FLOATING GROUND

Wetness, infrastructure, and envelopment in Kochi, India

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ABSTRACT: The oceanic city of Kochi on the southwest coast of India is known for its abundance of water and as a hub of tourism and urban development. This abundance of water effects the ways in which urban infrastructures, often designed in the temperate climates of the Global North, can operate, and be maintained. In this article, I suggest that infrastructures such as sewers, roads, and rivers tend to separate water from land, thereby containing one to produce the other. In doing so, they render solid surfaces from which urban infrastructures are imagined. To imagine infrastructure otherwise, I attune to wetness, rather than water. I argue that attuning to wetness as an affective quality, changes the way one conceptualises infrastructure. To bring wetness and infrastructure together, I turn to the concept of envelopment where an object and its atmosphere can be brought into conversation. By drawing on ethnographic fieldwork in Kochi during the devastating floods of 2018, this article provides insights into how infrastructures might be reimagined in tropical urban settlements.

KEYWORDS: Kochi, affect, atmosphere, city, flood, monsoon

Introduction

The oceanic city of Kochi (formerly Cochin) on the southwest coast of India (Figure 1) is defined more by its water bodies than its land bodies. When I first told friends of mine in Kolkata that I was travelling to Kochi to embark on ethnographic fieldwork, the first thing they mentioned were the famous Kochi backwaters. These waters which envelop Kochi are a popular destination for tourists visiting the south of India looking for picturesque houseboat cruises along coconut palm lined waterways, a glimpse of the watery life that is largely absent from South Indian cities like Chennai and Bangalore. I came to know these waters as a series of canals, rivers, and lakes that cut across the various smaller land masses that together form the urban agglomeration of Kochi. Each of these islands – West Kochi, Willingdon Island, and Ernakulam – have their own feeling, and each is connected and disconnected by waters that seem to house an affective attachment to place more so than any of these slightly dryer dwelling places.

Kochi's canals and backwaters were once the lifelines of the city, essential for the movement of people, goods, and ideas inland from the coast or back out to the Arabian Sea. These waters were also vital for subsistence on a diet that revolved around fish and coconut, and for recreation as they provided respite from the insistent heat of tropical South India. The management of the abundance of water – and Kochi's importance as a spice trading port throughout the ages – was central to infrastructural developments, and a kind of tropical flourishing, encapsulated in the popular reference to Kochi as the

"Queen of the Arabian Sea"[1]. Today, however, Kochi's famous backwaters lie mostly abandoned due to their use as drains and less as a form of sustenance and transport. In other words, as they became lines on land in service of development as drains, their material, social, and affective significance shifted. This development narrative is largely based on a conceptual and physical separation between water and land. This is achieved through infrastructures that rely on and produce that separation.

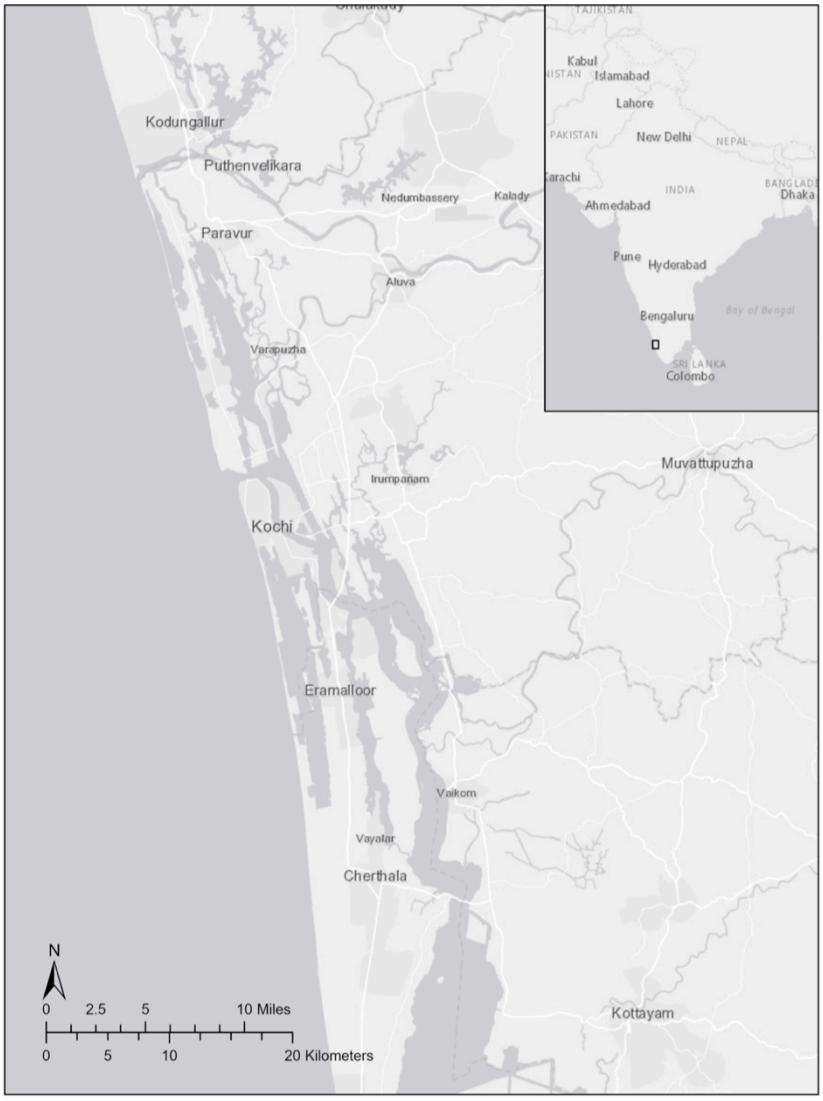

Figure 2- Map of Kochi and adjacent areas[2] (Justin McCulloch, 2021).

[1] Invoking the popular reference to Venice as the 'Queen of the Sea'. Kochi and Venice share a wetness and an appreciation of the arts.

[2] Maps like this work against my argument that the colonial cartographic imagination is unable to accurately represent wetness. However, it may be useful to see how Kochi is situated amongst the backwaters in this way, particularly for those who have not been to this place.

Urban landscapes, as well as urban waterscapes[3], are constructed and maintained by infrastructures that have their roots in colonial logics of extraction, property ownership, and state making (Gómez-Barris, 2017; Joseph, 2013; Rademacher, 2008). In their separation, water is often in service of land, often acting as a sink for unwanted wastes and a container for industrial runoff (Gabrys, 2009). This is a familiar story and is not too dissimilar from what has happened to the Yamuna and Ganges rivers in Northern India (Alley, 2002; Bhattacharyya, 2018; Drew, 2017; Haberman, 2006), or indeed many other rivers and waterways around the world (Barnes, 2014; Hoover, 2017; A. Rademacher, 2011). This management of land and water as separate entities was underway prior to European colonisation of India but was accelerated through that process. As historian Sunil Amrith states:

> *Along the Ganges, as everywhere else in India, the infrastructure of water control long preceded British rule. But in the nineteenth century, British engineers turned the Ganges valley into one of the most "thoroughly engineered" landscapes in the world.* (2008, p. 42)

Turning this attention to urban South India, what I want to focus on in this article is how both the landscape and waterscape of Kochi (Figure 2) has been constructed through (post)colonial infrastructural developments that create an abundance of water from intense *wetness*.

In what follows I draw on 10 months of ethnographic fieldwork in Kochi between January 2018 and April 2019. During this time, I engaged with environmental activists throughout the city, leaders of waste management initiatives at educational and medical institutions, government officials, civic groups mobilised around waste, architects, and artists. I also experienced the full force of the South Asian monsoon as it arrived in Kochi in July 2018, causing one of the worst floods in Kochi's history. To begin with, I shift the analysis from water to wetness. Wetness here is a relational affect, distinct from water as a discrete object. As an affect, wetness is something that is felt, not controlled. I then explore Kochi through the lens of its underground sewage infrastructure – or lack thereof. Only 5% of Kochi is serviced by underground sewage networks despite continued attempts to expand the network in order to prevent pollution entering Kochi's waterways and revitalise the city's waterbodies. This is largely due to the incredibly high water-table, and the disruption that laying sewage pipes would cause to already congested road networks. To compliment this section on sewers, I also situate roads as part of the same infrastructural logic that sees straight lines and hard surfaces as necessary to increased productivity and urban development. I then turn to the concept of envelopment as a way of engaging infrastructures and their atmospheres – in this case Kochi's incredible wetness – before closing the article by reflecting ethnographically on the 2018 floods and the ongoing pollution of the Periyar River that flows through the city. Here I emphasise the affective register of Kochi as a city that cherishes its wetness while grappling with infrastructures that are often incompatible with that wetness. By shifting the mode of analysis from water to wetness in a place as oceanic and as infrastructural as Kochi, I hope to open new ways of thinking about the affective qualities of infrastructure and wetness *together* that displace the dispositions of colonial urban imaginaries.

[3] For more on the construction of waterscapes and city making, the growing literature in urban political ecology will be instructive, see in particular Heynen, Kaika, & Swyngedouw (2006).

Figure 2 – Kochi, a city afloat (author's photo, 2018).

Wetness

The similar yet distinct social practices that humans craft with water have intrigued anthropologists for a long time (Strang, 2005, 2014). It's mutability and utility across different mediums has inspired people from around the world, and has been the subject of deep philosophical pondering about the ephemerality of life (Bachelard, 1983[1942]). As anthropologist Stefan Helmreich states, "water is not one thing", and takes many different material forms (2011, p. 133). But what is lost in this materialist rendering of one of life's most crucial elements? Wetness. Here, I want to reflect on Kochi's wetness, and how that might change the way infrastructures can be imagined in the city. Wetness is not a *thing*, but an affect or a quality. To draw again from Helmreich, if water is a "theory machine" for the environmental or 'blue' humanities, wetness might be a *feeling* machine (2011, p. 132). This involves an expansive atmospheric thinking that takes seriously the various qualities of wetness: soaking, seeping, evaporating, and condensing.

The estuary that Kochi now rests upon was the result of the cataclysmic flood of 1341 that redrew history and place in one epic deluge. Prior to this flood, then Cochin was a small port city, overshadowed by the now semi-mythic ancient trading port of Muziris. Annihilated by the flood, there are only a few excavated remains of Muziris that point to its once central figure in ancient trading routs between Southeast Asia, the Middle East, and the Mediterranean (Nandy, 2000). It is estimated that Muziris was somewhere near what is known currently as Kodungallur, and historically as Cranganore, about 20km north of present-day Kochi on the banks of the Periyar River. It wasn't until nearly 200 years later, in 1498, when Vasco de Gama, a Portuguese merchant, explorer, and missionary famously anchored in the Cochin harbour and began what became the European colonisation of the Indian subcontinent[4]. The region was devastated again in 1928 with the 'great flood of 99' (referring to the year 1099 in the Malayalam calendar), which would have influenced British infrastructural development at the time, and may have even influenced the communist and anti-caste emancipation movement throughout the 1930s

[4] For more on the official history of Cochin and the arrival of the Portuguese, see Subrahmanyam (1997).

(Houtart & Lemercinier, 1978). Since then, Cochin, and now Kochi, has been a major port city in South India, now host to the Southern Indian Naval Command, an IT Hub, the Eloor industrial belt, and a large trans-shipment international container terminal. Kochi is then a colonial city, historically and presently. Part of this colonisation of place involved a separation between land and water, despite the abundance of wetness.

These deluges that shaped Kochi were brought across the Arabian Sea by seasonal monsoonal winds. These winds travel in a North Easterly direction across the Indian subcontinent each June until they hit the Himalayan mountains. But before they reach the Himalayas, these winds must travel over the Western Ghats, a long mountain range on the eastern border of the state of Kerala, creating a downpour that acts as a precursor to what is to come for the larger north India cities. Over one half of the world's population draws their water from this seasonal downpour. Such is the importance and reverence of this "ocean of rain" that life in South Asia is deeply entangled with the rhythms of the monsoon (da Cunha, 2019, p. 205). After watering the Himalayas, the monsoon travels back across the continent, making Kerala the first and last place to receive annual monsoonal rains. As such, Kochi is the recipient of over 3000mm of rain each year, making it one of the wettest places in South Asia. And it is here that I find thinking about the monsoon in terms of water is insufficient to the task at hand. Water, in its distinction from land, is a part of a colonial imaginary, an imaginary that contributes to the desecration of rivers as infrastructures of capitalist extraction. *Water*, as a discrete and separable entity, as a resource, does little service to the marvellous qualities of *wetness* as a relational affect and condition for life.

In writing of wetness rather than water, I am indebted to the scholarship and generosity of Dilip da Cunha and Anuradha Mathur, who have been writing about wetness from their discipline of architecture for over a decade (Mathur & da Cunha, 2009, 2014, 2016, 2020). I met Dilip early on during my fieldwork in Kochi, before I knew his work, at a conference hosted by the Backwaters Collective, a group of established scholars with an interest in or connection to Kerala who meet every two years to discuss politics and philosophy. The 2018 conference that I attended was co-hosted by the 2018 edition of the Kochi-Muziris Biennale, the largest arts festival in Asia. It was a private event, but fortunately I had received an invite a few days earlier at a public seminar by historian Ajay Skaria. Unfortunately, I missed Dilip's presentation at the conference but we did meet later. This conference was a pivotal moment in my fieldwork experience as it was not only my first foray into a quite exclusive and progressive discourse of Indian philosophy[5], but also led to my engagement with the Kochi Biennale Foundation, the organisation behind the Kochi-Muziris Biennale. It also happened to be in the middle of Kochi's monsoonal rains as I vividly remember being enveloped in rain as I squeezed into the back seat of a car already full of people to hitch a ride home to my accommodation.

Dilip's presentation, which I subsequently accessed online through the Monsoon Assemblages archive[6], was about his most recent work titled, *The Invention of Rivers*. In it, Dilip theorises rivers as the colonisation of rain. In this designation, (post)colonial India has come to inhabit a cartographic imaginary of a surface, where maps are divided into 'land' and 'water' to (re)produce rivers. To move beyond this binary, da Cunha and Mathur suggest engaging with a relational ontology of *wetness*. In South Asia, this wetness is intrinsically tied to the ebbs and flows of the monsoon. It also shifts the analysis away

[5] Some of the other delegates were scholars such as Ashish Nandy and Vinay Lal.
[6] Monsoon Assemblages are a collective of researchers based at Westminster University, London, that seek to investigate the multiple realities of the South Asian monsoon. http://monass.org/

from an object-oriented ontology, and toward an affective phenomenology of existence[7]. In this way, wetness is a quality, an affect, a *feeling*, rather than an object. In doing so, da Cunha and Mathur put forth an engagement with a monsoonal aesthetics that is less meteorological and more affective, and is to be explored through song, dance, poetry, art, and other qualitative and phenomenological accounts[8]. Da Cunha and Mathur help us think about this by highlighting that the reality from which maps are drawn and infrastructures are made, is only one part of the hydrological cycle. The hydrological cycle moves from rain, to flow, to evaporation, and finally condensation. Cities are designed through an infrastructural thinking has been primarily concerned with the time of flow formation on the Earth's surface. This means that the monsoon comes and goes, and that it can be conceived of as water landing and flowing on a surface. It is discrete. In this separation, a surface is made, and a line is drawn between land and water. From the complexity of wetness, came a rendering of the monsoon as a series of flows that needed to be contained. And in its containment, water in a line, on a surface, creates *land*. Water was in this way, in service of a (colonised) land.

This engagement with wetness rather than water finds companionship amongst Pacific Studies scholars (Hau'ofa, 1994; Teaiwa, 2017), and has recently been explored in broader fields of research such as geography, media studies, and island studies (Baldacchino, 2012; Candiani, 2014; Cavallo, Vallerani, & Visentin, 2021; Krause, 2017). Kimberly Peters and Steinberg and Peters suggest thinking with a wet ontology, where "the sea's material and phenomenological distinctiveness can facilitate the reimagining and re-enlivening of a world ever on the move" (2015, p. 248). They find a wet ontology helpful to move beyond some of the ways in which geography has been stymied by land-based thinking of linearity, solidity, and territory. Similarly, Melody Jue proposes a milieu-specific analysis that "figures as a general conscientiousness of the environmental conditions in which scholars produce theories" (2020, p. 15). She does so to bring seawater into an analytical framework that "focuses on the relationship (and tension) between the interpreter's normative environment of interpretation and the ocean as an environment of interpretation" (ibid, 20). Kochi might even be thought of as an urban variation of what Philip Hayward has proposed as an *aquapelago*, where "a social unit existing in a location in which the aquatic spaces between and around a group of islands are utilised and navigated in a manner that is fundamentally interconnected with and essential to the social groups' habitation of land and their senses of identity and belonging" (Hayward 2012, p. 5). However, while this concept draws attention to watery attachments and envelopments, rather than land-based ones, it continues to operate within the framework of land and water as separate material entities. These approaches to both wetness and oceanic interpretation contribute to the emerging field of 'Blue Humanities' or 'Critical Ocean Studies' that aims to put water at the front of contemporary concerns in environmental scholarship and literature (DeLoughrey, 2019). While I draw inspiration from these efforts, I am less interested in the various excesses of the oceanic, or sea water as a medium for ecological thinking, and more interested in how Kochi as a place and as a city, contends with the (colonial) distinctions between land and water through the relationships that have formed there between wetness and infrastructure.

[7] Object-Oriented Ontology (OOO) is a recent turn in the continental philosophical tradition of materialism (or new materialism), championed by the likes of Graham Harman and Timothy Morton, which aims to reject human exceptionalism by flattening the ontological analysis to include all things, human and non-human. This turn has been critiqued for its lack of attention to power and subjectivities. For a critique of OOO relevant to this paper, see Hepach, 2021.

[8] Here I am also indebted to the Monsoon Assemblages research group at the University of Westminster, where I first presented this research in 2019.

Infrastructure

The history of Kochi and its wetness can be read through ways in which infrastructure has been imagined in the city. Famous as a port city, Kochi has struggled with its more typical colonial infrastructures, especially those that assume access to solid ground (and indeed, a solid underground). The Periyar river, which flows through Kochi to the backwaters, often changes colour due to nearby chemical industries dumping their wastes illegally through underground pipes in lieu of a functioning sewage system. This caused major fish-kill events on numerous occasions throughout my fieldwork. In this section, I focus on how immense wetness changes the relationship between two colonial infrastructures in Kochi: sewers and roads. But first, I need to share how I think about infrastructures and why I think that is important.

What the term 'infrastructure' captures is as unruly as the lifeworlds they create as physical and affective entities. Infrastructure is more than just public works. People are infrastructure (Simone, 2004), nature is infrastructure (Carse, 2012). The fact that the concept defies definition is a kind of testament to the mutability of the term, but if everything (and therefore nothing) is infrastructure, then what is the use? Conceptually, infrastructure provides a useful way of engaging and analysing the relationality of things. Infrastructures are socio-material configurations that bring things into relation, which is distinct from bringing them together. Separation and containment are also relations[9]. Sewers aim to contain bodily wastes through separation and excision, embodying the colonial and capitalist disposition of disposability. In their relational capacities, infrastructures might be thought of as "matter that enable the movement of other matter" (Larkin, 2013, p. 329) pushing "ethnographers to address the instabilities of the contemporary world, to highlight movement, contingency, process, and conflict in and through the study of particular infrastructural formations" (Harvey & Knox, 2015, p. 4).

It is perhaps through their relational capacities that infrastructures re-enforce a kind of imaginary surface, a solidity that renders some things wet and some things dry in order to keep things contained and separated[10]. In this instance, Kochi's many rivers and canals, produced through the colonial imaginary as water separate from and in service of land, act as infrastructures carrying away unwanted wastes. They produce this separation of water and land from wetness and dryness as much as they rely on it to function. And in this separation, they also generate something more than physical by contributing significantly to an affect or an atmosphere of a place[11]. And while some will no doubt enjoy the "surface pleasures" that present themselves through these infrastructural fabrications (Anjaria, 2020), I'm curious about what other kinds of pleasures might have been lost along the way, and how what is both present and what has been lost contribute to the feeling of Kochi as a city today.

The invention and adoption of sewers in 19th century Europe, and the pathologising of human excrement has had a surprisingly profound effect on the development of cities around the world (Anderson, 1995, 2006; Chaplin, 1999; Gandy, 1999; Gerling, 2019; Levine,

[9] For more on separation see Liboiron (2021, 48).

[10] In thinking of infrastructures through their relational capacities, I am drawing on the work of anthropologist Atsuro Morita and Casper Bruun Jensen (Jensen & Morita, 2017), but also the work of Martinique philosopher Edouard Glissant (Glissant, 1997).

[11] I am particularly inspired by anthropologist Maura Finkelstein as she suggests, "to feel infrastructure may not be to 'know' it (in the sense of engineering), but in focusing on affect, my work challenges this framing of expertise and draws urban anthropology away from city planning and back to ethnography" (Finkelstein, 2019, 22).

2007). In the influential book *History of Shit,* Dominique Laporte goes as far to say that the intervention of Victorian era sewers and the politics of waste they embodied "branded the subject to his body, and prefigured, not so insignificantly perhaps, the Cartesian ideology of the *I*" (1978, p. 31). They did so by formalising relations between the state and public and private ownership of (urban) land. Involved in this was separation of land and water as a way of designing cities, with the control of water as resource (and waste as contaminant) enabling the ownership of land as private property in cities[12]. The assumption that is relevant here is that the ground beneath one's feet is solid, and that one can dig into it, place a pipe in it, and assume that pipe will remain in place and that it won't leak. There is also an assumption that there is an away, someplace else, where the unwanted wastes can go where it becomes someone or something else's problem. This 'away' is often a wastewater treatment plant, but can also be a river, a lake, or the ocean. In Kochi, this away is the backwaters. But the flow of sewage in Kochi doesn't happen through pipes, it happens on roads and in canals.

Due to Kochi's incredible wetness, most of the population rely on above ground or cement-lined underground septic tanks, rather than sewers to dispose of domestic and commercial wastes. These tanks require emptying, something that is done by manual laborers and septic trucks in the cover of night. Together with my research assistant, I interviewed a group of these septic tank cleaners one afternoon early on in my fieldwork as they were getting ready to start their shift. They told us that many of the tanks they service were overflowing or damaged, that many residents use makeshift septic tanks that leak instead of the commercial tanks with government approval. Because of the high-water table, a leaking septic tank means that it is likely that the septage has contaminated nearby sources of drinking water such as wells. In a densely populated city such as Kochi, the tightly packed residential houses mean it is increasingly difficult to keep sufficient separation between septic tanks and drinking water. Furthermore, I was told that many septic trucks, once full of domestic waste, often empty their collected septic waste directly into the backwaters to avoid driving across town on congested roads to the one wastewater treatment facility that charges a service fee[13]. On another occasion at a popular market in downtown Kochi, one of the stall holders told us trucks often dump their waste into river right behind the market. The use of roads thus enables different forms of politics to emerge around the containment and treatment of sewage.

Sewers and roads are two sides of the same coin. This is especially so in Kochi. One of the reasons I was given for why Kochi didn't have more sewage networks was the disruption it would cause to the already congested roads that require constant maintenance due to Kochi's wetness. Kochi's roads are some of the most congested in India. Adopted through many years of colonisation, the roads initially sped up the transport of spices and other goods coming down from the Western Ghats and to the Arabian Sea to be shipped to Europe and other parts of the world. These goods would have once been transported on water, but the invention of automobiles and the shift to a petro-modernity (Daggett, 2019; Howe, 2019) quickly surpassed these humbler means of transport. As Penny Harvey and Hannah Knox note about the adoption of roads in Peru, they "shifted the axis of activity away from the river [and] brought about a different kind of opportunity and created a new kind of settlement" (Harvey & Knox, 2015, p. 35). As roads were adopted in Kochi, transport along the many lakes and canals in the city reduced. As more people used the roads, more roads needed to be built, and the canals – no longer used for transport or

[12] This is often referred to as the Haussmanisation of Paris, a prototype for urban development the world over, see Gandy (1999).
[13] I was also witness to, and heard mention of, wastewater pipes diverted directly from properties to water bodies where the opportunity arises.

pleasure –gradually turned into drains for domestic and commercial runoff. Many of Kochi's canals are now clogged with discarded plastics and weeds including water hyacinth (*Eichhornia crassipes*) introduced from South America.

Today, Kochi's roads are in a constant state of disrepair, with large potholes developing each time there is a downpour. The constant 'roadworks' to make a floating ground solid create traffic jams that rival cities ten times bigger like Bangalore and New Delhi. To understand why roads continue to be the normalised and naturalised mode of transport infrastructure in the city, it is useful to understand infrastructures as being more than just a technical apparatus. As Brian Larkin explains:

> *a road's technical function is to transport vehicles from one place to another, promoting movement and realising the enlightenment goal of society and economy as a space of unimpeded circulation. But it can also be an excessive fantastic object that generates desire and awe in autonomy of its technical function.* (2013, p. 333).

The abandonment of the wetness in Kochi is not just a technical issue, it is also about complex histories of colonial rule and how they resonate in the present as (post)colonial aspirations and desires. Kochi has been changing rapidly since the liberalisation of the Indian economy in the 1990s, and like many other mid-sized coastal cities in South Asia, has dreams of becoming the next Singapore. A reproducible model of development which hinges on large infrastructural projects creates an atmosphere of what cultural studies scholar Lauren Berlant calls "cruel optimism", where "a relation of attachment to compromised conditions of possibility whose realization is discovered either to be impossible, sheer fantasy, or too possible, and toxic" (2011, p. 24). The legislated aspirational attachments in this oceanic city are to legible and standardised ideas of what progress and success are, often determined by technologically driven state based funding schemes, like the 'smart cities' program currently underway across India (Drew, 2020). This attachment requires a kind of forgetting, and in Kochi, that forgetting has something to do with the way an abundance of wetness above, below and around oneself conditions the possibilities of life, forging fluid relations. Roads, and other colonial infrastructures like sewers sever that relation.

Envelopment

To hold the affective qualities of infrastructure and wetness together, I turn to what geographer Dereck McCormack terms envelopment. Here, envelopment is "a process that shapes the relation between forms of life and their elemental milieus… a way of thinking through atmospheres and entities without reducing one to the terms of another" (2018, p. 32). The example that McCormack often refers to in his book, *Atmospheric Things*, is an aerostatic balloon. Hot air balloons, weather stations, and other spherical floating objects provide inspirational ground to theorise about atmospheres and the things that exist in relation to those atmospheres. As such, as it is presented here, envelopment is situated as a way of engaging with things that are airborne. This example reproduces a tendency when discussing atmospheres to fix attention to the sky and that which is encompassed by *air*. As anthropologists Tim Choy and Jerry Zee elaborate

> *This form of thought looks up and around, at plumes, clouds, and sky. It looks inward through the vital interiors that render bodies channels, containers, and filters for airs and the things they hold. More significant than the directionality of its gaze, however, is its manner of attunement to the*

> *potentials of substances to shift from states of settlement or condensation to ones of airborne agitation, to settle again in time, or to activate a reaction, somewhere else. The wrong air of the Anthropocene trains our attention to the mechanics of suspension, to how things lift and settle in mediums, to how things exist in atmospheres.* (2015, p. 211)

I would like to extend this assertion by pointing out that clouds, plumes, and bodies, are mostly containers of *wetness*, or in Astrida Neimanis' terms "bodies of water", in their various manifestations, rather than of air (Neimanis, 2017). Envelopment is not just related to being suspended in things that are skyward or airborne, it can also "move bodies to become more or less responsive to their conditions, and to modulate their capacities to act into and within these conditions", regardless of their elemental milieu (McCormack, 2018, p. 19). As I've highlighted above, the fluvial nature of Kochi does not just manifest as water flowing alongside land, but occupies space below, around, and above the human and more-than-human inhabitants of this place (often manifesting as sweat on my forehead, for instance). Kochi's wetness is an atmosphere that is more than rain falling on land then rendered useful to carry away unwanted things. It is something that continues to emerge amid the everyday lives of Kochites, significantly shaping the affective experience of the city, and the ways in which infrastructures can (or cannot) function. Kochi's roads and (lack of) sewers are enveloped in wetness.

Thinking about envelopment in relation to Kochi reminds us that paying attention to atmospheres doesn't just mean looking up, it means looking down and around as well. Suspension is not a skyward attachment, but an Earthly and aqueous condition. To bring atmospheric attention to wetness and infrastructures together, in a way that privileges an (under)ground, disrupts the surface thinking inherent in infrastructural projects such as sewers and roads that produce water and land. Indeed "attending to atmospheric attunements means chronicling how incommensurate elements hang together in a scene that bodies labor to be in or to get through" (Stewart, 2011, p. 452). To be in relation to the ground in Kochi is to be in relation to wetness. To be in Kochi, is to be enveloped in wetness.

These critical theories of atmosphere, including envelopment, draw on a growing body of literature and research on *volume* (Elden, 2013; McNeill, 2020; Steinberg & Peters, 2015). This research aims to displace the two-dimensional territoriality of cartography and the nation-state, in favour of thinking through depth and verticality as increasingly central to what Keller Easterling calls *extrastatecraft* (Easterling, 2014). Influenced by philosopher Peter Sloterdijk and his theories of *atmoterrorism*, the volumetric turn tends to look back to the advances of military technologies in the first half of the 20th century as the beginning of attempts to claim sovereignty over the sky and the underground (Sloterdijk, 2009). However, if one is to think through the history of bodily wastes and contagion – particularly the theory of miasma which, until germ theory surpassed it, suggested that illnesses travelled through "bad air" (Cole, 2010; Corburn, 2004) – thinking with volumes was critical to public health measures and the eventual invention of underground sewage systems in the mid 19th century. I turn to envelopment rather than volume here as volume is an attempt to incorporate three-dimensional measurement into theories of space, while envelopment involves and an affective register, it is a feeling.

"Kochi is a feeling"

I started this essay by stating that Kochi is a city historically defined by its relation to water. This slippage turns Kochi's wetness into water, as a manageable resource in

opposition to land, in a kind of cartographic negation. To show how this plays out in the city today I used both sewers and roads as examples of surface thinking, and how Kochi's wetness exceeds those infrastructural materiality's. To move beyond these seemingly incommensurate elements, I have suggested Kochi is enveloped in a wetness, and that this wetness has significant influences on the ways in which infrastructural development can play out in the city, even if roads and sewers continue to be constructed. From the historic flood of 1341 that flattened the city of Muziris to the backwater's tourism and modern infrastructures that fill the city today, Kochi is constituted by *wetness* and *infrastructure* in many ways. Moving the analysis away from water as an *object* toward wetness as an *affect* centres the embodied experiences of the infrastructures mediating that wetness in a rapidly changing city.

Wetness and infrastructure interrupt one another as they exist together at the same time in Kochi, and I want to now turn to how that *feels*. I do so by drawing on a popular saying in Kochi that I came across during my engagements with the Kochi-Muziris Biennale: "Kochi is a feeling". The promotional posters with this slogan written across the top feature two fish enveloped in waves, enveloped in wetness (Figure 3). With this as my inspiration, my wager here is that the feeling that Kochi generates – its ontological affect – has something to do with its envelopment in wetness and infrastructure, and the relation between the two, particularly as domestic, commercial, and industrial wastes continue to soak, seep, and leak between bodies, human and non-human. If infrastructures tend to separate water from land, and turn wetness into water, how does the enduring wetness of Kochi, and the way it interrupts those infrastructures, shape the experience of the city? To ground a contemplation of these queries within the final discussion, I share some personal experiences of the devastating floods that enveloped Kerala in August 2018.

The floods that killed hundreds of people in Kerala in August 2018 were caused by intense wetness and failures of (post)colonial infrastructural thinking. Initially, most of Kochi was largely spared the devastating flooding that hit lower parts of the state. That was until the intense rain led to the decision to open the overflow gates of the Idukki dam, one of the largest dams in South Asia. Subsequently, the Periyar River burst its banks and the Kochi International Airport, which was built on land reclaimed from the river, to turn back into a river, disrupting international flights for over two weeks. It also made the flooding much more devastating for those who lived downstream including those living in Aluva and Ernakulam. In some parts of the city, the entire ground floor of houses was under water. The trains stopped operating as the water from the floods was up to the height of the platform. Once the waters had receded slightly, I caught a train from Kochi to Trivandrum with my friend who had changed the departure of their international flight from Kochi to Trivandrum. We had to wade through knee high water in the backstreets of Ernakulam to reach the train station. The train was intensely overcrowded with others whose travel plans changed at short notice and were desperate to reach Trivandrum. We spent the 5-hour long train ride standing in the doorway of the train compartment with about 7 others, the doors open, occasionally swapping positions to sit with our legs dangling out of the train just inches above the flooded plains below the tracks. On some sharper corners that emerged through the engulfing green, it felt as though the train would topple into the wetness below.

Figure 3 - Kochi is a feeling (author's photo, 2018).

A few days after the treacherous train ride to Trivandrum, on August 22nd 2018, six days after the flooding began; I attempted to commute from my apartment in Fort Kochi to Ernakulam to visit the Cochin University of Science and Technology (CUSAT). I was heading there to meet some research participants and to visit a large flood relief camp for those who had to evacuate their houses. In my typically stubborn (and on this occasion, foolish) resistance to private car rentals, I set out from my apartment in an autorickshaw to the Fort Kochi-Ernakulam ferry, anticipating that water-based transport might be safer and more reliable in a flood. To my dismay, the ferry was not running because of the volatile waters. I decided to find an auto driver willing to drive me across to Ernakulam, where I hoped to catch the above ground metro to CUSAT assuming that an above ground metro would be unaffected by the flood waters. Once again, I was wrong. The metro train yard was flooded. By this point I was hungry and starting to get frustrated, so I waved down another auto and asked the driver to take me to Lulu Mall, a large shopping mall not too far from CUSAT, where I could take a moment to reassess my day. As I walked up to Lulu Mall, I realised it too had succumbed to the floods, and was not open to the public. Upon this realisation, I had no option left but to get another auto from Lulu Mall to CUSAT and hope that those I was meeting would accept my dishevelled arrival and have something for me to eat. Eventually, after meeting with the professor I had been in contact with, I was taken to a small canteen, operated on the ground floor of someone's house, tucked in behind the university. I remember it being one of the best thalis I ate while in India. After lunch we visited the flood relief camp, where some 3000 people where sheltering. Whole families gathered in large classrooms, aunties and uncles resting against walls, children playing together under tables and chairs. One woman told us the flood had changed her, and that she doesn't need anything anymore; it had taught her a valuable life lesson. On another occasion, a few days later, one of my closest collaborators in Kochi summarised the 2018 floods by saying "we are used to floods, but we have forgotten that we are used to them".

The inconvenience I experienced was nothing compared to those living closer to the Periyar riverbanks. Three days later I visited some houses in Aluva, near the airport. Most

houses were still standing, but the flood waters had risen so high that I struggled to find the high-water mark when I reached the house of a family member of a friend who lived in the area, only to find out that it was on the second floor. Everything in the house was enveloped in a film of silt, a visible reminder of the entangled nature of wetness and earth. We spent the day sorting belongings into piles and pressure spraying down the walls and floors in the house. Controlled water was being used to clean errant water. We were not sorting belongings into piles of what was to be kept, we were sorting them into piles of how things needed to be disposed. Virtually nothing was salvageable. Meanwhile, the house next door had managed to find a pump with which to drain the well in their front yard. It seemed that folks were scared their well water had been contaminated by the floods.

These were my only two firsthand experiences of the flooding in Kochi. Much of this time was spent in Fort Kochi where I was living, which was largely spared inundation from the floods due to its location on the other side of the backwaters at the edge of the sea. I spent these days reading the local newspapers, keeping in touch with friends and research participants on WhatsApp, and continuing to build relationships with the staff I'd met from the Kochi-Muziris Biennale as they planned their upcoming event. In the days immediately after the flood, footage began to circulate on WhatsApp of a truck clearing a bridge of the debris that had been deposited by the flood waters. Unfortunately, and to the dismay of those I was in touch with, the truck was clearing the debris straight back into the water below. One headline in popular Indian newspaper The Hindu read "Trial by Water", while further down the article the author states "the river has claimed its lost self" (Anandan & Praveen, 2018). Another from 'livemint', a popular online news outlet, read "[in] rapidly urbanizing India, it's time to reimagine water in cities" (Srinivasan, 2018). It is this reimagining that I have been attending to here, by suggesting that envelopment in wetness might be a starting place for thinking through the future of more ecologically situated infrastructure in this city. This way of approaching wetness through envelopment was inspired by many of the artworks at the 2018 edition of the Kochi-Muziris Biennale that responded to the floods in their installations. One piece was particularly inspirational, the work of Bangladeshi artist Marzia Farhana titled 'Ecoside and the Rise of Freefall'. This artwork, on the ground floor of a building that had a solitary window with a view of the backwaters, envelops the audience in the remnants of the floods that had occurred just months beforehand. With painstaking detail to shape, size, and embodied associations, Farhana spent weeks collecting ruined goods – from appliances such as fridges to bookshelves with hundreds of books – from people's houses that were devastated by the floods. Farhana then hung these from the ceiling in such a way as to create the sensation that one was floating among these items, stolen by the floods, each one coated in the familiar film of grey-brown silt. Art is important in crafting new futures because it "can make a conversation" as another participating artist would later tell me. In this instance, Marzia's work started a conversation not only about the devastation of increasingly frequent and disastrous floods, but also the affective atmosphere, the feeling, of being enveloped in wetness.

Figure 4 - Belongings coated in silt after the flood (author's photo, 2018).

Two months after the floods hit Kerala, I visited the Eloor-Edayar industrial belt with my research assistant, my research collaborator Dr. Georgina Drew, and an environmental activist from Kochi. This place—a small island between two tributaries of the Periyar river and only a short distance from downtown Kochi – has been described as a "toxic keg" by a local newspaper and is known as one of the most polluted places in the world (Devika, 2019). It is home to some 282 industries, of which almost half are chemical industries (Anjusha et al. 2020). All use the abundance of water nearby as a vital resource and as a sink for their wastes – it is used as infrastructure (Carse, 2012). As a result, this stretch of river is prone to mass fish-kill events, and periods of red, green, or black water caused by an alchemical reaction between river life and industrial chemical substances. Fortunately for the broader population, most of Kochi's drinking water is sourced *upstream* from Eloor, however the residents in the area and those that live downstream who rely on well-water for drinking are forced to endure high levels of contamination. Here an atmospheric attention to wetness above and below the ground helps to demonstrate how water moves in ways beyond the colonial imaginary of the river, and with it the toxins from nearby industries.

As we approached Eloor, we came to a bridge over the river and asked our driver to stop so we could get out and look around. Standing on a bridge overlooking the river on this warm October day, I noticed the smokestacks that rose into the sky and the material remnants of the floods hanging in branches of trees on the banks of the river. The water was a deep brown but according to the environmental activists we were with, the water was looking cleaner than usual due of the floods (Figure 5). We were told how some of the industries had illegal underground pipes that disposed their effluent straight into the river. The activists had been involved in a Save the Periyar campaign for a few years, but still nothing had been done to stop these industries from dumping wastes The rest of the day was spent exploring the Eloor area, noting down names of industries and talking to residents whenever the opportunity arose. Many explained how they were resigned to the conditions of their situation, enveloped in the toxicity of the nearby industries. At one point we stopped at a school, which had a large pile of industrial waste covered in tropical plants behind it (Figure 6). The kids playing in this yard, are playing in toxic wetness.

Destroying a river and a suburban island with industrial waste is one thing, but how does turning to wetness and envelopment help to broaden what becomes relevant in such scenarios? The Eloor-Edayar industrial belt is situated on an island for a reason. It uses the river not only as water and waste infrastructure, but also as a container for toxic industries (Figure 5). The activists we spent time with told us how the general population of Kochi don't know about this place because they don't have any reason to visit it. The only people we encountered were people who lived and worked there, stuck in the mess of industrial extraction and toxicity. For them, Kochi is a feeling of being enveloped in not only wetness, but also toxicity. As I have shown, wetness seeps, soaks, and evaporates beyond the confines of colonial infrastructures, including rivers. To be in relation to wetness in Kochi, is for many, to be in relation to varying degrees of toxicity.

Figure 5 - Periyar River and the Eloor industrial area (author's photo, 2018).

Figure 6 - Schoolyard with a forest of industrial waste behind it (author's photo, 2018).

Conclusion

Terrestrial and land-based thinking continues to be disastrous for urban settlements as water bodies remain as reservoirs for unwanted things. Putting water at the centre of conversations about infrastructural development has proved to be both promising and difficult as it disrupts the spatial ordering of the city. As geographer Matthew Gandy describes, "the very fluidity of water as both biophysical and symbolic agency serves to disrupt and challenge simplistic understandings of how complex urban societies function, and the degree to which social and spatial order can ever be achieved under the contradictory dynamics of capitalist urbanization" (2014, p. 54). What I have highlighted here, is that the very framing of land and water as separate entities to be managed is bound up in the problem. In Donna Haraway's now famous words inspired by Marilyn Strathern, "it matters what matters we use to think other matters with" (2016, p. 12). Attuning to wetness rather than water in a place as wet as Kochi, is one way to rethink the work that infrastructures are doing. Envelopment gives us a conceptual framework to begin thinking through the material and affective qualities of wetness and infrastructure *together*. The kind of envelopment I have described goes beyond turning attention to skyward atmospheres to engage with wetness as it surrounds above, alongside, and below.

To say that Kochi's ground is floating is both metaphor and literal, the solid surface from which to begin designing and building infrastructures has been constructed and is temporary. The ancient floods of Muziris and the recent floods in Kochi in 2018 attest to this. Attuning to wetness instead of water to grapple with this reality opens thought and feeling up to an existence in the world beyond enduring colonial binaries and separations on which most urban infrastructure is designed and built. As Kath Weston states, the challenge is to "reorganize (our) affective attachments, and with those attachments, the capital-intensive regimes of production designed to elicit them" (2017, p. 198). How might a reorganisation of affective attachments to an envelopment in wetness change the ways that infrastructures are imagined in urban south India? This question seems increasingly relevant as anthropogenic climate change continues to accelerate, putting low-lying settlements at further risk of being inundated or submerged.

While these insights are grounded in ethnographic attention to Kochi, they are relevant to monsoonal and tropical cities elsewhere. In Darwin, Australia for instance, the movements of the city are entwined with the wet and dry seasons. Separating these rhythmic patterns into land and water to be managed by state institutions and public infrastructures is bound up in the colonisation of place. It is in the undoing of this colonial separation that I join da Cunha and Mathur to propose that "if water separated to be *somewhere* is in crisis today, wetness negotiated *everywhere* holds the way forward" (Mathur & da Cunha, 2020, p. 16). Negotiating wetness everywhere requires a fundamental shift in not only urban design practices, but in philosophical and narrative literature; it requires a conceptual shift. And while my research participants and collaborators in Kochi did not use these exact terms, I believe this (re)conceptualisation heeds their call to reimagine infrastructure otherwise in ways that takes seriously the city's situated ecological and social conditions. Attuning to the affective experience and material politics of moving through wetness is key to this reimagining.

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