magazine, we discuss not only the in/visibility of infrastructures but mainly that of those who work on, through and with them. We question how different forms of labour, and labouring bodies, are made both visible and invisible in research and projects articulated around infrastructure. If the ‘infrastructural age’ has made sociotechnical systems, large and small, more apparent than ever, here we seek to recentre labour. In doing so, we endeavour to humanise and politicise the questions of labour invisibility and visibility in infrastructure studies.

Both as an analytical category and political subjectivity, the figure of the “labourer” is no longer to be taken for granted. Nor is the “human” and, yet, there is a need to look back to how these categories organise a field of inquiry and terrain of social life. Infrastructural work has been recognised as heterogeneous and variegated. But how does it speak to conversations surrounding care, social reproduction, everyday tactics, wage labour, social movements, and livelihoods more generally? Furthermore, what images and representations, scenes, frames, and viewpoints do we use to make sense of infrastructures of capitalist modernity and the work that goes into making and sustaining them?

While calling for greater visibility of labour within infrastructural research, we also offer a seemingly paradoxical caution: not everything (or everyone) should be made visible. Visibility should not be made into a political necessity or a moral obligation. Not only might this be an ontological impossibility; it can also lead to a politics of surveillance and control. Moreover, our focus and lens should be interrogated: who is it that sees, and when, how and why? Abstraction and obscuring also happen through the act of making visible. Likewise, moments of strategic invisibility, opacity, and refusal can be freeing - in the right circumstances. To make infrastructural labour visible is a highly situated task that calls into question positionality, relations, and experiences, not to mention methods and techniques.

And so, this interlude calls for greater attendance to the immutable presence of infrastructural labour, beyond the binary of in/visibility. We ask ourselves, under which conditions and for what purpose is the boundary of in/visibility negotiated? How are these fluctuating boundaries being depicted in our research, and how are they being conceptualised and mobilised?

## Hybrid Technologies and the 'Labourer' User in Nairobi

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Nairobi's informal settlements have sometimes been referred to as spheres synonymous with "energy poverty" which is not necessarily a description that fits their case. Amidst Nairobi City County's reluctance and failure to provide energy services to so-called slums (but also inefficiency to formalize service supply and provisioning in "slum" households), an emergent chain and syndicate of informal electricity distribution synonymous with cartels and dealerships who constitute informal power distributors has spiralled outside of the legal, centralized and established network. These informal power distributors "tap" from some of the few electricity transformers in the neighbouring residences and re-distribute this electricity to the settlement. Within the settlements, the connections are done with the help of repurposed wires and wooden or sometimes metallic poles. These connections are devoid of aesthetic beauty or precision.

Overtime, these syndicates have grown to become the de-facto self-assembled power grids whose chain distributions are synonymous with DIY engineering of criss-crossing spaghetti distribution lines, cables and connections. They have proliferated and materialized to a point where informal power distributors made a substantial gain and profit. These chains, in some areas, were able to attain situated legitimacy that is perhaps best comprehended by considering these references such as "Kibera Power" in Kibera which is parallel to the Nairobi-wide "Kenya Power." This variegated market was, for long, not only confusing for the users who ended up on its supply chain as consumers. It was also perplexing for Kenya Power, whose revenue base for a long time was undercut in the neighbourhood. Of interest here is how

this network speaks to the knowledge base and ever-changing reality of labouring urban infrastructures in the making.



Figure 13.1. *Untitled*

Kenya Power has previously attempted to disconnect and demolish these syndicates of self-assembled de-facto electricity distribution with little success. Its attempts have been frustrated, crippled and scuttled by the cartels and dealers determined to protect their source of living. However, Kenya Power has recently – with some success – employed informal power distributors with these constituting teams of engineers and technical staff who have managed to provide Kenya Power with the leverage it needs. These have constituted the local recruits who, while formerly involved in the settlements' electricity distribution and supply chain, were now key and integral in enhancing the deployment of prepaid meters in the neighbourhoods. They were hired, trained, employed and integrated as part of the technical staff to enhance crackdown initiatives. They provided the labour for excavating, unearthing and sloping out the smuggled wires and cables and "single-wire" connections with shovels, hoes and spades





Figure 13.2. *Untitled*

through the trenches, below the ground and over the skylines in a process that often seems much like a raid, invasion and takedown.

Kenya Power contends that in the process of deploying prepaid meters in Nairobi's informal settlements, it made two significant oversights. The first was to assume that the new project would possibly work exactly the same way it was designed to have worked. Kenya Power assumed that the deployed meters would operate "as a magic trick – as in, here is the solution" kind of solution to the slums' energy challenges. In other words, Kenya Power imagined that the "old" topology would naturally be replaced by the "new" topology without question – and perhaps with less resistance than imagined. In such a way, Kenya Power imagined that users would just be users and nothing more. But Nairobi's slum dwellers are hardly the mere users that Kenya Power would have imagined. They devise ingenious ways of "breaking into systems." They are more than mere users. They also labour as users: untangling systems, repairing the systems when they are broken; and at the very least, desire a general working knowledge of how the systems they use in their households actually work.

The second misconstrual by Kenya Power was to imagine that the employment of informal power distributors in its efforts to deploy prepaid meters in the neighbourhood would lead to standard success in the long run. Kenya Power had hoped to eventually graduate the then former informal power distributors to handle the upkeep, maintenance and monitoring of prepaid meters on its behalf in the neighbourhood. However, this did not eventually come to pass. By the end of the deployment of prepaid meters in the informal settlements, Kenya Power instead began to relieve many of these former informal power distributors from its organisation. Upon this, the same informal power distributors would later reinvent themselves and remerge to provide a kind of labour to the residents as engineers as a way of their own survival.

As disgruntled former employees of Kenya Power, these (former) informal power distributors became a kind of recreational hacker, who, "skilled" at their work, evolved into careful and stealthy strategists within a neighbourhood where residents fancied the power Kenya Power provided but detested the idea of having to pay for it. They possessed almost as much technical capacity, capability

and machinery required not only to tap and hack electricity transformers, but also the electricity meter boxes. They also owned all the assorted electrical equipment that often included conductors and cables. They possessed general working (and sometimes even expert) knowledge to break into, rework, repurpose and reassemble electricity systems. They possessed Kenya Power uniforms and necessary apparatus and guards required to climb concrete poles and posts. Hence, they begun to avail themselves as different kinds of “labourers”—duplicating, replicating, shortcutting, bypassing and recalibrating the very prepaid meters that they had helped Kenya Power deploy.

In summation, a closer examination of the operations of these hybrid energy technologies, beyond representing a form of social order within situated spheres also represent (new) forms of redistribution of labour beyond the aligned and formal ones, towards the rather realigned and heterogeneous ones. As such, they present different ways of discerning infrastructure labouring within intricate urban geographies of encounter.



Figure 13.3. *Untitled*

## The Labour of Platform Urbanism: A Popular Economy in the Making

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The emergence of platform urbanism over the last decade prompts a reimagining of existing infrastructural geographies of the city and the labour that underpins the operation of urban life. This reflection draws on fieldwork conducted in urban East Africa over recent years to think through the labour involved in these urban dynamics. Fields and Macrorie<sup>1</sup> offer a helpful foundation by arguing that these interfaces; can powerfully restructure how we work, live and interact, deliver city services and make urban decisions. These implications are already being brought to bear across much of the economy and everyday life.

rapid transformation of the digital networks and user-practices of urban Africa in the 21st century. According to the consultancy, PWC<sup>2</sup> between 2007 and 2016 the growth of mobile phone usage jumped 344 percent; from 174 million people to 772 million people. This rapid uptake now accounts for well over half of the 1.2 billion people living on the continent. As Guma asserts understanding the contemporary African city involves paying attention to the role of, “mobile technologies in shaping new sociotechnical constellations.”<sup>3</sup> If work has begun to articulate the ways in which platform urbanism transforms urban space and associated socio-technical relations

less attention has been paid to the (in)visible forms of labour required to sustain, maintain and access these digital networks. Rapid growth of these interfaces in so-called tech-savvy hotspots such as Nairobi, highlights the need to consider what type of labour regimes have emerged servicing digital infrastructures.

In neighbourhoods across East Africa as elsewhere a popular economy operates to service, maintain and fix the vital infrastructure that allows urban dwellers to access various platform interfaces: the phone. For Odendaal “the smart city at the margins is dominated by mobile phone access”<sup>4</sup> and a walk around a city such as Kampala would substantiate the continued viability of this technology to operate as predicated on a series of different forms of labour. This includes; charging, fixing or repurposing handsets, putting credit on, mobile money transfers, buying/selling (even stealing) various components or the units themselves. It is in these various forms of labour that we can see the necessary ways



Figure 14.1. A customer speaks to a fixer in Kibera, Nairobi

Platforms interact with existing infrastructures and environments transforming the way the urban is governed and experienced through technology. These interfaces have become ubiquitous across the region through the

- 1 Fields and Macrorie (in review) Platform urbanism: Debating why digital platforms matter for urban studies. Urban Studies
- 2 Source: <https://www.pwc.com/gx/en/issues/high-growth-markets/assets/disrupting-africa-riding-the-wave-of-the-digital-revolution.pdf>
- 3 Guma, P. K. (2019). Smart urbanism? ICTs for water and electricity supply in Nairobi. Urban Studies, 56(11), pp. 2333-2352, p. 2336
- 4 Odendaal, N. (2018). Smart innovation at the margins: learning from Cape Town and Kibera. In Inside Smart Cities( pp. 261-275). Routledge. London, p. 262



in which the infrastructure to access platforms are under constant, incremental adjustment, configuration and intervention<sup>5</sup>. It is a ‘people as infrastructure’<sup>6</sup> in the digital age and one that allows for various forms of self-organised labour and livelihood strategy.



Figure 14.2. A mobile money spot in Namuwongo, Kampala

The popular economy that has surrounded the mobile phone and its capacity to access various types of platform offer possibilities and potentials for people locked out of formal job markets. The International Labour Organisation reported that, “The youth labour underutilization rate in Uganda was high at 67.9 per cent in 2015”<sup>7</sup> and with one of the youngest populations on the planet with a median age of 15.8 years and only lower than Niger<sup>8</sup> the need to find livelihood opportunities remains one of the biggest challenges for Uganda’s urban youth. These high rates of youth unemployment are reflected across the African region which dominates the median age rankings with the top 20 countries.

A self-described fixer in Kampala explained how selling credit, “provides business opportunities to youth who have not done education.” He explained that this was because:

It doesn’t require serious training only a few guidance and you can run it. [For] mobile money, the provider’s call you for training for a few hours not the whole day, the training only occurs when they are issuing new sim cards for mobile money.



Figure 14.3. Phone charging spot in Kibera

His particular role in fixing phones was more highly skilled and involved learning from more experienced hands over a number of years, as well as continued experimentation, tinkering and (re)making, inserting and breaking apart of circuit boards, sim cards, hand-sets and batteries. He went on to outline his aspirations, suggesting that, “My business will grow to a big company. Like using mobile money to load airtime and paying bills like water electricity and many things.” In such aspirations the fixer highlighted how he envisaged acquiring the skills to perform very tasks in the servicing of phones, of ways to diversify his labour into the multiplicities of micro-economic opportunity that actualise through the daily use of mobile technology.

5 Silver, J. (2015). Disrupted Infrastructures: An Urban Political Ecology of Interrupted Electricity in Accra. *International Journal of Urban and Regional Research*, 39(5), pp. 984-1003

6 Simone, A. (2004). People as infrastructure: intersecting fragments in Johannesburg. *Public culture*, 16(3), 407-429.

7 Source: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_emp/documents/publication/wcms\\_429078.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_429078.pdf)

8 Source: <http://worldpopulationreview.com/countries/median-age/>



Underpinning this platform urbanism labour are not just the skills to undertake the activities which directly generate income but capacities and abilities to navigate the often difficult topographies of infrastructural life. For instance, much of labour we are discussing relies on continued flows of electricity and therefore involves anticipating, addressing and mitigating the disruption of an energy network prone to interruption. In thinking about this the fixer was clear about the inability to always find an answer, “For that there is no alternative sometimes people leave their phones and just wait till the power comes back.” And the return of electricity after disruption creates further requirements as it, “comes back and destroys the chargers.” It means that the fixer always has to anticipate, calculate and ultimately take risks around the flow of electricity to their workspace.

In a context of persistently high youth unemployment in Kampala, the ability of young people to configure economic opportunity through forms of labour around digital technology are reshaping the city. Hakiza, a young tech-entrepreneur notes the way that young people are able to envisage the urban through the algorithmic geographies of the platform, “Young people are versatile they like trying out new things....and they are fast.” It is this capacity to engage the technologies of the digital interface that has meant the operation and maintenance of platform urbanism is very often undertaken through (in)visible forms of youth labour. We might think of this labour through what Thieme<sup>9</sup> terms “hustle as a livelihood strategy” and the ways that this labour might be understood as, “alternative modes of social and economic organization amongst youth.” It opens up interesting focus on how a popular economy has been built from the ground up by networks of fixers, chargers, credit sellers and other intermediaries, with various rules, codes and conducts. This popular economy of the platform has various labour dimensions that are ubiquitous across everyday urban life and will help to shape the future city.



Figure 14.4. Phone fixer in Namuwongo

9 Thieme, T. A. (2013). The “hustle” amongst youth entrepreneurs in Mathare’s informal waste economy. *Journal of Eastern African Studies*, 7(3), 389-412, p. 389

## Distributed Labour: Socialising Infrastructures Through Engineering Work in Chennai

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I attended the annual meeting of the Society of Public Health & Environmental Engineers (SoPHEE) in Chennai, India on World Water Day. Despite the broad sounding name, it was actually an association of engineers working for Metrowater, the city's water supply & sewerage authority. The agenda for the meeting included talks by sustainability experts and scientists on the hydrology of Chennai. Arriving at the venue on a sweltering March evening, I was caught slightly off-guard at what appeared to be more of a family style get-together. Kids and environmental experts were sharing a meal that eschewed water intensive rice for hardy millets catered by Poovalagin Nanbargal, an environmental organisation whose name translates to 'Friends of the Earth', but no relation to the global network.

The evening unfurled as a space for the engineers to reimagine their role as social and political agents in shaping the city's water infrastructure. They marvelled at the year's winner of the Stockholm Water Prize, an activist who had worked on rejuvenating the system of tanks and canals in the northwestern State of Rajasthan, and wondered if the engineers of Chennai could collectively achieve a similar feat. A water scientist bequeathed his data on the water bodies in Chennai's hinterland as way of collaborating and encouraging their endeavour. Yet, as the event wound down, the inevitability of 'back to business' settled in and it became clear that little could be done to take this reimagination forward into practice.

Metrowater was set up in 1978 as an autonomous unit distinct from the State Government (Chennai is capital of the State

of Tamil Nadu) and the city Corporation, meant for an engineering-led planning and augmentation of water supply. Yet, as the 1990s ushered in changing rationales towards the management of water resources as well as public utilities, the organisation's goals shifted towards calculable sustainability and economic efficiency. Long term water resource planning became more a domain of external consultants, while the role of in-house engineers was restricted primarily to distribution within the city.

It is in this context that I find it useful to recast engineering practice as labour that straddles registers of expertise, material and affective work. For the engineers of Metrowater, such multifaceted work was a way of making a claim to the infrastructural system, to build their expertise and ultimately to fulfil their technical obligations.

To approach work in this un-compartmentalised way, I draw on the feminist anthropological pathways laid out by the 'Gens' framework, which urges attention to the 'generative' aspects of all kinds of work and the values extracted from them.<sup>1</sup> The 'Gens Manifesto' was developed in response to and in critique of dominant narratives of transformation in the nature and hierarchies of labour under late capitalism.<sup>2</sup> In particular, it challenges the binaries of material and immaterial or industrial and affective labour. As anthropologists of labour 'beyond the industrial heartlands' have pointed out, it is seldom simply about the formal economic logics and always encompasses the value generated by social relations, or 'embedded value'.<sup>3</sup>

1 Bear, L., Ho, K., Tsing, A. and Yanagisako, S. (2015). "Gens: A Feminist Manifesto for the Study of Capitalism." *Theorizing the Contemporary, Fieldsights*, March 30. <https://culanth.org/fieldsights/gens-a-feminist-manifesto-for-the-study-of-capitalism>

2 Ibid.

3 Harvey, P., & Krohn-Hansen, C. (2018). Introduction. *Dislocating labour: anthropological reconfigurations. Journal of the Royal Anthropological Institute*, 24(S1), 10-28.

Narotzky, S. (2018). Rethinking the concept of labour. *Journal of the Royal Anthropological Institute*, 24(S1), 29-43.





Figure 15.1. A mobile money spot in Namuwongo, Kampala

These imaginative conceptualisations of labour are doubly relevant to the case of engineers – firstly to dislocate engineering work from the realm of expertise, and secondly to include in their work the social relations that they are actively co-constituting. In social study, the role of engineering has been deemed hegemonic by extension of the neoliberal governmentalities permeating infrastructural networks, without much investigation into the actual work of engineers;<sup>4</sup> their claim to expertise has either been taken at face value to be solely scientifically informed or dismissed as ‘arcane’ in its technocratic isolation.<sup>5</sup>

Engineering knowledge, in the postcolonial ‘technopopulism’<sup>6</sup> of Chennai, however, is comprised of varying epistemologies and constituted through everyday work. And so, discussion at the SoPHEE meet up came around to the laborious and everyday work of fixing the city’s distribution pipes which had been undergoing much tinkering recently

owing to urban expansion and Metrowater’s sudden impulse to reduce leakage, which it claimed to have brought down from 25% to 7% after sustained efforts.

“I can’t vouch for these percentages. But, I know and people know we worked on the leaky pipes,” said an engineer while arguing for an everyday approach than formulating lofty goals towards sustainability.

“We would be standing there supervising work on the pipes when neighbourhood residents would walk over to us, on their way to work or dropping their kids at school, wanting to know what we were up to and how exactly this would affect or benefit supply in the area,” another SoPHEE engineer chipped in. More often than not, he chuckled; this would be accompanied by the enquiry “if we could also take a look at the last mile connectivity to their house or street.”

- 4 Cf. Björkman, L., & Harris, A. (2018). Engineering cities: mediating materialities, infrastructural imaginaries and shifting regimes of urban expertise. *International Journal of Urban and Regional Research*, 42(2), 244-262.
- 5 Coelho, K. (2006). Tapping In: Leaky Sovereignties and Engineered Dis (Order) in an Urban Water System. *Sarai Reader*, 6, 497-509.
- Gandy, M. (2014) *The fabric of space: water, modernity, and the urban imagination*. MIT Press, Cambridge, MA.
- 6 Arabindoo, P. (2011). Mobilising for water: hydro-politics of rainwater harvesting in Chennai. *International Journal of Urban Sustainable Development*, 3(1), 106-126.

In the process, the engineer and the local residents ended up exchanging knowledge about pipes, hydrology and sometimes the social geography of the area. This was useful to the engineer because residents often had detailed diagnoses of supply issues in their area, like the one below:

“Earlier it used to be a standard pipeline of ¼ inch for all apartments and houses. Now, they have different dimensions for different building sizes, which are connected to the main through a head, in which water bubbles up before going into the connecting pipes, thus buffering flow uniformly in all directions. Our building with 43 flats gets the maximum dimension pipe and is located at the end of a seaward road which, despite its flat appearance, hides sand dunes underneath. The size of the pipe along with gravity means water pressure is never enough to pump enough up to our building.”

Irrespective of the validity of this analysis, it gave the engineer a tangible problem to work on, while forging a social relationship over the air of conspiracy in taking up work additional to his mandate. It was also the method by which he established a domain of expertise that required continual reproduction of the social networks that in turn kept the water network functioning.

Metrowater’s distribution structure relies largely on its 15 Area Engineers, each appointed to a specific area, but often rotated between them. So, it wasn’t an engineer’s existing knowledge or social network within an area that constituted his expertise, but his skill in getting to know and socialising the pipelines and their users. It is what AbdouMaliq Simone calls infrastructures of relationality where “relationships themselves constitute an infrastructure for inhabitation.”<sup>7</sup> Such relationships, he argues, are not merely social exchange but material carriers of circulation and “tools through which political

imaginations and claims are exerted.”

Even as knowledge claims are made over the infrastructural network, and consequently the city, through shared inhabitation of what Andrew Barry terms a ‘technological society’,<sup>8</sup> it’s also a classed society. Residents, like the one above, have what seems to be the near-universal middle class complaint about plumbers, even as they collaborate with less-than-expert engineers over fragmented knowledges on the behaviour of pipes and water in their neighbourhood. They also do not strike up a similar relationship with the Area Corporation engineer, who is accountable to the elected ward councillor, who in turn is believed to rely on working class voters rather than strike up a civic middle class alliance.

It is precisely because Metrowater was ‘reformed’ as a seemingly non-political institution that its engineers’ work forges techno-political, if contingent, networks across the city. While Metrowater engineers may follow a discernible ethic of ‘public’ engineering in serving areas of the urban poor, they frequently express a sense of identification with more affluent residents, “They’re also middle class, right? Trying to assemble infrastructural services for a home they perhaps built with their life’s work.”

This, they claimed, means that sometimes they flout orders from their managers on what values should inform their supply ethics. Managers typically derived weekly supply volumes based on calculations of efficiency from the city’s reservoir levels. “We are the ones on the ground and know more about where and how much water needs to be distributed,” an engineer said. “So, we just do what’s required and underreport supply figures if necessary.”

The ‘technopopulist’ alignment between middle class residents of Chennai and water engineers (often transcending caste and religious lines although this wasn’t a specific

7 Simone, A. (2014). Relational infrastructures in postcolonial urban worlds. In Graham, S., & McFarlane, C. (Eds.). *Infrastructural Lives: Urban infrastructure in context*. Routledge. 17-38.

8 Barry, A. (2001). *Political machines: Governing a technological society*. Continuum International Publishing Group.



inquiry in my study) model a 'network'-based non-ideological mode of government that Barry cautions should nonetheless not be viewed "as the symbol of a particular political project."<sup>9</sup> In Chennai, it emerged as a socio-technical response to a situation with a limited centralised structure as starting point, thus challenging the bureaucratic reforms underway at Metrowater. At the same time, attending to the multivalent work of sustaining this network exposes how the value generated by social relations or 'embedded value' is put to use towards not only running an infrastructural system but also producing and reproducing a certain expectation or promise of what infrastructures are.

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9 Ibid.

## Working Against the End of Time: Diverging Infrastructural Imaginaries and the Future of the Mexico City Water System

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It was a cold autumn morning in Mexico City. I had been accompanying ingeniero López on a visit to several facilities under his management, in the western part of the city. After buying lunch on a *tortería* on the side of the road, we made our way to a major site located in an upscale neighbourhood, Vistahermosa. A deceptively small metal door led to a winding dirt road. On top of this road there was a small hill, surrounded by trees. Dozens of buildings, pumps, engines, pipes and valves suggested that this was a crucial site, as López had briefly mentioned earlier. Once there, he told me that water coming from two interbasin transfers, the Lerma and Cutzamala Systems, was measured and distributed there towards the city central and southern delegaciones (boroughs) through a complex system of pumps, deposits, valves and pipes. Together, these transfers account for 42% of the daily water supply in Mexico City, their importance being hard to understate<sup>1</sup>.

Despite this relevance, many of the buildings and infrastructures on site had visible signs of a long-term process of decay, which I saw from the truck as Rivera, the driver, found a place to park. We got off, and my head was already filled with questions. I asked a couple but received no answer. It was already 2.00 pm, and lunch came before any potential answer. The three of us, López, Rivera and I, started eating our *tortas*. The main operator at the site approached and greeted us briefly, and then walked away as we finished eating. After that, I walked with Tapia towards the far side of the site. There, an unseen three way pipe connector, which they call *trifulcadora*, leads the already mixed water of the Lerma and Cutzamala Systems to the aqueducts

that take it to the centre and south of Mexico City. The building is on a process of clear ruination (figure 1). At the back, the hillside had collapsed (figure 2), damaging the night watchman's cabin, which had then been moved. Some pumps had broken down, and most computers lacked crucial pieces, being installed but not working.



Figure 16.1. *Infrastructural ruination*

We walked back towards the truck, where the operator, Miguel, was chatting with Rivera. We got talking. He told me that he had seen many floods there in the three years he had worked at the site, and was dismayed that the damages remained neglected. He mentioned how many automatization projects had fallen short, as the case of the unusable computers showed. Money had stopped flowing, due to either budgetary constraints or corruption – or most likely both. His narrative was filled

1 SACMEX. (2018). Diagnóstico, logros y desafíos. Mexico City: SACMEX.

with disappointment. Even more than that, he had a profound worry for the future of the grid. Not only is decay increasingly visible. Pressure keeps mounting on these networked infrastructures, as consumption in Mexico City<sup>2</sup> keeps increasing in the central areas, whilst inequality deepens and expands.



Figure 16.2. Collapsed hillside at a SACMEX facility

I asked Miguel what he thought the future of water in Mexico City would be. He looked at me, his eyes squinting, and in silence. After just a few seconds, he asked back: ‘Do you remember how the Maya ended up?’ he said. I looked at him, probably puzzled, and told

him I was not too sure. Barely waiting for my reply, he carried on: ‘They had to abandon their cities for lack of resources’ he concluded, and an even deeper silence set between us. Miguel’s response was certainly extreme but not too far from other accounts of how water supply and sanitation might look like in a not-too-distant moment in time. Whether a rapid collapse or a prolonged crisis, most of the workers with whom I carried out research during a one-year ethnography in the Mexico City Water System (SACMEX) coincided on portraying a rapidly coming future of scarcity and risk for the city, placing this crisis in the near future, between 20 and 50 years from now. It was against this dreaded end of time that SACMEX workers understood and affirmed the value of their labour, in particular that of repair and maintenance. Their work was a way of deferring catastrophe; a way to stop, even momentarily the decay of the city and the world<sup>3</sup>.

Beyond the confines of the repair and maintenance tasks that constitute the daily practices of workers across SACMEX, other imaginaries are put forward. Engineers across the System were certain that if deferral is to gain efficacy, new mega-projects would have to be built. In an expansive, incremental logic, new, evermore distant, water sources would need to be secured if Mexico City is to survive. These future projects are not imagined as a definitive solution but merely as a temporal and spatial displacement of an impending socio-natural collapse – an infrastructural fix that further expands the Mexico City hydropolitan region<sup>4</sup>. As the end of times gets pushed further into the future, the scale of its inevitable coming is also expanded. The city becomes a vortex that survives only through an expansive logic of resource appropriation, increasingly fuelled by apocalyptic images of a dry city<sup>5</sup>. In this protracted time, the mega-projects of today become heralds of those still to come. Engineers’ imaginaries keep pushing forward an ideal of a technopolitical

2 The Metropolitan Area of Mexico City has a population of around 21 million people. However, Mexico City itself, the area in which SACMEX operates, has around 8 million people. The infrastructural projects and sites in which SACMEX and the workers mentioned here supply the city itself, even if water flows beyond its confines, only to be managed by other public agencies.

3 Graham, S., & Thrift, N. (2007). Out of Order: Understanding Repair and Maintenance. *Theory, Culture & Society*, 24(3), 1-25.

4 González Reynoso, A. E. (2016). La región hidropolitana de la Ciudad de México: conflicto gubernamental y social por los trasvases Lerma y Cutzamala. Ciudad de México: Instituto Mora - CONACyT.

5 Kimmelman, M. (2017). Mexico City, Parched and Sinking, Faces a Water Crisis. Retrieved December 14, 2018, from <https://www.nytimes.com/interactive/2017/02/17/world/americas/mexico-city-sinking.html>; Watts, J. (2015). Mexico City’s water crisis – from source to sewer. Retrieved December 14, 2018, from <https://www.theguardian.com/cities/2015/nov/12/mexico-city-water-crisis-source-sewer>

modernity, in which technology, science, and state would be able to control water and city through infrastructures, even if budgets have been decreasing, the state has been progressively dismantled, and infrastructures are on a process of evident breakdown and decay.

The ways in which threat and futurity have come to shape contemporary urban politics has been explored before<sup>6</sup>. These vignettes, however, indicate that future perceptions and narratives of risk and breakdown also become entwined with the everyday labour and expertise practices that maintain, manage, and repair infrastructures. These labour practices have been researched in increasing detail, showing how they are central to the maintenance of the state<sup>7</sup>, of large infrastructural regions<sup>8</sup>, and of hybrid relations at the scale of the city<sup>9</sup>. Attention to narratives of the future and how they shape present practices might be relevant in understanding not only how labour is carried out and why, but also what kinds of urban futures are possible through the interactions between labour and infrastructure.

I want to close this short piece with some questions that might guide future enquiries of infrastructural imaginaries in Mexico City. If in engineers and workers' narratives about the coming city there seems to be little space for a more just, sustainable city, then how can these be challenged, or how are they being disputed now and by whom? What kinds of infrastructural configurations and labour practices can be put in place if the city is to survive beyond the need of infrastructural fixes, transforming not only city but the urban process itself? Can the feared 'end of time' that drives much of the present work of maintenance and repair be rearticulated into an ethos not of catastrophe but of care?

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6 Zeiderman, A. (2016). *Endangered City: The Politics of Security and Risk in Bogotá*. Durham, NC: Duke University Press.

7 Barnes, J. (2017). States of maintenance: Power, politics, and Egypt's irrigation infrastructure. *Environment and Planning D: Society and Space*, 146-164.

8 Carse, A. (2014). *Beyond the Big Ditch: Politics, Ecology, and Infrastructure at the Panama Canal*. Cambridge: The MIT Press.

9 Anand, N. (2017). *Hydraulic City: Water & the Infrastructures of Citizenship in Mumbai*. Durham, NC: Duke University Press.

Baptista, I. (2018). Electricity services always in the making: Informality and the work of infrastructure maintenance and repair in an African city. *Urban Studies*, 1-16.



## Infrastructural Labour as Enacting the Right to the City?

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Throughout this magazine, we have argued that focusing on infrastructural labour can lead to a more meaningful understanding of how cities are collectively sustained and reproduced. However, simply rendering infrastructural labour visible is not sufficient (nor necessarily desirable). How we frame the efforts and lives of the people working on, in, and through urban infrastructures matters. How can we productively theorise and politicise infrastructural work and workers?

While the particularities of infrastructural labour undoubtedly vary across space, time and sociotechnical system, we can collectively appreciate that labour power is necessary for the creation and functioning of urban infrastructures. In turn, these infrastructures and their services contribute towards the production of urban space and collective social reproduction. By social reproduction, we're talking about "that complex of activities and relations by which our life and labor are daily reconstituted"<sup>1</sup> By working to create, maintain, and deliver infrastructural services, infrastructural labour sets the ground for everyday life and subsistence in the city.

Whether electricity, education, sanitation or transportation, urban infrastructures are lively constituent forces that reflect and shape our social, economic, political and ecological relations. Yet, the contradictions of contemporary capitalism have led to a crisis of social reproduction, or care.<sup>2</sup> (Fraser, 2016). Socially reproductive labour is subject to intensified exploitation and devaluation while, at the same time, previously public or common goods and services are commodified.

We encounter this disjuncture on a daily basis: nurses and social care workers relying on food banks to feed their family, while fire-fighters and other key workers commute vast distances because they cannot afford a home within their city. We must question how the commodification of infrastructural services and devaluation of infrastructural labour have intensified to a point where the people underpinning one infrastructure are unable to access another. If we appreciate labour's integral role in creating and maintaining urban infrastructures, then how does our work contribute towards its political revalorisation?

In practice, infrastructural work is perceived and valued in vastly different ways. In a given city, a unionised worker in municipal waste management may earn enough for a relatively secure living and have recourse for support if they fall ill or are unfairly dismissed. At the same time, a subsistence-based 'informal' waste picker in the same city will be nominally compensated for materials and struggle to establish a secure livelihood. While highly problematic, infrastructures' inherent heterogeneity is predicated on a diversity labour conditions and relations, not to mention expectations over who must undertake what infrastructural work. This is not an argument for the universalization of infrastructural labour conditions. Instead, we must expose these contradictions and find compelling narratives and conceptualisations that challenge the devaluation and invisibilisation of infrastructural workers.

Could we imagine infrastructural labour as performing of the Right to the City? As a "cry

1 Federici, S. (2012). *Revolution at Point Zero: Housework, Reproduction, and Feminist Struggle*. PM Press. p7.

2 Fraser, N. (July–August 2016). *Contradictions of Capital and Care*. NLR 100. Retrieved May 20, 2019, from New Left Review website: <https://newleftreview.org/issues/III100/articles/nancy-fraser-contradictions-of-capital-and-care>

and demand” where inhabitants reclaim and transform urban life,<sup>3</sup> Harvey stresses that “the Right to the City is not merely a right of access to what already exists, but a right to change it after our heart’s desire.”<sup>4</sup> Whether visible or not, working in/through urban infrastructures has an immeasurable impact on urban life. Everyday efforts of repairing water pipes, running schools, and driving buses feed into the rhythms of everyday life, producing the spaces and the relations which define the inhabitants’ experiences. Furthermore, this work simultaneously supports individual and collective livelihoods thereby contributing towards the production and (social) reproduction of urban life.

Thinking about infrastructural labour as enacting the Right to the City also raises questions about responsibility: who is expected fulfil collective socially reproduction rights within the city, and under what conditions? Undertaking socially necessary work fulfils the obligations of state actors (or whoever is deemed responsible for infrastructural provisioning), infrastructural work may be seen as a hegemonic extension. However, the tacit knowledges, negotiations, and relations surrounding everyday infrastructural work are significantly more nuanced. As illustrated by other interventions in this magazine, working for the state does not eliminate one’s ability to improvise, challenge, or subvert.

While the Right to the City is frequently exemplified through instances of appropriating space, self-governing institutions and practices, and moments of dissent, the concept speaks of transformation, occupation and autogestion more generally. In cities around the world, people work day in and out to ensure taps flow, bins are emptied, hospitals remain open, and so many other facets of our urban social environments continue to function. This multitude of labour may not always be on some precipice mass revolt, but its power is nevertheless present. By broadening our understanding of what constitutes

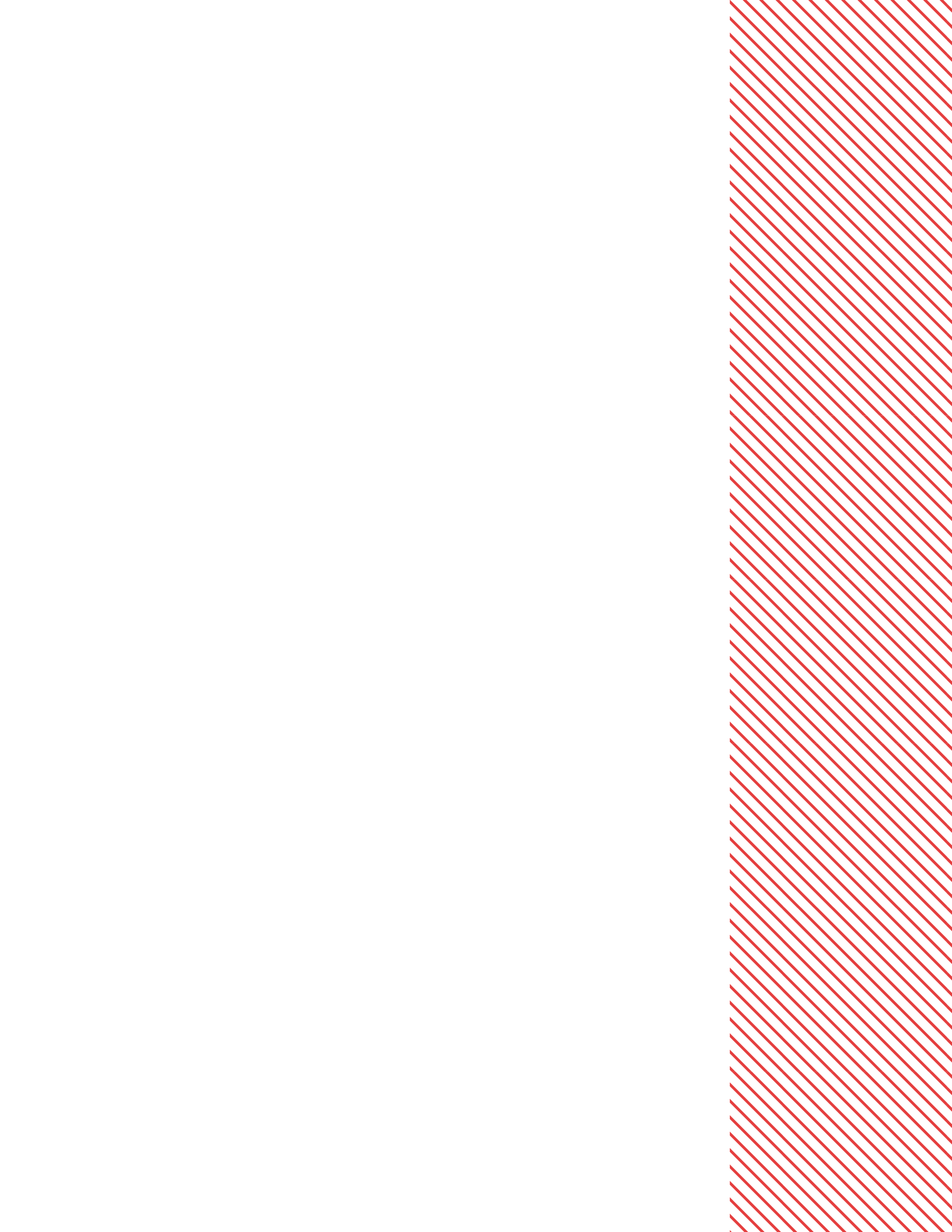
infrastructural labour and emphasising its contribution to collective social reproduction, we become aware of infrastructural labour’s continuous remaking of urban life. In turn, the Right to the City provides us with a common language for asserting the value and potential of infrastructural labour.

While there are undoubtedly other ways of politicising infrastructural labour, the Right to the City’s political and theoretical gravitas provides a space for thinking about infrastructural labour’s necessity and material contributions to individual and collective urban livelihoods. Repositioning infrastructural labour as enacting the Right to the City can help us to simultaneously question how infrastructural labour contributes to individual and collective social reproduction. This positioning also opens the possibility for political solidarity amongst infrastructural workers and public claims for the decommodification infrastructural services and access.

While arguing that infrastructural labour can be productively theorised as enacting the Right to the City, this is not the primary point I wish to make. Instead, this intervention serves as an illustrative prompt and call for continued critical reflection about how we represent people’s work and contributions towards infrastructural systems and processes. Our accounts and interventions have political currency. As this magazine calls for greater attention to infrastructural labour, so too must we find ways of bridging our intellectual efforts to the service of those we research, work with, and write about.

3 Lefebvre, H. (1996). *Writings on cities*. Oxford: Blackwell Publishers.

4 Harvey, D. (2003). The right to the city. *International Journal of Urban and Regional Research*, 27(4), 939–941. <https://doi.org/10.1111/j.0309-1317.2003.00492.x>



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Omar is an urban geographer. His work lies at the intersection of urban studies, settler colonialism, political economy and Middle East studies. Drawing on the histories and geographies of road and electricity infrastructure in Palestine, his dissertation examined the ways these socio-technical networks are constructed, imagined and governed but also how they are experienced and contested

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Hara's current research revolves around the ways people come together, form (more or less visible) communities and seek for equality and justice; Hara has also been exploring issues of social movements and migration mainly in the south of Europe.

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Catalina Medarde is an illustrator based in Spain. She believes in art as a vehicle for making knowledge and culture accessible to everyone. Her master's degree and research experience as a pharmacist gives her the tools to best translate science into educational cartoons. Other works of Catalina include paintings, children illustration or mural art.

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His research is focused on the politics of the urban environment in an era of climate crisis, with particular interests in the governance of water and waste. He was previously a postdoctoral fellow with the African Centre for Cities at the University of Cape Town and a visiting researcher at the University of São Paulo, and he has conducted extensive research in São Paulo, Brazil and in South Africa. His current research is dedicated to understanding the relationships between climate crisis, financial capital, and infrastructure in cities marked by intense inequality.

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Niranjana is interested in the everyday practice of making and maintaining the urban, and the differentiated agencies and politics of difference that engenders. By engaging with these practices, my research examines the entanglement of nature, culture and technology in the urban waterscapes of south India.

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Hanna is an urban geographer interested in urban risk governance in regional cities. Of particular interest to her is how people live their lives, how people change cities and how life in cities changes people.

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Jonathan is a researcher focused on developing various comparative ways of understanding the politics of urban infrastructure across diverse urban contexts.

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Kathleen's research centres on urban infrastructures, labours, and citizenships. Her PhD thesis considers state-led community waste initiatives in South African cities and is part of the ESRC-DFID supported 'Turning Livelihoods to Rubbish?' research project

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Anshika holds a PhD from Darmstadt University. Her research focuses on understanding the urban sanitation challenge being faced by women in informal settlements in the cities of Dar es Salaam, Tanzania and Nairobi, Kenya.

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Yaffa's research examines urban and feminist political ecologies of water, southern and comparative urbanism, and the everyday infrastructures and governance of Indian cities.

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Joe's interests broadly encompass urban studies, political ecology, development, science and technology, and political economy. His work centres on two related research projects: 1) the political ecology of water and infrastructure; and 2) the politics of integrated environmental governance.

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