



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

South Asian Urban Climates: Towards Pluralistic Narratives and Expanded Lexicons

Citation for published version:

Nida, R, Parikh, A, Lamb, Z, Syal, S, Ghertner, DA, Menon, S, Anwar, NH, Nabi, H, Butt, W, Ranganathan, M, Srinivasan, K, Bhat, H, Powis, A & Anand, N 2023, 'South Asian Urban Climates: Towards Pluralistic Narratives and Expanded Lexicons', *International Journal of Urban and Regional Research*.
<https://doi.org/10.1111/1468-2427.13173>

Digital Object Identifier (DOI):

[10.1111/1468-2427.13173](https://doi.org/10.1111/1468-2427.13173)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

International Journal of Urban and Regional Research

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.



South Asian Urban Climates: Towards Pluralistic Narratives and Expanded Lexicons

Discussions on the effects of the global climate crisis in South Asia are frequently centered on atmospheric dynamics, economic considerations, or implications for national security — with cities seen as sites of acute risk or as levers of resilience. Yet as critical examinations of contemporary environmental change tell us, the causes and effects of global carbon emissions, biodiversity loss, atmospheric pollution, and meteorological changes are shaped by colonialism, racial-capitalism, and the extraction and commodification of socio-natures (Davis and Todd, 2017; Erickson, 2020). Looking from particular contexts, we can also ask how the effects, experiences, and responses to climate dynamics are inextricably layered with the constitution of social identities; forms of state and non-state violence; processes of militarization and securitization; exclusionary and uneven development; caste, class, and gender politics and so on. Understanding such ‘confounding factors’ necessitates greater attention to local, specific, and narrative perspectives, rather than global, generalized, and probabilistic assessments (Shepherd and Sobel, 2020; see also Ghosh, 2016). In this intervention, we use a series of interconnected mini essays as notes to explore climate, normally read across wide geographies, long timescales, and cumulative factors, through a more pluralized and situated view on ‘urban climates’ — which register in South Asian cities everyday in air pollution, monsoons, sewage, epidemics, indoor microclimates, and more.

We structure this expanded conceptualization of urban climates around three linked aspects, each of which we identify with a term from the broader South Asian lexicon of climate and weather — **structural conditions (*mahaul*)**, **local and lived experiences (*mausam*)**, and **heterogenous materialities (*aab-o-hawa*)** — as a way to capture climate across political, social, historic, atmospheric, ecological, material, sensory, and embodied registers. This is not an *a priori* framing, but has emerged through the process of gathering, dialoguing, and linking across diverse and local stories of urban environmental politics from across South Asia.¹

We are interested in how individual cases can be narrated in their multiplicity and difference. Telling these stories is an act of ‘writ(ing) across borders’ (Siddiqi, 2020) and holding

¹ The format of this article, a series of brief essays linked together through particular themes, takes inspiration from collectively authored texts in allied fields such as urban planning (Barry *et al.*, 2018) and architectural history (Hochhäusl *et al.*, 2018). It emerged out of three meetings in the 2019 seminar series Urban Climates: Power, Development, and Environment in South Asia, in which we, an interdisciplinary group of urban scholars, shared our work on a range of empirical contexts. The paper presents an experiment in continuing to think and write together to develop conceptual positions and questions which emerge from and stay close to these vivid empirical accounts, and to reflect on the multi-faceted meanings, challenges, and possibilities of urban climates in the region. Nida Rehman and Aparna Parikh co-convened the 2019 seminar series, and subsequently the interventions piece. They gathered the vignettes, identified some of the broad themes, and co-wrote the introduction and conclusion. They have equal authorship.

differences together, to grapple with expansive and imaginative geographies of climate. While certain Indian cities have seen sustained interest within scholarship in urban studies over the last fifteen years, there has been relatively less collective thinking across South Asian urban environments, especially beyond India, with scholarship often replicating historical and political borders and hierarchies.² We are inspired by the articulation, by critical media and literary voices, of the shared politics and imaginaries of climate across South Asia (such as Jamhooor Team, 2019), and the ‘spirit of radical internationalism’ of climate justice activists who have deliberately taken on the destructive and unjust tendencies of capitalist, state, and military powers, and centered notions of restorative justice, worker rights, and the sovereignty of communities in shaping ecological futures (Rashid, 2019). South Asia as an analytic helps capture familiar and resonant *mahauls* — ongoing histories of colonialism, caste, extractivism and so on — even as they manifest in quite disjunctive ways. Exploring the relationalities of mahaal, mausam, and aab-o-hawa across Dhaka, Gurgaon, Chennai, Islamabad, Gadani, and the other sites considered here through the framework of urban climates we aspire to ‘think with and through the “region”,’ with South Asia offering not only a geographic category, but also a generative analytical frame and method for urban critique (Sinha, 2013).³

<H1> MAHAUL, MAUSAM, AND AAB-O-HAWA: TOWARDS A CRITICAL LEXICON OF URBAN CLIMATES

We look analytically and linguistically from South Asia, using the Hindustani/Urdu words mahaal, mausam, and aab-o-hawa to articulate a framework of South Asian urban climates. We engage these critical concepts, first, as a heuristic to bring together concerns about political and ideological armatures, lived and embodied experiences, and heterogeneous materialities of the climate — and to consider how structural dimensions are already always imbued within local and embodied conditions, and vice versa. Second, and more generally, we are also interested in the affective dimensions of a broadened climate lexicon — and particularly how the cultural significance or usages of particular terms can support and thicken analytical explorations.⁴

² A review of some of this literature is provided by Coelho and Sood (2021). For examples of scholarship offering comparative perspectives on urbanization in India see also the *Economic and Political Weekly Review of Urban Affairs* issues and Rademacher and Sivaramakrishnan (2013). For broader perspectives on Asian cities see Bunnell and Goh (2018) and Rademacher and Sivaramakrishnan (2017). Important collections that look comparatively at cities and architecture in South Asia are Anjaria and McFarlane (2016) and Siddiqi (2020) respectively.

³ The physical and discursive boundaries of South Asia, both external and internal, represent the fraught interaction of biophysical materiality with histories of colonialism, neo-colonial interventions, and geopolitical tensions at various scales.

⁴ These terms from Urdu/Hindustani are not easily translatable to English. While we recognize that these terms are not used throughout South Asia, they nevertheless capture particular ‘structures of feeling’ we want to render about

The word *mahaul* is a very loose translation of environment or atmosphere. More than in a biophysical sense, it is a term that suggests an all-encompassing socio-political or cultural atmosphere. Mahaul is often used to describe a prevailing mood or spirit, or overarching context for a place, events, or relationships.⁵ In such a moral or political sense, mahaul is then a frame that structures what goes on, how relationships or events unfold within and through it, and how they are experienced. Moreover, the mahaul is actively made — *mahaul banana*. We are concerned with how the atmosphere is constructed through processes of colonization and territorialization, and upheld by class, caste, and patriarchal structures; ideological frameworks and knowledge systems; modes of extracting labor and resources; and forms and exclusions of neoliberal urbanization. These mahauls — made through the production of margins, elsewheres, and segregative atmospheres as examined in some of the mini-essays that follow (Menon, Anwar, Nabi, Butt, Ranganathan, Parikh, Syal) — contour the effects of climate breakdowns.

We explore these effects through the second term, *mausam*. Mausam translates to season or weather, and particularly how these are felt in the day-to-day. It thus helps to raise questions about multifaceted local experiences of climate. We explore these here through adverse experiences of extractive regimes, hazards, and polluting infrastructures, as it manifests in the form of slow violence (Nabi) and death and silencing (Parikh), with adverse impacts on ecological and bodily health (Menon). These experiences can also become the basis for generating critical positions, emancipatory politics, and local actions — whether in the form of capacious imaginaries of urban nature (Anand), memories and embodied experiences (Parikh), or alternative views on development (Menon) — which can counter the ‘environmental unfreedoms’ or the ‘...fundamentally humanity- and dignity-robbing traits of socio-ecological harms’ (Ranganathan). Mausam as an analytic is also a provocation in thinking about different registers of time involved in the making of urban climates, such as futuristic notions of developmental time (Menon, Lamb), colonial time and re-emergence (Ghertner, Rehman, Anand, and others), and the pace of extractive harm (Nabi, Parikh). Finally, we are interested in how the term mausam also entrains an evocation of the tangibility and sensorial qualities of the weather — of rainwater, toxic air, or indoor microclimates.

With the triple barrelled term *aab-o-hawa* we enter more directly into questions of materiality. The term is normally used to describe climate or environment, but translates more literally to water and air. Rather than suggesting an ontological whole, it points to the varied biophysical and socio-cultural elements and atmospheric conditions that make up the environment. We bring *aab-o-hawa* into this framework to underscore forms of socio-material hybridity,

urban climates. With inevitable gaps that occur in translation between languages and contexts, the evocations will register differently depending on familiarity with or access to these languages.

⁵ Anu Sabhlok’s framing of the urban mahaul and the conversation that followed during the Urban Climates workshop at Dartmouth has inspired our use of it here. See also Kirmani (2008). Our use of mahaul also relates to the following notions, among others: ‘weather’ as the totality of our environments, a climate that is antiblack (Sharpe, 2016); ‘environmental unfreedoms’ as socio-ecological harms that extract dignity (Ranganathan, this paper); ‘slow violence’ as violence produced over time and rendered invisible (Nixon, 2011).

entanglements, and non-human agencies of urban climates. We are particularly interested in how thinking and engaging with more-than-human life as well as a range of biophysical materialities can provide directions to move away from regimes of knowing, measuring, controlling, and governing (urban) nature that are steeped in abstractions or dualistic framings of human society and nature (Bhat, Powis). Thinking with the aab-o-hawa means considering how material assemblages and more-than-human entanglements of climate — such as of the monsoon or disease-infected mosquitoes — often exceed frameworks for knowing and categorizing nature (Bhat, Rehman). It also opens up to closer consideration of diverse modes or practices of more-than-human cohabitation and the construction of grounded knowledges (Srinivasan, Anand).

Through this framework and in the essays that follow, we present a range of perspectives on and from South Asian cities to consider their urban futures — and the future of the urban more broadly. The first section follows the destructive path of extractive and accumulationist urban agendas, how they make urban mahauls characterized by violence and unfreedoms meted out on ‘othered’ places and lives. The second section more closely observes the embeddedness of these power structures in the local mausam of multiscalar environments and socio-ecological changes, probing how urban dwellers recognize and articulate, or imagine against, these structural harms. The third section discusses the making of the more-than-human aab-o-hawa, and the ethical, epistemological, and political implications of recentering nonhuman agency in collective urban futures.

Crucially, the three sections map only loosely onto the three terms, mahaul, mausam and aab-o-hawa respectively. Instead, we are interested in the ways in which the mahaul, mausam, and aab-o-hawa intersect and weave across the stories in each section. Together, the vignettes provide a window into the violent inequities that emerge from an erasure of marginalized voices within urban environments, amidst global reckonings with (and denials of) novel, ongoing, and still-to-come crises of planetary, ecological, epidemiological, and social health.

<H1> CONSTRAINED IMAGINARIES AND SEGREGATED ATMOSPHERES

Across small towns, urban peripheries, and historic metropolises in South Asia, colonial, nationalist, and global capitalist imaginaries have shaped planning schemes and created extractive and segregated atmospheres. We situate the creation and experience of climate within these relentless processes of accumulation and dispossession, as they follow from modernist imaginaries for capitalist urban futures in Islamabad, rehashed adaptation regimes in Dhaka, segregative zoning for air in Gurgaon, and the historically rooted, racialized othering of Dalits in Lahore and Bangalore. These mahauls create the unlivable mausam — landscapes of risk, toxicity, and segregation — that manifest in polluted waterways, landfill sites, smog, extracted resources, and more. These constrained urban environmental imaginaries reproduce unsustainable pasts in the present and future, pointing to the expansive registers of time in which urban climates need to be understood.

<H2> Extraction, Development, and Destruction beyond the South Asian Metropolis *Nausheen Anwar*

Official imaginaries and critical discourses of South Asian cities' futures conceptualize urbanization and its related crises, as a process driven entirely by metropolitan inducements. In official discourse, the 'small town' is often a discursive casualty; stuck somewhere between the rural and the urban. In the specific case of Pakistan, the urban is centered around the big metropolis with its familiar industrial foundations, postcolonial ethnic contestations, vernacular politics, and nationalist planning. Yet, the necessities of global, national and regional capital often find different pathways of operation, accumulation, and extraction, contributing to the crises of planetary and ecological health. These demand attention to the less visible or dispersed channels of wealth creation, mobility, and labor that exceed the global metropolis (Sengupta, 2017; Mukhopadhyay, Zérah and Denis, 2020). These channels extend and connect urban geographies and different national contexts, wherein new pathways of accumulation and extractive landscapes are forged beyond the South Asian metropolis. I take the nonmetro location of Islamkot in Pakistan's southern region of Sindh, as the epistemic axis for understanding the advent of climate breakdowns, and the distributed presence of capital, dispossession, aspirations and corporatized regimes of governance. These dynamics operate through a dialectic of territorialization and deterritorialization (Sengupta, 2017) to constitute the 'small town' in Pakistan's emergent extractive landscape of planetary urbanization.

The discovery of one of the world's largest lignite coal reserves spread across the Thar Desert — an ecosystem of shifting rainfall patterns, droughts, and acute poverty, has resulted in unprecedented changes in the region. This includes the ongoing erasure of existing socio-spatial forms of social life to accommodate natural resource extraction for national energy development, as well the state's facilitation of licenses to private consortiums. The enclosure for extractive industry has triggered all kinds of changes: from infrastructural developments and land displacements to the expansion of nonmetro centers like Islamkot. In the provincial government's new master planning vision, Islamkot is a prototype of a 'SDG modern Taluka' — the first of its kind in Pakistan. It is the epicenter of expansive corporate initiatives for development, ecotourism, and campaigns for the protection of the region's biodiversity (Dawn Correspondent, 2020). These initiatives not only substitute the state's role but also promote the classic trope of a 'backward' or 'lagging' region that is necessarily transformed through corporate interventions in the name of progress. But Islamkot is also a 'logistical city' where speculative frontiers of property making intersect with labor's new compulsions and desires in services industries, building and construction. These changes exemplify the rapid urbanization of nonmetro regions in South Asia, such as those in the Kangra district of Himachal Pradesh in India as discussed by Siddharth Menon below, and the attendant changing microclimates that are spawning new adversities and vulnerabilities. As the region transforms, activist groups in Islamkot have called for climate justice by denouncing the ecology's destruction. But much of this activism has been marred with accusations of sedition and terrorism by the workings of a security-obsessed state (Anwar, Meghwar and Saleem,

2019). Islamkot unsettles our understandings of space and place by highlighting the multiple flows that shape engagements with local-global capitalist pathways, and especially the exigencies of state violence. It is the ground zero of the complex entanglements between death, destruction, and development through which capital, technologies, infrastructures and desires for new urban futures flow.

<H2> *Designing Dhaka's Adaptation Regimes* *Zachary Lamb*

Dhaka, Bangladesh, is often cited among cities most vulnerable to climate change (Maplecroft, 2016). Situated near the confluence of two great rivers in the Bengal Delta, Dhaka has always faced periodic flooding. With recent growth, settlements have spread into former wetlands, but drainage and flood control infrastructures are incomplete and fragmented, leaving poor residents especially vulnerable (Dasgupta *et al.*, 2015). In Dhaka, as in other similarly endangered cities, design professionals have become increasingly central in addressing the threats of flooding and climate change, with architects, landscape architects, and urban designers integral to emerging 'global networks of urban environmental project making' (Goh, 2019). However, while design-centered adaptation efforts often feature grand ambitions to remake cities, recent experience in Dhaka suggests that in some cases design can narrow rather than expand the scope of climate futures.

The recent Dutch-funded Bangladesh Delta Plan 2100 (BDP) illustrates how design methods can be used to narrow climate futures. Early BDP documents signaled the arrival of a new water management paradigm for Dhaka and the eastern Bengal Delta. While flood infrastructure planning here has long been dominated by levees and other 'gray' infrastructures, the BDP promised more flexible and ecologically-sensitive water management practices (Consultant Team BanDuDeltAS, 2014). In this vision, Dutch designers on the BDP team created sophisticated renderings showing proposals for 'green' infrastructure and floodable urban landscapes (General Economics Division, 2016).

In spite of the visual rhetoric promising flexibility and ecologically sensitive urban transformation, the BDP doubled down on conventional gray infrastructures. BDP plans for Dhaka's flood management included two alternatives, a conventional 'engineered control' option and a more environmentally-responsive 'adaptation by design' option (General Economics Division, 2016). Though the two options were framed as radically divergent, both called for expanding Dhaka's encircling levees, a controversial proposal that has long been opposed by anti-levee advocates (Alam, 2016; Islam, 2016). In an interview one senior water planner in Dhaka described the project as 'old things being rehashed.' The BDP visualizations of 'green' and 'blue' stormwater strategies, with their vivid colors and pristine urbanism, are radically disconnected from both the lived experience of the city's heavily polluted waterways and the massive highway-topped levees proposed elsewhere in the project documents.

The stakes of such urban climate adaptation projects are high. New infrastructures, whether ‘gray’ or ‘green,’ can profoundly alter people’s lives and settlement patterns, enabling some forms of urbanization and livelihood, while foreclosing others. When designers participate in such projects, they become part of ‘adaptation regimes,’ the emergent power structures that ‘govern the landscape of possible interventions in the face of climate change’ (Paprocki, 2018). Observing design-led climate adaptation planning after Hurricane Sandy, researchers concluded that the planning process included ‘insufficient recognition of the political work’ performed by designers (Collier, Cox and Grove, 2016). Beyond political inattention, others have found that design visualizations can be proactively ‘used to constrain public debate’ in contentious development processes (Groulx and Lewis, 2017).

Whether one looks at flood adaptation plans in Dhaka, changing regimes of waste processing in Lahore (Butt), or the aestheticized greening of privileged landscapes in Mumbai (Parikh), it is clear that, without attention to the mahaul, the structural drivers of entrenched inequality, technocratic and aesthetic responses to South Asia’s urban crises are likely to advance ‘solutions’ that are illusory, thin, and uneven. In Dhaka, the BDP used design tools and visualizations to rebrand controversial gray infrastructures with a new green veneer, suggesting that new infrastructures would bring dramatic improvements in the biophysical and material conditions (aab-o-hawa) of urban waters. However, if adaptation planning continues to elide the broader structural conditions that underlie developmental agendas (mahaul), these design representations can end up justifying the imposition of discredited forms of environmental management, denying the lived experience of urban residents, and undermining resistance movements (mausam). Designers have long offered transformative visions of environmentally responsive urbanism in response to climate change. Yet, as we see in Dhaka, to deliver on these promises, designers must recognize their political agency and direct their efforts towards constructing new urban imaginaries that expand, rather than constraining possible climate futures.

<H2> *Waste and the Fiction of Elsewhere* *Waqas Butt*

Since the early 1990s, Pakistani cities have been undergoing rapid transformations, where the growth of a politically ascendant middle and upper middle class has been accompanied by reworked spatial relations along the lines of class, caste, and religion, expanding economies of consumption, and fragmented urban infrastructures. As the proliferation of disposable commodities produces endless streams of waste materials, areas inhabited by Pakistan’s middle and upper middle classes must be cleansed of these materials on an everyday basis. Put slightly differently, waste must be kept separate from those who produce them, such that its risks and harms can accumulate and concentrate elsewhere. Since 1997 the most prominent *elsewhere* in Lahore was the dumping ground at Mehmood Booti that received nearly half of the city’s daily waste generation. Even before its opening, Mehmood Booti was ensnared in litigation, where complainants, courts, and commissions decided upon, among other things, the environmental impact the site was having on the health of residents in the

area. Though the court decided that ‘pollution is a form of slow poisoning’ and ordered the remediation of the dumping ground into a sanitary landfill, Mehmood Booti continued operating until 2016 when Pakistan’s ‘first sanitary landfill site’ was built nearby. Using technologies like perforated drainage pipes for leachate and a geotextile and High-Density Polyethylene geomembrane, the landfill was to contain the risks and hazards that Mehmood Booti had failed to. However, not only has Pakistan’s ‘first sanitary landfill site’ failed to live up to its promise of containing risks and hazards, waste infrastructures in Lahore, like much of South Asia, depend upon Dalits performing the actual work of taking waste materials elsewhere.

In Lahore, nearly all sanitation workers employed by the municipal government are Christian Dalits, having converted from the noncaste group known as Chura, while most workers laboring under informalized work relations are Muslim Dalits, predominantly from similar groups like Changar or Musali. It is undeniable that waste work exposes these laboring bodies to risks and harms attached to these materials. Additionally, as Malini Ranganathan describes in the case of Bangalore and Shruti Syal in the case of Delhi (see below), workers’ settlements are characterized by varying degrees of legality and informality, and have unequal access to urban infrastructures of water, waste management, power, and transportation, while, especially in the case of informal workers, waste materials are accumulated and sold within households known as jhuggi-jhopris (clusters of huts). The concentration of waste materials in certain spaces and bodies, and not others, contributes to how and why identities are differentially racialized through caste-based ascriptions (e.g. purity and impurity), as well as class-based markers of distinction (e.g. lifestyles). Elsewheres are emplaced in space as much as they are in bodies, something that is essential to how urban climates are ‘heterogeneously (and differentially) made and experienced’ (i.e. mahaul), just as they are known and experienced across spatial and temporal registers (i.e. mausam).

Joining human and non-human labor with technological interventions (see Zhang, 2020), waste infrastructures in Lahore and across much of urban Pakistan are assembled to take away waste materials to concentrate them elsewhere. This movement elsewhere connects the transformation of waste materials (e.g. discard recycled into commodities) to the production of environments and bodies differentiated along lines of caste, class, and religion, subsequently facilitating the circulation of capital and uneven development (see Parikh below; [Gidwani and Reddy, 2011](#)). This is why the concentration of waste elsewhere figures so prominently in Pakistan’s ‘urban ecological imagination’ (Sivaramakrishnan, 2017): exposure to risks and harms resulting from consumption of commodities, the accumulation of discard, and the attendant toxicity can be mitigated through logics of separation and containment. Yet, as recent climatic events, from flooding in Karachi that submerged the city in waste to the smog that regularly engulfs urban centers across the Punjab, have made clear, urban climates across the country have been built upon fictive grounds. Precisely because of their fictiveness, elsewheres must constantly be maintained by mobilizing effort, whether that be the engineering of dumps and landfills or the laboring of human and non-human life.

<H2> *Eco-Casteism and Climate Apartheid* *Malini Ranganathan*

Bengaluru's mahaul — namely the social and structural hierarchies that saturate and pervade urban space and ecology — is one of eco-casteism and climate apartheid. Yet, the city's privileged castes, comprising largely of brahmins, lingayats, jains, and other land-owning and politically connected castes, deny casteism, even as they practice it in their homes, workplaces, and educational institutions. I write from the vantage of a savarna [dominant caste] scholar of environmental casteism and environmental racism. In so doing, I must reckon with the caste privilege that I continue to benefit from, despite living a supposedly 'casteless' cosmopolitan life. In this essay, I offer brief remarks on the role of brahminism and eco-casteism in Bengaluru's climate apartheid.

Mukul Sharma (2017) uses the term 'eco-casteism' to refer both to the denial of caste prejudice, and to the naturalizing of caste as socially harmonious and ecologically beneficial. The upholding of 'brahminism' — an ideology that sanctifies the brahmin at the top and all others beneath him — was to B.R Ambedkar (Ambedkar, 2017) the 'negation of the spirit of liberty, equality and fraternity,' and what I would like to emphasize as the driving logic of eco-casteism. Meanwhile, 'climate apartheid' refers to the racially uneven nature of climate change vulnerability, in which poorer and racially oppressed populations suffer the most and bear the least responsibility for climate change (Rice, Long and Levenda, 2021). In India, eco-casteism means that so-called upper castes dominate conversations on climate (Mangala, 2019; Kukde, 2020), while within cities like Bengaluru, climate apartheid is dictated by caste segregation (see especially Bharathi et al., 2018; Kuttiah, 2017; Sen et al., 2021; Sreenath, 2015).

After heavy monsoonal deluges, now less predictable and more common with climate change, low-lying areas in Bengaluru become awash with flood waters and sewage. It is at this point that caste power is deployed, and when 'environmental unfreedoms,' as I have called them elsewhere, are most visible (Ranganathan, 2021). First, as Shreyas Sreenath (2015) writes, while the practice of manual scavenging is technically outlawed, in the aftermath of a monsoonal downpour in Bengaluru, Dalit laborers and poorer non-Dalits are recruited to clear excreta and waste blockages from manholes. This has led to death by asphyxiation but is willfully and strategically underplayed by the government. Second, flooding elicits a frenzy of actions blaming illegal 'encroachments.' After a high court order in 2014, the Bengaluru government went on a demolition drive to remove flood-risky encroachments on and around keres (lakes, wetlands, or tanks) and raja kaluves (canals or storm drains). Walking around the potholed, slushy road ringing Sarakki lake in southern Bengaluru, the wreckage was visible in early 2015: bulldozed debris from low-lying informal settlements, piles of people's shattered belongings, fences marking off demolished areas from public access. In a nearby informal, lower class Muslim settlement, Madina Nagar, BBMP engineers had demolished houses teetering on wetlands and storm canals. Two years earlier, the eviction of Ejjipura slum belonging to Dalit Christians, had left 5,000 people homeless, vulnerable to flooding, violence,

and vector-borne diseases (Housing and Land Rights Network, 2017). Some residents have been relocated to the far outskirts but post-eviction traumas and challenges linger on in resettlement sites (Selva, Siddharth and Adavi, 2020).

In this mausam or the everyday lived experience of climate apartheid, marginalized castes experience multiple vulnerabilities: they are vulnerable because their labor is recruited to clear fetid floodwaters; they are vulnerable because they live in informal low-lying areas; and they are vulnerable to being blamed for flood risk. Climate apartheid is manifest when Dalit and lower-class settlements near lakes are criminalized as illegal ‘encroachers,’ while adjacent apartment buildings, sports complexes, and Hindu temples are erected with impunity or left untouched (Navya, 2013; Saldanha, 2013; Nayantara, 2015; Siddharth and Ragesh, 2020). Climate-proofing is selective, carefully calibrated to preserve caste, class, and environmental privilege for some, while rendering others evermore expendable and prone to environmental unfreedoms.

<H2> *Zoning for Air* *D. Asher Ghertner*

In his *Geography of Disease*, F. G. Clemow expressed the common nineteenth-century opinion that a physiological immunity acquired to toxins and pollutants might become ‘not merely an individual immunity, but a racial immunity, transmissible from generation to generation, and truly permanent so long as man shall continue to live in a *set atmosphere*’ (1903, p. 5 emphasis added). This idea of a set atmosphere, with individual communities expected to ‘share their own air,’ buttressed segregationist settlement planning in colonial India, putting in place what might be considered a system of zoning for air. Colonial civil lines were developed as officers’ quarters following this logic, with larger grounds and different design requirements than native quarters used to make and maintain race and class-differentiated airs. The carving up of the public city necessarily involved imagining a segregated atmosphere (also see Bhat below), a separate mahaul.

Zoning for air has never really gone away, nor does it have a singularly colonial origin, with specialized caste, class, and religious attunement to the (bad) air of others core to social atmospherics in India (Guru, 2009; Lee, 2017; Ghertner, 2020). But it has forcefully reemerged in the wake of India’s urban air pollution crisis, with the pursuit of privatized air elevated as a principal goal of urban living in elite townships marketed to metropolitan India’s so-called pollution refugees — those able to pay for what the Godrej Air township in the National Capital Region city of Gurgaon calls ‘air as amenity.’ Gurgaon is witness to whole genres of secessionary atmospheric branding, with green screens and inward-looking sightlines advancing segregationist airs imagined apart from the public city: the promotional slogan for developer M3M’s Polo Suites is ‘breathe the air of nobility.’

Whereas zoning for air — as a package of land-use controls, atmospheric technologies, and scientific prognostics — naturally falls within the domains of regional town planning and climate

change mitigation, the actual technologies of atmospheric control have perhaps been most aggressively utilized in private real estate, with the model airshed downscaled not from the climate zone to the metropolitan region (as environmental planning would have it) but all the way to the residential colony. For example, prospective buyers at Polo Suites, part of the same complex housing the Trump Tower NCR, are given a climate study that its developer M3M supposedly carried out to optimally design the township for air quality. Anti-smog guns atop penthouse towers, 'O2 islands,' and permanent, on-site air-quality engineers offer the home/township up as an immunologically sequestered sphere (Sloterdijk, 2009). As importantly, this immunological model diminishes the habitability of the public city. The increased pollution generated in powering immunological home defenses directly usurp the respiratory freedom of those left out. Imagine being on the sidewalk outside a township with its diesel generators firing away to maintain centrally purified interior air.

Zoning for air in metropolitan India clearly has inherited the colonial scalar fixation on the racialized and classed community. Any emancipatory climate politics, and hence any politics premised on revitalizing the public city, must begin by reimagining public air and air's forgotten publics.

<H1> LOCALIZED VIOLENCE AND ALTERNATIVE IMAGINARIES

The stories in this section show how colonial imaginaries and multi-scalar projects of capitalist modernity, as observed in the previous section, wreak social and environmental havoc in particular spaces — across ship-breaking yards at Gadani, a neoliberal township in Mumbai, the jhuggi-jhopris of Delhi, and in the Kangra Valley of Himachal Pradesh. These violent mahauls operate here through the erasure or invisibility of peripheral sites or othered groups, who are spatially and categorically denied a voice in processes which detrimentally impact health and livelihoods, resulting in long-term ruination and even death. Close attention to such localized and embodied mausams, as they intertwine with the biophysical materialities, the aab-o-hawa, of polluted water, sewage, jungles, and the built environment, also reveal alternative imaginaries of the urban, such as from the wilderness in Mumbai or different microclimates in Kangra Valley.

<H2> *A Ship Story: Slow Violence and Swift Waters* *Hira Nabi*

'I used to be a fisherman, like my father and forefathers, here we were all fishermen,' Khalid tells me as we chat during his lunch break. 'When I was younger, I joined my father in fishing. The catch was enough, not plentiful like in his time, but enough for us to subsist on. But as the ships arrived and filled up the beaches, the fish went away: they fled the shore and moved into deeper waters. I couldn't follow the fish with my small boat, as it would capsize. My nets would yield nothing — the water had become dirty, filled with oil and waste. I was advised by friends to sell my boat and join the ship-breaking industry. That was all the employment left here.' He

pauses briefly. ‘I sold my boat and joined the industry that destroyed the livelihood of my ancestors.’ Khalid’s personal narrative about his changing livelihood charts the timeline of how the arrival of big industry is leading to the long-term ecological ruination of Gadani, while providing short-term employment.

The Gadani shipbreaking yards are one of the three main shipbreaking yards on the Indian Ocean along with Alang in India, and Chittagong in Bangladesh. These yards have in common a poor adherence to workplace safety regulations and easy sidestepping of both labor and environmental laws. The shipping industry, based in Europe and in East Asia, ‘is rarely held accountable for the negative impacts caused by shipbreaking on tidal beaches’ (NGO Shipbreaking Platform, no date). It is no coincidence that the shipbreaking sites are geographically distant from shipping and the shipbuilding industries — akin to the making of elsewhere as described by Waqas Butt above.

Rob Nixon (2011) writes that slow violence is ‘a violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all.’ This slow and deadly violence, made invisible by distance, becomes the central theme of my short film, *All That Perishes at the Edge of Land* (2019). In the dialogic exchange between the decommissioned container vessel, Ocean Master, and several workers, they speak of this violence directly, and at other times speculate about its origins. The violence prevalent within this industry threatens to engulf all of them: humans and non-humans, land, water, air (aab-o-hawa). Underlying the conversation is a desire to measure the violence, difficult to quantify and account for because it is not a spectacle. The conventional optics of violence are blurred in the film, which narrates the day-to-day struggles of workers, like Khalid, the exhaustion⁶ of the surrounding environment, and only makes passing mention of a deadly accident on an oil tanker. Instead the film addresses the stealth and stillness of a violence lurking beneath the surface, not yet apparent, evading recognition while causing harm. We need new barometers to measure the scope of this violence, to link toxic trade with the expansive geographies of extractive capitalism (as Nausheen Anwar discusses above) and union busting tactics, and to read the warning signs that marine ecosystems are sending. Otherwise, we forget that violence can be as slow as it can be deadly.

<H2> *Violent Aesthetics and Divulging Detritus* *Aparna Parikh*

The realm of politics as a form of experience ‘revolves around what is seen and what can be said about it’ (Ranciere, 2006, p. 13). I read the cementing of such an aesthetico-political regime in neoliberal Mumbai by way of Hiranandani Gardens, a township with Special Economic Zones (SEZs), which has been attributed a world-class and sustainable status in

⁶ I use the word exhaustion to allow empathy with the environment, to suggest that it is capable of fatigue just as other sentient beings are.

national media and architectural discourse. Such attributions entail global referents and greening efforts, as manifest through a widespread use of manicured landscape elements, advertised ability to view nature, and building nomenclatures invoking aspirational landscapes. Such aesthetic environmental practices (Ghertner, 2015; Pow, 2018) reify the regime's 'distribution of the sensible' (Ranciere, 2006), even while relying on disposable bodies to transform 'barren' land — both deemed detritus within the horizon of capitalist value production (Gidwani and Reddy, 2011, see also Nabi's discussion of extractive violence in this paper). I focus on the material and discursive detritus to reveal the violence embedded in producing urban climates that uphold 'sensible' aesthetic paradigms and devalue embodied forms of environmental engagements.

Quarry: The development of SEZs in Hiranandani Gardens relies on stone quarrying, resulting in loss of human life and ecology. The conversion of hillside resources into exchange value occurs within and outside the purview of law. Within legal mechanisms, the building of SEZs hinges on the state's presumption of the Information Technology sector as non-polluting, an aspect contradicted by ongoing quarrying. Beyond the legal gambit, regulatory non-compliance is contested by civil society organizations, whose concerns about sound and pollution have intermittently interrupted quarrying. The lack of fencing or signage around the quarry site led to the death of two young boys who fell in an area flooded by rainwater (Chavan, 2006). These boys were residents of Parksite, a nearby low-income community. Despite the grievous occurrence, the concerns of the urban poor regarding quarrying remain unheard. When they *are* included, Hiranandani residents present them as being uneducated, and potentially unaware of the impacts of quarrying (Mitra, 2010). Thus, even while attempts to stop quarrying can have benefits across class boundaries, concerns of the urban poor are silenced and their deaths do not form a central component, if at all, in anti-quarrying probes.

Jungle: The township's marketing renders nature at a distance, seen in promotional videos where residents can 'sip in hot coffee admiring breathtaking views' (*Life at Hiranandani Gardens Powai TVC*, 2014). This visual consumption contrasts with an embodied fear held by Parksite residents, who live on the other side of the mountain from Hiranandani Gardens. This fear hinges upon the residents' memory of the area as a dense jungle populated with dangerous animals and resulted in the creation of a physical and symbolic boundary separating the domestic realm from the ostensible wilderness. Leopards continue to dot the landscape, even as a concretized built environment has replaced a biodiverse forest. Such associations contest the area's demarcation (by developers) as a 'barren' site on which construction is destructively etched upon.

The detritus, or what remains on the edges of capitalist value production, can showcase the violent mausam that emerges from extractive violence, but at the same time can provide a capacious imaginary of urban climates. Leopards and jungle disrupt the 'sensitivity' of aestheticized green mahauls, revealing the limitations and contradictions of market-based environmental claims. Further, environmental memories provide a glimpse of embodied

engagements with nature that unsettle a commonsensical notion of ‘barren’ land and its translation into exchange value.

<H2> *Megacities as Socio-ecologically Extractive Landscapes* *Shruti Syal*

Delhi withdraws nearly all the water from the river Yamuna for its 19 million residents, and discharges nearly half its sewage into the river via uncovered, open-access nullahs (stormwater drains) that serve as supplementary sewers due to the inadequate sewerage. While the Interceptor Drain Project and the latest drainage⁷ and sewerage⁸ master plans propose ambitious infrastructural interventions to treat this wastewater or prevent waste discharge into nullahs, they over-simplify the relationships between nullahs and the 250 *jhuggi jhopdi* clusters (JJs) adjacent to them, and overlook infrastructure provision in these settlements.

Drain-adjacent JJs are recipients of nullah pollution by upstream ‘formal’ land uses like dairies, malls, residential and industrial areas, etc. (Syal 2019, p. 40-62). Despite that, since waste and pollution is more starkly visible in these settlements, evictions occurred on environmental grounds like improper waste disposal (termed ‘nuisance’) (Ghertner, 2015) or floodplain management (Baviskar, 2011), without much thought to a critical causal factor: lack of infrastructure and service provision. Even as Delhi’s High Court declares ‘slum’ residents as citizens and not encroachers, and the current city government favors in-situ resettlement, street-level bureaucrats still work within the mandates of older legislations that disincentivize infrastructure provision and maintenance in JJs. These are ambiguous in describing agency responsibilities, do not clarify agency hierarchies, and bear warped definitions of slums that serve to lock them into a cycle of informality — they are classified as slums due to a lack of services, but this classification in turn is used to justify why services are not provided here. Meanwhile, any efforts to provide infrastructure/services in partnership with NGOs happens incrementally, with no division of maintenance responsibility between state and non-state agencies, and infrastructure provided has a limited lifespan and is inaccessible to households that cannot afford to pay (Syal 2019, p. 103-133). Where it exists, infrastructure provision is inadequate, inaccessible, and plagued by regulatory overlap: a lack of coordination between multiple regulatory agencies with overlapping spatial and functional jurisdictions that results in a failure to remove waste, instead repeatedly transferring it from community toilets to nullahs to public spaces in the JJ (Syal 2019, p. 86-92).

The prejudicial classification of JJs as slums and nuisance has fostered neglect in infrastructure provision and rendered them invisible in the latest plans. While this mahaul of neglect impacted these settlements for decades, as long as the waste piled up ‘elsewhere’ (Butt, this paper), most Delhi denizens were unaware of the plight of the ‘forgotten publics and

⁷ The "Drainage Master Plan for NCT of Delhi" prepared in 2018 for the Department of Irrigation & Flood Control by the Indian Institute of Technology Delhi

⁸ The "Sewerage Master Plan for Delhi 2031" prepared in 2016 by the Delhi Jal Board and engineering consultants AECOM

their engagements with the environment' (Anand, this paper). However, the sheer volume of sewage and fecal matter choking the nullahs and river (the aab-o-hawa) today is changing the mausam for all city residents. The invisibility of a million drain-adjacent JJC residents and their waste disposal into drains will overwhelm the pipelines and treatment plants being built — under the new master plans — to redirect and treat nullah water, because these infrastructures have not factored in the sewage volume and fecal matter content from these settlements. It is critical that the initiatives and actions related to drain and river remediation not be implemented in isolation from those for service provision in informal settlements.

<H2> *Micro Urban Climates* *Siddharth Menon*

Since economic reforms in 1991, small towns, rural, and peri-urban regions of India have experienced rapid transformation in building materials from locally sourced *kuccha* (raw or impermanent, in Hindustani) ones, like mud and bamboo, to market procured *pucca* (cooked or permanent) ones, like concrete and steel. The large-scale deregulation and privatization of the cement and construction industries has created a mahaul of frenzied capital-infused construction activity. Yet, mainstream narratives as well as critical scholarship about India's urbanization have remained largely silent about these spaces (Bunnell and Maringanti, 2010). Not much is known about the impacts of urban transformation on the everyday lives of people in peripheral regions. Using the case of the Kangra valley of Himachal Pradesh in northern India, I show how the shift from *kuccha* to *pucca* houses has reworked existing microclimates. A focus on 'microclimates' then situates the material effects of global circuits of capitalist urbanism in Kangra's newly constructed *pucca* houses, providing a scale to examine embodied harms to undervalued lives.

Within Environmental Design/Engineering, microclimates denote mini climates that are formed in/around buildings through interaction between climatological conditions, local weather patterns, site orientations, passive design principles, and construction materials. Microclimates play a key role in conditioning the qualitative experience of a built space. Historically, the thermal capacities of materials have been very useful in regulating internal building temperatures. However, as mason Bhonduji highlighted, the recent turn towards *pucca* houses in Kangra has wreaked havoc on their microclimates. Traditionally, houses here were built using *kuccha* materials like sun-dried mud bricks (adobe). Due to their poor compressive strength, adobe walls needed to be at least 18 to 24 inches thick. This thickness was also a thermodynamic boon as it enabled walls to act as heat batteries, passively regulating indoor temperatures during warm summers and harsh Himalayan winters. Conversely, the higher compressive strength of *pucca* materials negated the structural need for increased wall thickness, enabling walls to be as thin as 6 to 9 inches. But as Bhonduji noted, the reduction in wall thickness has impacted its thermal efficiency as *pucca* houses are excruciatingly hot in the summer and biting cold in the winter. These microclimatic extremities have impaired the health of vulnerable household members, including children, the elderly, and those with chronic conditions. During winter months, they are more prone to catching a cold, developing a fever,

or exacerbating respiratory illnesses. This has not only increased medical expenses but has also necessitated the procurement of electric heating and cooling devices, like fans, air conditioners, and heaters, thus stretching already precarious household incomes.

The above vignette suggests that India's capital-fueled urbanization trajectory has detrimental effects on the lives of rural and peri-urban residents. An ethnographic focus on microclimates demonstrates how fantastical imaginations about India's urban futures (Roy, 2016) materialize through the deteriorating health of pucca house residents. Thus, like Nausheen Anwar (this paper), I foreground the need to situate our analyses of South Asia's urban transformation in the ordinary small towns, rural, and peri-urban spaces that lie 'outside the metropolitan shadow' (Mukhopadhyay, Zerah and Denis, 2020, p. 582). Only then can we continue to extend and further provincialize the geographies of critical urban theory.

<H1> UNRULY NATURES

More-than-human cohabitations, across land and water at different scales, provide a glimpse of entangled flows of power, as well as alternative ways of being and of knowing. Within urban mahauls of extractive violence across South Asian contexts, we witness entangled human-environmental relations, whether in the coexistence with 'undesirable' dogs, snakes, and plants in Indian cities, the unruly assemblages of vector-borne disease in Lahore, monsoonal narratives in Delhi, the subterranean waters of Chennai, or the Arabian Sea from Mumbai's coast. Close attention to the aab-o-hawa and other biophysical relationalities call for recognition of environmental agency in all its unruliness and promote a politics of recognition that challenges ethical dualisms and colonizing erasures. With lively entanglements that exist below, on, and above the earth's surface, these texts suggest an ontological and epistemological reframing of anthropogenic urban climates.

<H2> *Revisioning Social Natures through Urban India* *Krithika Srinivasan*

Urban climates provide a distilled picture of humankind's efforts to control nature and achieve insulation from the risks posed by living as part of nature (Srinivasan and Kasturirangan, 2016). They highlight contradictions in prevailing conceptions of social nature which convey ontological hybridity but are built on ethical dualisms that permit the reworking of nonhuman nature to meet human ends (Srinivasan, 2019).

One can see this in how desired urban natures – gardens, zoos, pets – are curated, while unruly natures such as weeds, invasives, and pigeons are controlled. Spontaneous natures, such as swamps, are subject to eradication and then to biopolitical management when there is belated recognition of their ecological value, like in the case of Pallikaranai marsh in Chennai (Surya, 2016). In Mumbai, as Nikhil Anand writes below, the sea is treated as a 'blank space' to be dumped with waste or 'reclaimed' for roads and buildings.

This means that much of the vibrancy of nonhuman life that can be found in cities exists and flourishes *despite* human manipulation. They are unintentional natures, organisms such as cockroaches, *Prosopis juliflora*, free-living cats, and rats whose agencies are suppressed as pestilent. This suppression also diminishes the life-opportunities for non-target creatures. For instance, the mosquito control efforts described by Nida Rehman below destroy habitats for amphibians and kill a range of insects with knock-on impacts on the food chain.

A near-future where all nature is urban holds dismal prospects for nonhuman life – unless we seriously rethink our ethical and political obligations to the latter. Visions of social natures remind us that humankind is ontologically a part of nature but stop short of recognizing that humanity cannot be placed ‘above’ in ethical and epistemological matters. Human knowledge of the planet can never be complete if we are a part of it; claims to ‘know’ what’s best ecologically are deeply problematic. Similarly, the anthropocentrism that has characterized societal reworking of nonhuman life indicates that scholarly conceptions of social natures have been partial in their narrow focus on ontological non-dualism and overlooking of ethical dualisms.

Indian urban landscapes and their unruly natures present opportunities to reconfigure frameworks of social and urban natures. Everyday practices of cohabitation with Chennai’s street dogs (Srinivasan *et al.*, 2019), and initiatives to enable people-snake coexistence in Bengaluru (Narayanan and Bindumadhav, 2019) and people-leopard cohabitation in Mumbai (Bose, 2020) offer lessons on how cities and their people can share space with natures considered risky or undesirable. The challenge is whether we can learn from and with often overlooked examples of more-than-human cohabitation in urban South Asia to develop ways of recognizing, respecting and enabling physical, ethical and political space for the agencies of nonhuman natures globally.

<H2> *The City in a Breeding Ground* ***Nida Rehman***

Following a large outbreak of dengue fever in 2011, diverse forms of watery urban nature became public health targets in Lahore. The Punjab Government deployed workers with surveillance kits and a smartphone application to locate and destroy *Aedes* breeding grounds amidst the anthropogenic micro-ecologies of potted plants, stray tires, weeds, air coolers, and water tanks in private homes and in designated hotspots such as parks, graveyards, and junkyards. Vector surveillance contoured the public health state’s view of urban spaces – rendering human-mosquito cohabitation into discrete units, to be ‘tagged’, mapped, and counted, and as sites for vector control and citizen responsabilization. Yet, the structural relationships and ‘material proximities’ (Brown and Kelly, 2014) of the mosquito breeding ground cannot be easily discretized. Mosquitoes do not see like the state, and the state does not see the political ecologies of mosquito breeding.

These are some of the mahauls that create opportunities for breeding across the city, but which are elided or simplified in the visual and technical infrastructures of vector control. Mosquito breeding in water storage containers, from bottles and buckets used by the urban poor to more formalized plastic or concrete water tanks, points to the historical inequities of water infrastructure in Lahore — built out incrementally and unevenly since the colonial period. Another key site of breeding are the lush gardens of enclaved urban residences, steeped in the horticultural aesthetics of the colonial city and reliant on marginalized labor and privatized water provision but which are sometimes shielded from surveillance through the privilege of upper-class ‘refusals’. In another vein, the proliferation of breeding in neglected tires indicates not only the stratified landscapes of rising automobility and commercialization in Pakistan, but also the global trade of used tires, whose technical and regulatory transformations since the 1980s have greatly expanded vector mobility (Reiter and Sprenger, 1987). Junkyards of varying degrees of formality and ownership are also designated as hotspots. In particular waste pickers and dealers — whose social lower status reflects the colonial categories of caste and customary work discussed above by Butt (see also Butt, 2019)— often set up temporary spaces to sort and display scrap materials for sale, but are frequently subject to inspections, fines, and removal under public health surveillance.

With the rising incidence of vector-borne diseases brought on by climate change and globalized urbanization (Ebi and Nealon, 2016; Ryan *et al.*, 2019), water storage, gardens, tires, and junkyards have come to represent key epidemiological foci for mosquito control — and to responsabilize subjects. Yet their constitution within infrastructural failures, socio-spatial inequities, and global networks slips out of view in technical matrices to visualize, emplace, and govern vectors and people. The political ecologies of stagnant water and the ‘assemblage character’ of disease require closer attention (Wolf, 2016). Situating the breeding ground within multiscalar logics of urbanization, the socio-material ‘durabilities’ of the city’s colonial past (Stoler, 2016), and other vectors of power shows how disease, vulnerability, and responsibility are constituted in the gaps between public health and uneven development. Meanwhile, going beyond pointed allocations of responsibility, attention to the embodied practices and experiences of frontline health workers and everyday human-mosquito entanglements can also help think beyond landscapes of individualized responsibility towards new formations of collective response and care in the city.

<H2> Urbanising Monsoons **Harshavardhan Bhat**

By thinking in and through the air of the monsoon, I have been interested in how different disciplines perceive the monsoon and attempt to develop forms of knowledge. Particularly, I am interested in the stories of anthropogenic matters and formations (from cities such as Delhi) and how they entangle with stories of the monsoon. As forms of knowledge come together, I show in my work how the ‘monsoon’ conceptually inherits knowledge systems while performing its own practice of life-worlds. What I mean by this is that the monsoon quite literally — in its material and conceptual form — picks up, redistributes, inundates, and weaves

speculations into vast living capacities and the way they are understood. The monsoon also ontologically extends these speculations into spatially and temporally variable interconnections, that are a result of its ability to inherit and form capacities. For instance, I find stories of agricultural residue, the pollen of invasive vegetal ecologies, and anthropogenic dust that find themselves interlinked and re-distributed in stories of toxicity, changing environmental ecology and dust storms. What is often remarked as a meteorological product and volumetric substance is transformed as the knowledge system of plural aerial material inheritance. The monsoon takes and re-conceptualises the air.

South Asian cities are ongoing archives of colonial and postcolonial disciplinary disruption through their monsoonal relations. The compounding and enterprising effect of these material political infrastructures has composed urbanising monsoons as extractive and unequal materialities that are sites of disaster production and sustenance - floods, scarcities, emergent variabilities and toxicities. Therefore, even as the monsoon cultivates the very possibility of life, again and again, our urban methodologies have been nurtured to atmospherically work against it. I argue that to think with the monsoon often is to let it escape because it is simply a substantiation (Choy and Zee, 2015) that cannot be captured. It captures 'us' and the very possibility of being alive and in conversation. Even as the accounting of tropical meteorology and weather sensing theorizes urban weather — as one notices through Anthony Powis's intervention, it meanders into geological speculation as it hits the ground, where the abstraction of atmosphere meets speculations of what is below.

To account the monsoon as a mere phenomenological occurrence of meteorological systems discounts the role and influx of the urban in its expansive role in producing the monsoonal present and future. As toxicity permeates urban air (Negi, 2020; Liboiron, Tironi and Calvillo, 2018) and floods are co-produced (Mathur and da Cunha, 2009; Bremner, 2019), the monsoon allows us a way of reconceptualising and rethinking the relationships and conditions produced by urban form — through its primary entanglement with the monsoon and its speculations. Monsoonal forms in all their multiplicities stick things together.

<H2> *Thinking with Groundwater from Chennai* ***Anthony Powis***

I first came to know groundwater as a substance that might enable me to write about the entanglements of monsoonal climates and rapid urban change in Chennai, south India. Groundwater is a persistent presence in narratives of the city: in its everyday abstraction,⁹ which is relied upon for around one third of the city's water supply;¹⁰ as a volumetric resource,

⁹ 'Abstraction' in this context is a helpfully duplicitous term, referring both to the physical practice of removing water from the ground, and the representational practice of considering certain aspects over others.

¹⁰ An estimated 350 million liters per day (MLD) of a total consumption in excess of 1000 MLD (Graft *et al.*, 2019).

‘the river flowing just below the surface’,¹¹ which needs to be cared for and replenished by means of recharge structures; as a stratified zone through which basements and tunnels are built; and as a diverse ecology of minerals and microorganisms modified both by seawater intrusion and anthropogenic contaminants. Groundwater appears in narratives of both drought and flooding as waves of the underground monsoon. In the context of my research, it was everywhere: it appeared, and was something through which I could begin to get to know this place. But whilst I began by trying to read the city through groundwater, my focus became the epistemological mechanisms of knowing groundwater itself: tools that people use, and how groundwater makes itself known.

Throughout these different points of view, it is impossible to say quite what groundwater is, other than a set of relations that move in and between urban climates: a socionatural, hybrid condition, neither separable into constituent parts, nor cognisable as a singular whole. Groundwater appears and is drawn into focus as a register which can bring together accounts of such diverse phenomena as alluvial geomorphology, social inequality, municipal engineering, and more. The closer I look at it, the less it appears as a discernible, material thing: instead I begin to make sense of groundwater as a relational substance, one which is not a background to the city’s ongoing reproduction, but is both substantially altered by and co-constitutive of lively urban assemblages — akin to Harshvardhan Bhat’s observations above in his analysis of the monsoon. Groundwater moves through the city both literally and conceptually as a changing set of relations which shift and need to be followed. Different positions will yield different sets of characters, as certain conceptual frames and knowledge practices bring different aspects of it into view (also see Anand below). Through the focus on ways on knowing groundwater, what emerges are provisional glimpses into urban processes that are highly charged and highly political: struggles of liveability, which like groundwater itself can’t be rigidified into formal structures. The materiality of groundwater — an always provisional and relational assemblage — forces us to see urban climates in this way.

<H2> *Decolonize the Sea* *Nikhil Anand*

Mumbai, the historian Gyan Prakash (2010) argues, has been made by a double colonization — a military colonization of Indians by the British, and a colonization of nature, and in particular the sea, by culture. While British colonization ended in 1947, the terrestrial city’s colonization of the sea continues unabated. For now.

This colonization, like all colonization, is full of erasures. The doctrine of terra nullius — or ‘land claimed by no one’ — was key to the establishment of settler colonies and the displacement of indigenous populations in the Americas and Australia. In her work on indigenous water rights in Australia, legal scholar Virginia Marshall (2012) describes aqua nullius: an ongoing set of legal

¹¹ Quote taken from an interview with a former civil servant in Chennai, July 2018.

maneuvers by the liberal Australian state to not see prior uses of water bodies on one hand, and to see land and water as distinct formations in property law on the other. These arrangements permit (both legally and politically) the continued colonization of water, or what Hofmeyr (2019) evocatively calls hydrocolonialism.

It is not only legal technologies that perform separations of land and water, but also acts of imagining, drawing, and writing (see Powis above). In their book *Soak: Rethinking Mumbai in an Estuary*, Anuradha Mathur and Dilip da Cunha (2009) describe cartographic techniques that delineated the coast; this line separated the city from the sea. It performs both an act of erasure and composition. It erases relations between the city and the sea. It produces the former as a dry profitable ground of speculation. It produces the sea as a blank space — empty and available for colonization by the city.

Stretching as far as the eye can see, the sea in Mumbai today continues to be emptied and made available for monstrous infrastructures through such colonizing practices of dividing and forgetting. For example, project documents of Mumbai's Coastal Road Project make the case for the coastal road by assuming the sea is pure nature, empty of both ecological and social entanglements, so as to be available for landfill, yet again (Wagh and Indorewala, 2019).

But the sea is not empty, and the climate has changed. Today, the sea is reclaiming the city of Mumbai — literally and figuratively. High tides, particularly in the monsoon, regularly return sea water and garbage to the city. Intensified monsoons and increasingly frequent cyclones, both a result of anthropogenic climate change, are now greeted with a sense of foreboding by many in the city. It is no longer just Mumbai's indigenous Koli fishers that now notice how the spring tides claim the city every month. Activists protesting the coastal road and city engineers operating the storm drains increasingly expect and observe the ways in which the sea disrupts both the imagination and the practice of the city as dry land. They notice and regularly wonder what the city might look like after the second colonization has ended.

<H1> CONCLUSION

The intervention draws on pluralistic experiences and expanded nomenclatures of climate to provide a situated perspective on the extractive processes that underpin environmental change in South Asia, and contour their everyday effects. We use the Urdu/ Hindustani terms – mahaul, mausam, and aab-o-hawa – to think capaciously about the structures, experiences, and materialities of South Asian urban climates. These terms weave through the intervention's case studies, providing both an armature to explore the imbrications of biophysical conditions, socio-cultural experiences, nonhuman agencies, historical structures, diverse knowledges, geographic affinities, local politics, and global arrangements of power, as well as an invitation to further open up to the cultural and affective dimensions of situated climates.

The investigations range from micro-ecologies and microclimates to global chains of capital, waste, and pathogenic circulation, which rely on and produce difference and uneven visibility.

The first section focused on the processes of accumulation, dispossession, racialization, pollution, and segregation that contour imaginaries of planning and development, and (re)produces marginalities across urban landscapes. These urban visions are designed for climate adaptation plans and the reworking of ‘small towns’ along global capitalist pathways. Despite seeming at odds with one another, we show how these projects and others perpetuate historical legacies of displacement and toxic harm, including caste-based discrimination across contemporary South Asia. The second section brought to the fore peripheral places and actors, and their pivotal role in producing spaces of modernity. A focus on the often ignored violence they face reveals the inextricability of embodied and environmental harm, even as centering their perspectives can present alternative urban imaginaries that account for slow violence, complex land associations, and nonmetropolitan modernities. The third section called for closer attention to more-than-human agency and entangled relationships, as they shape the political ecologies of South Asian cities. Looking from human-mosquito entanglements and other more-than-human cohabitations raises renewed concerns about care, responsibility, and recognition. Water, as it materializes through the monsoon, groundwater, or the sea, provides a new vantage to articulate toxicity and envision decolonial futures.

Our contributions are threefold: thinking through mahaul, mausam, and aab-o-hawa, we use linguistic frames specifically to dialogue across a range of climate experiences and imaginaries in urban South Asia; beyond our use of the three particular terms, we position expanded lexicons as a conceptual and methodological strategy to ground understandings of climate in different contexts within local and embodied conditions; and we use collective writing as a way to foreground the multiplicity, granularity, and situatedness of narratives of urban environmental change. Such a plural and expanded analytic on urban climates in South Asia provides us with an entry point into thinking about the entanglements of social, political and environmental mahauls; the temporal continuities between the colonial past, and the neoliberal present and its aspired futurities that contour the everyday experiences of the mausam; and the heterogeneous materialities of the aab and hawa as they disrupt the erasures and dichotomies of knowing urban nature.

<H1> BIBLIOGRAPHY

Alam, H. (2016) ‘Eastern bypass: the same mistake again?’, *The Daily Star*, 9 September. URL <https://www.thedailystar.net/city/eastern-bypass-the-same-mistake-again-1283119> (Accessed: 21 August 2020).

All That Perishes at the Edge of Land (2019). Directed by H. Nabi

Ambedkar, B.R. (2017) *Dr. Ambedkar’s Speech at G.I.P. Railway Depressed Class Workmen’s Conference, Nashik, Velivada*. URL <https://velivada.com/2017/06/03/dr-ambedkars-speech-depressed-class-workmens-conference-nashik/> (Accessed: 18 November 2021).

Anjaria, J.S. and McFarlane, C. (eds) (2016) *Urban Navigations: Politics, Space and the City in*

South Asia. 1st edition. Routledge India.

Anwar, N.H., Meghwar, V.D. and Saleem, A. (2019) 'In Thar, who matters more? Coal companies or Tharis?', *Dawn*, 11 June. URL <https://www.dawn.com/news/1445572> (Accessed: 21 August 2020).

Barry, J. *et al.* (2018) 'Unsettling planning theory', *Planning Theory*, 17(3), pp. 418–438.

Baviskar, A. (2011) 'What the eye does not see: The Yamuna in the imagination of Delhi', *Economic and Political Weekly*, pp. 45–53.

Bharathi, N., Malghan, D. and Rahman, A. (2018) *Isolated by Caste: Neighbourhood-Scale Residential Segregation in Indian Metros | IIM Bangalore*. IIM Working Paper 572. Bangalore: Indian Institute of Management.

Bose, M. (2020) 'Living with leopards in Mumbai', *Deccan Herald*, 1 March. URL <https://www.deccanherald.com/specials/insight/living-with-leopards-in-mumbai-809401.html> (Accessed: 24 January 2023).

Bremner, L. (2019) 'Planning the 2015 Chennai floods':, *Environment and Planning E: Nature and Space*.

Brown, H. and Kelly, A.H. (2014) 'Material Proximities and Hotspots: Toward an Anthropology of Viral Hemorrhagic Fevers', *Medical Anthropology Quarterly*, 28(2), pp. 280–303.

Bunnell, T. and Goh, D.P.S. (eds) (2018) *Urban Asias: Essays on Futurity Past and Present*. Berlin: Jovis.

Bunnell, T. and Maringanti, A. (2010) 'Practising urban and regional research beyond metrocentricity', *International Journal of Urban and Regional Research*, 34(2), pp. 415–420.

Butt, W.H. (2019) 'Beyond the Abject: Caste and the Organization of Work in Pakistan's Waste Economy', *International Labor and Working-Class History*, 95, pp. 18–33.

Chavan, P. (2006) 'Parksite Boys Drown in Quarried Pond at Powai Hill', *pracha2004*, 17 June. URL <http://pracha2004.blogspot.com/2006/06/parksite-boys-drown-in-quarried-pond.html> (Accessed: 21 August 2020).

Choy, T. and Zee, J. (2015) 'Condition—Suspension', *Cultural Anthropology*, 30(2), pp. 210–223.

Clemow, F.G. (1903) *The geography of disease*. University Press.

Coelho, K. and Sood, A. (2021) 'Urban studies in India across the millennial turn: Histories and futures', *Urban Studies*, 59(13), pp. 2613–2637.

Collier, S.J., Cox, S. and Grove, K. (2016) 'Rebuilding by Design in Post-Sandy New York', *Limn* (7).

Consultant Team BanDuDeltaS (2014) *Inception Report: Bangladesh Delta Plan 2100*

Formulation Project.

Dasgupta, S. et al. (2015) *Urban flooding of Greater Dhaka in a Changing Climate: Building Local Resilience to Disaster Risk*. World Bank Publications.

Davis, H. and Todd, Z. (2017) 'On the Importance of a Date, or, Decolonizing the Anthropocene', *ACME: An International Journal for Critical Geographies*, 16(4), pp. 761–780.

Dawn Correspondent (2020) 'First-ever survey of flora and fauna in Tharparkar launched', *Dawn*, 12 February. URL <https://www.dawn.com/news/1533829> (Accessed: 21 August 2020).

Ebi, K.L. and Nealon, J. (2016) 'Dengue in a changing climate', *Environmental Research*, 151, pp. 115–123.

Erickson, B. (2020) 'Anthropocene futures: Linking colonialism and environmentalism in an age of crisis', *Environment and Planning D: Society and Space*, 38(1), pp. 111–128.

General Economics Division (2016) *Strategy Formulation for the Bangladesh Delta Plan 2100: Urban Areas Strategy*. Dhaka, Bangladesh: Government of Bangladesh.

Ghertner, D.A. (2015) *Rule by Aesthetics: World-Class City Making in Delhi*. Oxford University Press.

Ghertner, D.A. (2020) 'Airpocalypse: Distributions of Life amidst Delhi's Polluted Airs', *Public Culture*, 32(1), pp. 133–162.

Ghosh, A. (2016) *The Great Derangement: Climate Change and the Unthinkable*. Chicago: University Of Chicago Press.

Gidwani, V. and Reddy, R.N. (2011) 'The Afterlives of "Waste": Notes from India for a Minor History of Capitalist Surplus', *Antipode*, 43(5), pp. 1625–1658.

Gidwani, V.K. (2015) 'The work of waste: Inside India's infra-economy', *Transactions of the Institute of British Geographers*, 40(4), pp. 575–595.

Goh, K. (2019) 'Flows in formation: The global-urban networks of climate change adaptation', *Urban Studies*, 57(11), pp. 2222–2240.

Graft, A. et al. (2019) *Chennai: State of Water*. Tamil Nadu State Land Use Board.

Groulx, M. and Lewis, J.L. (2017) 'Merely "Design Marketing"? Professional Perspectives on the Use and Misuse of Environmental Visualizations in Community Engagement:', *Journal of Planning Education and Research*, 39(3), pp. 273–284.

Guru, G. (2009) 'Archaeology of untouchability', *Economic and political weekly*, pp. 49–56.

Hochhäusl, S. et al. (2018) 'Architecture and the Environment', *Architectural Histories*, 6(1), p. 20.

Hofmeyr, I. (2019) 'Provisional Notes on Hydrocolonialism', *English Language Notes*, 57(1), pp. 11–20.

Housing and Land Rights Network (2017) *Bengaluru's Continuing Inequity: An Eviction Impact Assessment of Ejjipura/Koramangala Four Years After its Demolition [written with Forum against EWS Land Grab and Fields of View]*. New Delhi.

Islam, N. (2016) *Let The Delta Be A Delta Bought to you in North America by Muktaadhara Inc Distributed by Bahata Publication Inc*. Dhaka: Eastern Academic.

Jamhooor Team (2019) 'Climate Crisis in South Asia: Editor's Note', *Jamhooor*.

Kirmani, N. (2008) 'Competing Constructions of "Muslim-ness" in the South Delhi Neighborhood of Zakir Nagar', *Journal of Muslim Minority Affairs*, 28(3), pp. 355–370.

Kukde, U. (2020) 'Caste and Climate Justice', *Round Table India*, 20 August. URL https://roundtableindia.co.in/index.php?option=com_content&view=article&id=10171:caste-and-climate-justice&catid=129:events-and-activism&Itemid=195 (Accessed: 18 November 2021).

Kuttiah, P. (2017) 'Caste in the Urban: Bangalore as case study', *Round Table India*, 1 April. URL https://roundtableindia.co.in/index.php?option=com_content&view=article&id=9026:caste-in-the-urban-bangalore-as-case-study&catid=119&Itemid=132 (Accessed: 18 November 2021).

Lee, J. (2017) 'Odor and order: how caste is inscribed in space and sensoria', *Comparative Studies of South Asia, Africa and the Middle East*, 37(3), pp. 470–490.

Liboiron, M., Tironi, M. and Calvillo, N. (2018) 'Toxic politics: Acting in a permanently polluted world', *Social Studies of Science*, 48(3), pp. 331–349.

Life at Hiranandani Gardens Powai TVC (2014). URL <https://www.youtube.com/watch?v=PPqa-NFG7X8> (Accessed: 21 August 2020).

Mangala, P. (2019) 'Climate Justice in India: A Critical Overview', *Round Table India*, 6 October. URL https://roundtableindia.co.in/index.php?option=com_content&view=article&id=9734:climate-justice-in-india-a-critical-overview&catid=119:feature&Itemid=132 (Accessed: 18 November 2021).

Maplecroft (2016) *Climate Change Vulnerability Index*, Verisk Maplecroft. URL <https://www.maplecroft.com/risk-indices/climate-change-vulnerability-index/> (Accessed: 21 August 2020).

Marshall, V. (2012) 'Deconstructing Aqua Nullius: Reclaiming Aboriginal Water Rights and Communal Identity in Australia', *Indigenous Law Bulletin*, 8, p. 9.

Mathur, A. and da Cunha, D. (2009) *Soak: Mumbai in an Estuary*. New Delhi: Rupa Publications.

Mitra, S. (2010) 'Quarrying poses threat to ecology', *Hindustan Times*, 13 August. URL <https://www.hindustantimes.com/mumbai/quarrying-poses-threat-to-ecology/story-IZAULFuES6U6CwELXqciAM.html> (Accessed: 21 August 2020).

Mukhopadhyay, P., Zérah, M.-H. and Denis, E. (2020) 'Subaltern Urbanization: Indian Insights

for Urban Theory', *International Journal of Urban and Regional Research*, 44(4), pp. 582–598.

Narayanan, Y. and Bindumadhav, S. (2019) “Posthuman cosmopolitanism” for the Anthropocene in India: Urbanism and human-snake relations in the Kali Yuga', *Geoforum*, 106, pp. 402–410.

Navya, P.K. (2013) 'How govt helps SEZ trump Bellandur lake', *Citizen Matters, Bengaluru*, 30 May. URL <https://bengaluru.citizenmatters.in/5332-how-govt-helps-sez-trump-bellandur-greens-5332> (Accessed: 18 November 2021).

Nayantara, N. (2015) 'Demolition drive in Bengaluru brings down homes of the poor, religious structures untouched', *The News Minute*, 27 April. URL <https://www.thenewsminute.com/article/demolition-drive-bengaluru-brings-down-homes-poor-religious-structures-untouched-29893> (Accessed: 18 November 2021).

Negi, R. (2020) 'Urban Air', *Comparative Studies of South Asia, Africa and the Middle East*, 40(1), pp. 17–23.

NGO Shipbreaking Platform (no date) *The Problem, NGO Shipbreaking Platform*. URL <https://www.shipbreakingplatform.org/our-work/the-problem/> (Accessed: 21 August 2020).

Nixon, R. (2011) *Slow Violence and the Environmentalism of the Poor*. Cambridge, Mass: Harvard University Press.

Paprocki, K. (2018) 'Threatening Dystopias: Development and Adaptation Regimes in Bangladesh', *Annals of the American Association of Geographers*, 108(4), pp. 955–973.

Pow, C.P. (2018) 'Building a Harmonious Society through Greening: Ecological Civilization and Aesthetic Governmentality in China', *Annals of the American Association of Geographers*, 108(3), pp. 864–883.

Prakash, G. (2010) *Mumbai Fables*. Princeton, N.J: Princeton University Press.

Rademacher, A. and Sivaramakrishnan, K. (eds) (2013) *Ecologies of Urbanism in India: Metropolitan Civility and Sustainability*. Hong Kong: Hong Kong University Press.

Rademacher, A.M. and Sivaramakrishnan, K. (eds) (2017) *Places of Nature in Ecologies of Urbanism*. Hong Kong University Press.

Ranciere, J. (2006) *The Politics of Aesthetics: The Distribution of the Sensible*. London: Bloomsbury.

Ranganathan, M. (2021) 'Caste, racialization, and the making of environmental unfreedoms in urban India', *Ethnic and Racial Studies*, 0(0), pp. 1–21.

Rashid, A. (2019) 'Towards climate justice in the spirit of internationalism', *Dawn Prism*, 20 September. URL <https://www.dawn.com/news/1506310> (Accessed: 4 January 2022).

Reiter, P. and Sprenger, D. (1987) 'The used tire trade: a mechanism for the worldwide dispersal of container breeding mosquitoes', *Journal of the American Mosquito Control Association*, 3(3),

pp. 494–501.

Rice, J.L., Long, J. and Levenda, A. (2021) 'Against climate apartheid: Confronting the persistent legacies of expendability for climate justice', *Environment and Planning E: Nature and Space*, 5(2), pp. 625–645.

Roy, A. (2016) 'When Is Asia?', *The Professional Geographer*, 68(2), pp. 313–321.

Ryan, S.J. *et al.* (2019) 'Global expansion and redistribution of Aedes-borne virus transmission risk with climate change', *PLOS Neglected Tropical Diseases*, 13(3), p. e0007213.

Saldanha, L. (2013) 'Maverick's Project in Bangalore: Il-legalising the poor', *Public Matters*, 11 February. URL

<http://leoonpublicmatters.blogspot.com/2013/02/mavericks-project-il-legalising-poor.html> (Accessed: 18 November 2021).

Selva, I., Siddharth, K. and Adavi, L. (2020) *Keri in Village, Kolageri in the City, Marginalization Continues: A Study of the Long-term Impacts of Evictions in Bangalore*. New Delhi: Housing and Land Rights Network.

Sen, A., Unnikrishnan, H. and Nagendra, H. (2021) 'Restoration of Urban Water Commons: Navigating Social-Ecological Fault Lines and Inequities', *Ecological Restoration*, 39(1–2), pp. 120–129.

Sengupta, R. (2017) 'The Small Town in India: "Subaltern Urbanisation" and Beyond', *Refugee Watch: A South Asian Journal on Forced Migration*, 50, pp. 58–79.

Sharma, M. (2017) 'Eco-casteism: Sulabh and the Denial of Dalit Existence', in *Caste and Nature*. Delhi: Oxford University Press.

Sharpe, C. (2016) *In the Wake: On Blackness and Being*. Reprint edition. Durham: Duke University Press Books.

Shepherd, T.G. and Sobel, A.H. (2020) 'Localness in Climate Change', *Comparative Studies of South Asia, Africa and the Middle East*, 40(1), pp. 7–16.

Siddharth, K. and Ragesh (2020) 'Poor residents huts set alight by Land Mafia.', *Slum Jagatthu*, June.

Siddiqi, A.I. (2020) 'Introduction: Architecture as a Form of Knowledge', *Comparative Studies of South Asia, Africa and the Middle East*, 40(3), pp. 495–506.

Sinha, M. (2013) 'Is "Region" Still Good to Think?', *Comparative Studies of South Asia, Africa and the Middle East*, 33(3), pp. 264–267.

Sivaramakrishnan, K. (2017) 'Courts, Public Cultures of Legality, and Urban Ecological Imagination in Delhi', in *Places of Nature in Ecologies of Urbanism*. Hong Kong: Hong Kong University Press, p. 137.

Sloterdijk, P. (2009) *Terror from the Air*. Semiotext.

- Sreenath, S. (2015) 'Numbing Machines', *Economic and Political Weekly*, 54(47), pp. 7–8.
- Srinivasan, K. (2019) 'Remaking more-than-human society: Thought experiments on street dogs as "nature"', *Transactions of the Institute of British Geographers*, 44(2), pp. 376–391.
- Srinivasan, K. *et al.* (2019) 'Reorienting rabies research and practice: Lessons from India', *Palgrave Communications*, 5(1), pp. 1–11.
- Srinivasan, K. and Kasturirangan, R. (2016) 'Political ecology, development, and human exceptionalism', *Geoforum*, 75, pp. 125–128.
- Stoler, A.L. (2016) *Duress: Imperial Durabilities in Our Times*. Durham: Duke University Press Books.
- Surya, S. (2016) 'Landscape Ecological Urbanism for Restoration of Pallikaranai Marsh Land, Chennai, Tamil Nadu', *Procedia Technology*, 24, pp. 1819–1826.
- Syal, S. (2019) 'A socio-ecological systems perspective on planning for informality', PhD thesis, University of Illinois at Urbana-Champaign.
- Wagh, S. and Indorewala, H. (2019) 'As Mumbai's Coastal Reclamation Begins, Artisan Fishers Fight for Their Livelihood', *The Wire*, 7 March. URL <https://thewire.in/rights/mumbai-coastal-reclamation-artisan-fishers-livelihood> (Accessed: 21 August 2020).
- Wolf, M. (2016) 'Rethinking Urban Epidemiology: Natures, Networks and Materialities', *International Journal of Urban and Regional Research*, 40(5), pp. 958–982.
- Zhang, A. (2020) 'Circularity and Enclosures: Metabolizing Waste with the Black Soldier Fly', *Cultural Anthropology*, 35(1), pp. 74–103.