Part 1

The Kuils River and its Infrastructures

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The Kuils River rises in the Kanokop Hills of Durbanville just outside of Cape Town, as a trickling stream. Looking at where it originates, one would never imagine the multiple beings and things it affects, nor the deep vast history this river has, not only in shaping Cape Town's landscape, but also the politics, infrastructure technologies and economics of the day.

Image 1: The Kuils River is canalised at the source (Photo: Author)

The river merges with another river, the Eerste River in the Macassar area, about 30 km away from its source. The Eerste River, which begins in the Jonkershoek Mountains adjoining Stellenbosch,

flows south to enter the Kuils-Eerste River estuary, one of eleven estuaries in the Cape, before entering the sea at False Bay, where the Indian Ocean joins the Atlantic. The Kuils River and Eerste River are important rivers that run through the eastern part of the Cape Metropolitan Area (CMA), together forming a bigger catchment and draining an area of approximately 660 km^2 (Chingombe et al. 2010). A portion of this catchment falls within the CMA (through which the Kuils River flows), and the rest falls within the Stellenbosch municipality (where a significant part of the Eerste River is located).

The Kuils River was once a seasonal river, drying up in the summer months to form small pools, also known as "kuils" (in the Afrikaans language), but flowing in torrents during the winter rains. Along its course, the flow and quality of water and life in the Kuils River is shaped by multiple factors, such as wetlands, agricultural lands, canals, flows from small tributaries, effluent from several wastewater treatment works (WWTW) and storm water flowing into the river from formal and informal residential areas. Day and Brown (1998) observed that the river (and by extension, the Eerste River after its confluence with the Kuils River) now flows throughout the year due to the high volume of effluent processed by four Waste Water Treatment Works (WWTWs[1]) and increasing stormwater drained from residential and industrial areas along its path.

The river also featured multiple wetlands, but over 80% of these have been depleted due to rapid urban growth and the development of industrial parks and residential areas over the last 40 years (Magoba and Brown, 2008). The location of the Kuils, once characterised by vast tracts of land for farming that more recently have been earmarked as a space for rapid urban development through the Reconstruction and Development Programme (RDP) housing and industrial areas, has resulted in a hardening of surfaces that has increased stormwater flow into the river. The river thus bears both urban and agricultural pollutants of unknown origin, known as nonpoint source (NPS) pollutants.

[1] The four WWTWs along the Kuils and Eerste are:

a. Scottsdene, which pumps wastewater into the Bottelary River, a tributary that joins the Kuils at the middle section of its course;
b. Bellville, which pumps wastewater into the middle section of the river in the Sarepta/Kuils River neighbourhoods, adjacent to where the Bottelary River meets the Kuils River;
c. Zandvliet, which pumps into the lower section of the river a few metres upstream of the Sandvlei community;
d. Macassar, which pumps wastewater into the Eerste River after its confluence with the Kuils and before it enters the sea at False Bay. The Macassar WWTW area is a popular bird-watching site, as there is a lagoon there before entering the sea that is teeming with life.

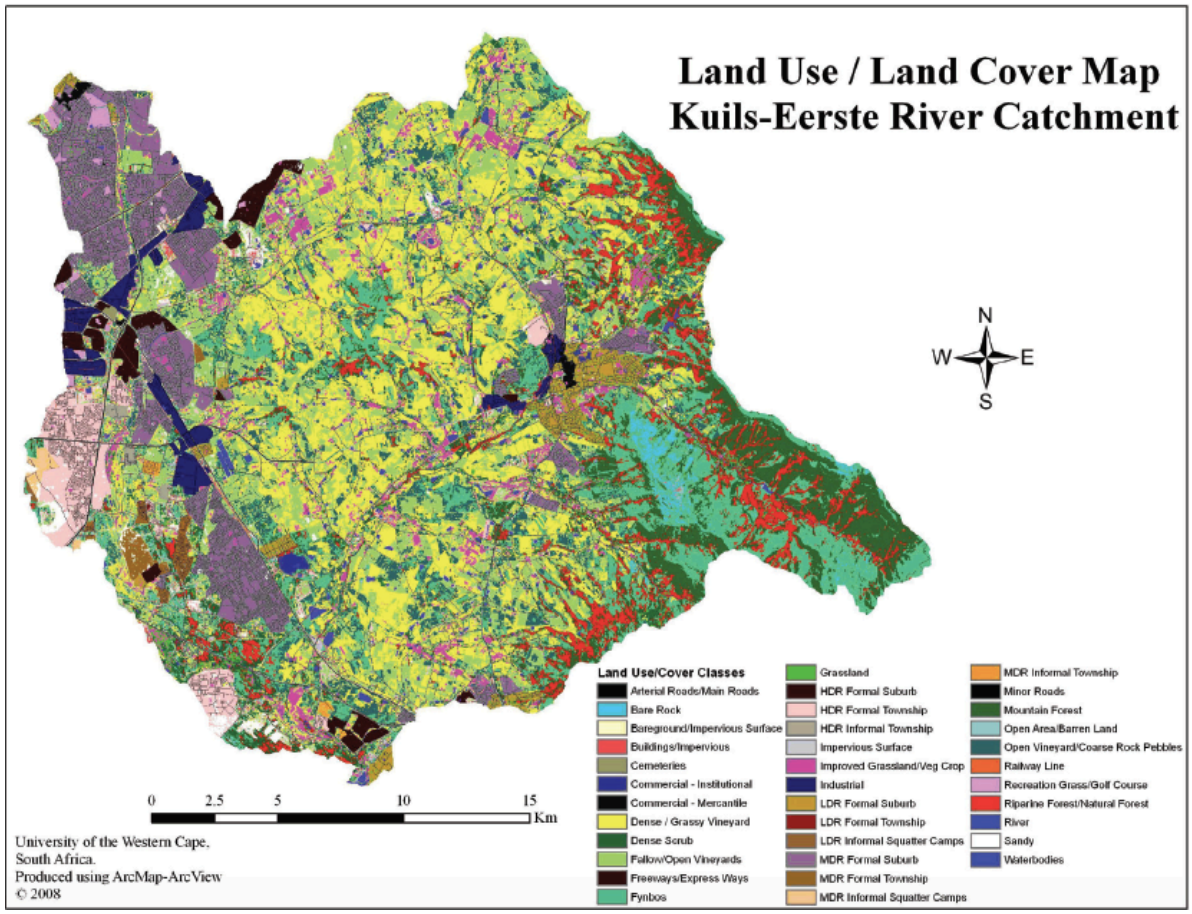

Image 2: Land Use/Land Cover Map of the Kuils-Eerste River Catchment (Source: Chingome et al, 2010)

The increased development in the area, resulting in the hardening of surfaces using concrete and tar, created impervious surfaces as demonstrated in yellow in the land cover image by Chingombe et al. (2010) above. Covering soils that were previously allocated for agriculture with concrete and tar as well as removing natural ground cover such as grass, shrubs and trees, hampers natures processes of regulating flow in this urban environment. The decrease in plant cover also results in less evapo-transpiration necessary for rainfall and heat regulation, particularly in spaces with dense concentrations of materials that absorb and retain heat. This concentration causes what is called an 'urban heat island' that affects natural cycles and the well-being of people and multi-species communities. It also impacts the economy, as more energy is required to regulate the heat (e.g. increased use of air conditioners) and combat the effects of accumulating greenhouse gases (e.g. impacts on health and increased frequency of climate extremes of heat and flooding) (Hulley, 2012).

Image 3: Development application notice placed in a plot (former farmland) in the Kuils River Nature Corridor (Photo: Author)

Spaces such as the Kuils River Nature Corridor and the Khayelitsha Wetlands therefore play an important role in balancing the climate of the city, however, these are constantly under threat not only from poorly treated effluent as discussed earlier, but also with the rapid development that is taking place in the city.

In 2018, the Zandvliet Waste Water Treatment Works (WWTW), located between the Khayelitsha township and the Sandvlei farming community in Cape Town, South Africa, became embroiled in controversy due to its discharge of poorly treated effluent into the Kuils River, which joins the similarly polluted Eerste River before entering the Indian Ocean at False Bay. The Zandvliet WWTW, one of four WWTWs discharging effluent that ends up in the Kuils River (including the Macassar WWTW, which discharges into the Eerste after its confluence with the Kuils), services some of the fastest-growing areas in Cape Town, treating effluent from the south-eastern parts of the City (namely Kuils River, Delft, Blackheath Industria, Blue Downs, Eerste River, De Wijnlanden, Thembokwezi, Mxolisi Phetani and Khayelitsha) (IOL News 1.7bn upgrade underway at Zandvliet WWTW, 2019; Bone, 2020). The Zandvliet WWTW, with a capacity to treat 72

megalitres per day (Ml/day) was scheduled for an upgrade, delayed by ten years of litigation over five tender process disputes and a land claim dispute (Frankson, 2019). The upgrade finally commenced in 2019 and is scheduled for completion in 2023 and is expected to provide additional treatment capacity of 18 Ml/day, bringing its total capacity to 90 Ml/day. The upgrade of the Zandvliet WWTW was valued at R1.7 billion and is financed by a loan from the German KfW Development Bank (Bone, 2020). The upgrade will include the construction of a membrane bioreactor (MBR), which is a waste water treatment process that integrates a perm-selective or semi-permiable membrane with a biological process, (Judd, 2010), as well as upgrades of sludge dewatering facilities, new inlet works, pump stations, primary settling tanks and maturation ponds, where effluent is purified before discharge (Frankson, 2019). Further expansion is planned to cater for urban growth in the vicinity of the WWTW.

Image 4: Proximity of Zandvliet WWTW (red) to Kuils River (blue) and Sandvlei community (green), connected by the 'Kak River' canal (yellow). (Source: Google Earth, 2021)

While the Zandvliet WWTW upgrade was delayed by nearly 10 years, the Sandvlei community downstream of the WWTW on the Kuils River reported an increase in animal deaths and a general decline in resident health, with complaints of respiratory and skin infections. Even contemporary teenagers remember that the Kuils River was once home to otters, fish, birds and a multitude of frogs, but it now carries solid waste and chemical particles flushed down the drains of thousands of homes through the Sandvlei community, depositing what the City insists is foam and not raw sewage along the river banks. When living with the river became unbearable and life-threatening,

residents reported these incidents to the City of Cape Town (CCT) authorities charged with wastewater management to no avail.

a.  b. 

Image 5a-b: Images how the pollution of the Kuils River and collection of samples by residents (Photos: Author)

I argue that the narrow focus on the technical aspects of upgrading the river and solely tending to the bureaucratic processes (i.e. tender processes and land claims) of "getting the project done" whilst neglecting the Sandvlei community struggles with a polluted Kuils River is an act of violence. This form of violence was made even more visibile through an encounter with the Department of Informal Settlement, Water and Waste, a division of Cape Town's Water and Sanitation Department during my PhD fieldwork. On this particular occasion, I sat in the dim light of a government office in Cape Town's Central Business District (CBD), with no windows to see the famous views of Table Mountain and the ocean, features that have exponentially pushed up the price of property in the "Mother City". Professors Lesley Green and Leslie Petrik, Dr Bernelle Vester (a bio-engineer), residents of Sandvlei and myself had walked into the office for an emergency meeting to discuss the findings of water samples taken from the Kuils River in the Sandvlei/Macassar area on the edges of Cape Town on the 27th of November 2018. The samples showed exceptionally elevated levels of *E. coli* (ranging between 43 500 - 872 000 coliforming units (cfu) per 100ml) and *Enterococcus* (ranging between 75 500 – 1 285 000 cfu per 100ml). *E. coli* and *Enterococcus* are bacteria found in the gut of humans that wreaks havoc outside of that environment. The acceptable national water quality standard of these bacteria in water bodies for

non-contact activities such as boating and kayaking is 1000 cfu per 100ml and for drinking is 0 cfu per 100ml.

I remember feeling quite uneasy about the meeting, given the tension and frustrations that had emerged from previous meetings about the impact of the Zandvliet WWTW on the river and the residents who live along it. The large contingent of Sandvlei United Community Organisation (SUCO) members also threw me off, as city officials normally outnumbered us in meetings of this kind. I perched awkwardly on my seat and greeted the people closest to me, both engineers by training, and nodded to the CoCT representatives, who had professional backgrounds in the sciences (such as water chemistry, health and marine biology). On our side were anthropologists, a process engineer, a chemist and, as mentioned, members of SUCO.

As we sat down I saw frowns and anxious looks pass between everyone in the room. The chair of the meeting at the time, the Executive Director of Informal Settlements, Water and Waste for the City, started the conversation by addressing the discomfort felt by the City officials at the presence of so many SUCO members. The chair said that they had understood that the meeting would include just academics and City staff, with the goal of understanding the water test results and planning the way forward. An attempt at negotiation was made, which included appeals from Professor Green, director of the Environmental Humanities South at the University of Cape Town, to consider four pertinent issues with regards to research and policy formation. These issues were:

1. The ethics of what it means to do research without consulting those directly affected by river pollution. While we as academics were equipped with tools and methods to conduct research and sample the water, it was ethically imperative to not limit our findings to our own understanding of the numbers the test revealed, but to also consider how this was translated and experienced by residents of Sandvlei. The intention was to include the inputs of the residents in other ways, and acknowledge these inputs as other ways of knowing often not recognised within the domains of academic knowledge and technical expertise.
2. Including these translations and experiences requires a grounding of knowledge/science in the everyday to inform policy that is connected to the people it governs.
3. Grounding knowledge in the everyday requires a paradigm shift in policy and governance, challenging the supremacy and role of quantifiability in the representation of lived experience and as the ultimate truth.

4. The paradigm shift should also question the difference between the roles of elected city officials (who play the role of dealing with politics) and those who are appointed (who misdirectedly only deal with the 'facts' of science and management).

However, the City officials opted to remove themselves from the meeting before the results could be disseminated. Green, Petrik and I had engaged with the CCT before, setting up a meeting immediately after we received the test results of a water sample I had collected a month earlier. The test results showed alarming levels of *E.coli*, enterococci and chemical nitrates in the water. In this meeting, after disseminating the results, suggestions by City engineers were made to further canalise the river, which we opposed as this would only have shifted the problem elsewhere. The representatives of the CoCT also objected that we were causing unnecessary alarm about the quality of water entering the river and then flowing into the sea, which they noted to be an egregious offence at the start of the tourist season. Our methods of collecting the water samples were questioned, as regulations required that we collect water samples from the middle of a flowing river – we argued that residents and their animals interact with the water on the banks of the river. We left that meeting feeling rather frustrated, as it seemed that more efforts had been made to discredit our research than to actually address the problem of the polluted river. This was not just a 'clash of knowledge' about the river but was also about knowing the river through numbers versus seeing it flow past homes and interacting with it; through water samples versus breathing in the fumes and pathogens released by it, shaping and being shaped by it.

After the representatives of the CoCT excused themselves from the meeting, I remained in the boardroom with my colleagues and the SUCO members. A conversation about how to engage with the city unfolded as Green set up the laptop to begin the presentation to those still in the room. The consensus was that people were tired of toeing the line, as this had not resulted in their issues being heard. I suggested that we needed evidence that would stand in a court of law, and the SUCO members argued that they had been providing evidence for years but it was never accepted. An argument between myself and Mr Sallie, a SUCO member, ensued about the kind of evidence that would be accepted in this arena: what constituted evidence and how the evidence should be collected. To me, it meant being able to present a watertight case should the need arise, but I saw from the expression of my interlocutor that I was missing the point. Mr Sallie said, 'Why should we have to end up in court? I just want my kids to be safe. Is that a crime that I would have to end up in the courts to solve the issue?"

In short, however, the only form of evidence that the city would accept had to be based on scientific evidence that met particular scientific descriptions of cause and effect and were devoid of the experiential aspect that was so central to the ethical claims about well-being presented by the SUCO members.

The sense I got from the meeting was an attempt by the CoCT representatives to be neutral and objective to the issue about the river. Because to include feeling and experience was to make it personal, and the personal becomes political, which would not count as objective science, and the section of the Department of Water and Sanitation in charge of the technical aspects of water and waste management apparently does not deal with the politics.

Ms Salie, the wife of Mr Salie, then reflected on a site visit that the director of the Water, Waste and Informal Settlements the same official had done in their neighbourhood, saying,

> 'I can't believe we are going through this again. The last time when they came to see the waste treatment plant, they refused to hear us. One of them even refused to shake my hand. Am I contaminated? And now they will not sit with us to talk. I am angry and I am hurt.'

I reflected on the deep irony of this encounter, where the CoCT had failed to acknowledge that the contamination of the river was affecting the people, but then treated the people as if they were in fact contaminated.

Over the weeks that followed, I reflected on how communication had failed between the different parties who wanted to develop a solution to the problem. Everyone seemed concerned about the state of the river, but the point of contention had become what evidence was supplied, how it was presented and who was entitled to present it. This seemed to be a semantic dispute about what actually constituted the river and how it should be cared for. The city officials, academics and Sandvlei community agreed that the Kuils River was polluted, but disagreement arose particularly when seeking to understand the 'complex urban Anthropocene ecology in which infrastructure is failing, and the environment is overwhelmed by new forms of toxicity' (Green, Solomon, Petrik & Barnes, 2019), made evident by the increase in human health issues and the disappearance of animal and plant species over the years. However, only one team's data was being accepted by the

City, and that was the data for which the City had paid and that was acceptable to the Council's reigning orthodoxy.

Scott (1998) argues that one way the state organises society is through infrastructure, where state practices converge with the global economy and development. As such, infrastructure becomes an interesting and important site for the study of how relations of power and hierarchy translate into overt forms of physical and emotional harm (Rodgers & O'Neill, 2012). So while the discourses of municipal infrastructure are inevitably claimed to be 'for the betterment of society', I argue that the particular assumptions built into the design of infrastructure, as well as the bureaucratic and techno-managerial approaches used to build said infrastructure, often take for granted the social consequences of infrastructure's day-to-day (mal)functioning (Rodgers & O'Neill, 2012). With this observation centrally in mind, this paper demonstrates how violence is enacted through infrastructure and techno-scientific governance in relation to the Kuils River. The paper is drawn from my PhD thesis titled "The Kuils River Multiple: Version of an Urban River on the Edge of Cape Town, South Africa", which was based on roughly three years of ethnographic fieldwork in the Kuils River catchment and its associated landscapes and bodies of water. While the broader thesis explored how lives, politics, technology and environment are impacted by river management in the city and how these produce different versions of the Kuils river in turn shaping how it is managed, this paper focuses on the question: "How do we care for the Kuils River and its associated landscapes and communities beyond techno-scientific interventions?". It is essential to note that this paper does not discount nor underplay the importance of technology and science in water and environmental governance, rather, what I aim to show is that when the technological and scientific are the only concerns of river management, experiences of marginal and vulnerable people and geographical spaces can be pushed to the periphery which in turn enacts different forms of violence.

The focus on the the scientific data and technical interventions over the voices and experiences of the community not only reveals the political nature of infrastructure but also the kinds of harm, although they may have been unintentional, can be enacted on people and the environment. After reflecting on this encounter, I concluded that this was a form of techno-scientific governance which views infrastructure as a tool with which to manage, control and predict the flow of water in the urban and peri-urban areas of the Kuils, devoid of history and therefore assumed to be free from bias and human influence. However, when infrastructure is seen simply as a tool for water and waste management, the so-called objective management of the rivers and water in the city can become invisibilised and have real life consequences. The location of WWTWs in the middle and

lower sections of the river is not just about suitable terrain but is linked to histories of settlement and displacement and race and class in the city. The 10-year delay to the upgrade of the Zandvliet WWTW is not just a result of bureaucratic maladministration but affects human health and ecosystem well-being as well. Infrastructure requires upgrades over time, which are implemented incrementally and require negotiation with multiple users, designers, planners, communities, terrains and more, all with different intentions and priorities. These intentions and priorities intersect with material life, making the reality of the infrastructure multiple, as demonstrated by the different experiences of city officials and the Sandvlei community with regards to the Zandvliet WWTW – and as Mol (2002: 7) argues, 'If reality is multiple, it is also political'.

The Kuils River is not a space that **always** produces obvious and blatant signs of toxicity, but it can do so in subtle and incremental ways that communities observe and endure for years (Davies, 2019). This does, however, allow communities to accumulate knowledge about the flux of the river over time, how pollutants enter and exit, and the effects of these pollutants on those living along its waterways – an approach quite different to that of the city officials who take water samples a few times a month, or even to us as researchers who collect samples after a major event has changed the composition of the river. This one river is subject to many differing experiences, and therefore different concerns, expressed with differing evidentiaries. For City officials to assert one form of knowing the river as true but the other as false was surely an act of epistemic violence (Spivak, 1988). Gayatri Spivak uses the term "epistemic violence" in her key text *Can the Subaltern Speak?,* as an approach of highlighting the silencing of marginalised groups. For Spivak, the "layperson", "general, non-specialist", "the illiterate peasantry: and "the lowest strata of the urban subproletariat" (ibid: 42) are often silenced and subjected to epistemic violence by those who supposedly know better. This silencing is a result of the devastating effects of colonialism and erasing of local knowledge to privilege knowledge and epistemic practices, often from certain parts of the global North. Although Spivak's argument has been disputed strongly, her insight into the difficulties for marginal groups in addressing this type of violence that attempts to undermine local knowledge possessed by marginalised communities is useful for the broader study and this paper. As she astutely notes, one way of enacting epistemic violence is to disparage a given groups' knowledge claims, damaging their ability to speak or be heard. Spivak's argument can be extended to the relationship between rivers and people, as the ways of knowing the river by the community are considered inadmissible in disciplines that require facts through science and measurement. Accounts that are based on experience and framed as personal are unobjective and therefore

dismissed in the hallways of science and governance because there is only one truth, one way of knowing the river.

One could argue that the dismissal of local or informal accounts of the river's contamination perpetuates humanity's slow response to environmental degradation, in this instance, as mentioned earlier, allowing marginal and vulnerable people and geographical spaces to be 'sacrifice zones' for the benefit of the greater Cape Town population (Davies, 2019). Ignoring local claims of environmental injustice helps to perpetuate the brutality of governance by science and experts **only**. The toxic spaces remain disputed and dialogues reach a stalemate, while communities continue living in polluted and degraded environments. The situation described above demonstrates how different forms of knowledge practices around water and, in particular, the river, can enact violence despite having similar intentions.

UPGRADES: TOO LITTLE, TOO MUCH, TOO LATE?

During the contested planned upgrades of the Zandvliet WWTW, the Sandvlei community had been intensely frustrated, because not enough was done with any urgency to alleviate the problems of the river while the CCT waited for the litigation to be completed, which raises the question; does a corporate entity's right to appeal and contest a tender outweigh citizens' rights to a clean environment? No precautionary measures were taken to ensure the health and safety of the human and multi-species communities along the river, thereby exposing them to slow forms of violence (Nixon, 2011) and a health risk that could lead to premature death (Mbembe, 2019). Steve Lerner (in Bullard 2011) proposes a compelling argument for why prevailing environmental management must be re-examined to place emphasis on the precautionary principle, prevention and commensurate protection. This argument, the result of two years of research and work with twelve communities in the middle of toxic 'sacrifice zones' in the United States, is backed by irrefutable evidence that not all Americans are created equal (Bullard, 2011). Bullard's book, *Sacrifice Zones*, reveals that one of the most important indicators of an individual's health is their ZIP code, which correspond to histories of segregation between communities of colour and white communities. For Lerner (in Bullard, 2011), this pattern of unequal protections constitutes environmental racism, as these spaces are often occupied by low-income people of colour, a trend we also see in the Cape Town context. In such spaces, the well-being of people and the environment are side-lined in the name of 'economic development' and 'progress', often brought about by technical proposals and responses assumed to be objective and neutral. Therefore, while upgrades to the Zandvliet WWTW and by extension the Kuils River and its associated landscapes are deemed necessary to

societal goals of development (more often than not determined and imposed by society's elite), they have often resulted in the creation of sacrifice zones where lives (human, flora and fauna) are regarded as cheap and disposable in the interests of economic and political opportunity.

The upgrades to the WWTW raise a paradox through its infrastructure, an ontological oxymoron attempting to bridge timelines between the past, present and future (Lerner in Bullard, 2011). City planning in Cape Town was historically designed to provide services to an elite white and wealthy minority through infrastructure such as roads, water pipes, sewage removal pipes and power lines; the City offered limited services to people of colour. As such, wastewater and potable water infrastructures in the City were intended to serve a small populace on the overall grid, and waste was diverted to rivers and oceans with little thought about cumulative pollution levels over time. As Fanon (in Anand et al., 2018) argued, "The settler's town is a strongly built town, all made of stone and steel…. The native town is a hungry town, starved of bread, of meat, of shoes, of coal, of light", the disparity in services offered to spaces with white residents and black and coloured residents produced different versions of urban living. Homes in the wealthy areas of the Atlantic Seaboard, Southern Suburbs, West Coast and Northern Suburbs had effective sewer systems and had water piped into their homes, giving residents little cause to consider how water shaped their daily lives.

Residents in the lower income neighbourhoods, mostly located on the Cape Flats, had substandard infrastructure in the more formal areas, while informal settlements often had no water and sanitation services at all, placing different pressures on the environment and human health. The poor or non-existent infrastructure in lower income areas heightened residents' awareness of the precarity of water availability and waste removal, but also the symbolic meaning, where the lack of adequate infrastructure implied an impermanence (temporary stay in urban spaces for people of colour) and fostered an identity as second class citizens. As a contemporary example, Sandvlei is a predominantly coloured Muslim community and the nearby eastern section of Khayelitsha also affected by the Zandvliet WWTW is a black community. Most informal settlements in the city are not connected to the water and wastewater infrastructure, where wastewater infrastructure (or the lack thereof) is 'a sociomaterial terrain for the reproduction of racism' (Anand et al., 2018: 2), or what Ruth Wilson Gilmore (in Anand et al., 2018: 2) describes as 'the state-sanctioned or extra-legal production and exploitation of group-differentiated vulnerability to premature death'.

The racial necropolitics of Kuils River settlement patterns show that the infrastructure along the Kuils River is embedded with differentiated experiences, resulting in covert and difficult-to-prove cases of harm. Limiting the epistemics of harm to proof of direct causality, as required by the rhetorical statements of CCT political leaders and officials, enacts a form of necropolitics. Mbembe (2019: 66) describes necropolitics as the ultimate expression of power by a sovereign (or state), deciding who thrives and who does not. By exploring the necropolitics of the Kuils River, this paper reveals how exposure to chemical pollutants, poor and inadequate infrastructure and, sometimes, *too much* infrastructure along the river creates harmful spaces that are a perpetual threat to the well-being of people and the environment. These threats are experienced in covert and limiting ways, making it difficult to prove harm and giving the State the power to determine what should be deemed life threatening and what should not.

Mbembe uses the argument of necropolitics to extend Michel Foucault's (2010) notion of biopower, which expresses the power to control, manage and determine life. In the case of the Kuils River, biopower and necropolitics are manifest in the centuries of displacement of people of colour and the ongoing destruction of the environment, exposing communities (human and other-than-human) to hazardous landscapes through covert forms of violence. The violence enacted on such populations and multi-species communities is considered slow and subtle, often gaslighting its victims though a lack of catastrophic or spectacular evidence to demonstrate injury; infrastructure often invisibilises this harm (Nixon, 2011). Under the guise of development and the rhetoric of upgrading and improving urban river functions (and by extension citizens' lives), the paradoxical nature of the destruction of other lives and systems is not seen or is ignored. Upgrading the WWTW and, by extension, the stormwater drains, canals and gabions of the Kuils to improve its functioning as a conduit and transporter of waste beyond the city (a process from the past) has compromised the quality of life and well-being of people and the river in the present. The growth of the city necessitated the upgrade of the WWTW and Kuils infrastructure to deal with future problems, bridging the unequal service delivery of colonialism and apartheid to the rapid development and increased demand for service of the present and the population growth and climate change of the future. Spaces such as Sandvlei have become sacrifice zones that bear the burden of these upgrades in the contemporary moment (Lerner, 2010). By increasing the volumetric output, the city's resilience and waste management future planning has not taken into account its effect on the people and multi-species communities in close proximity to or reliant on the river.

Although infrastructure can be valuable and even essential for addressing basic human needs, technical approaches are often limited, and those who produce them are generally blind to the power embedded in them. They are presented as neutral approaches to addressing societal problems, failing to also account for infrastructure's conceptual and material capacities. As such, in the current moment the Kuils River presents as a paradox of infrastructural management, where technical responses to sewage and waste disposal problems are often incommensurate with addressing histories of (un)settlement, controlling the movement of people and the environment, unequal service provision and environmental justice in the everyday at grassroots level. With the advent of democracy and the inclusion of the majority of the population in service delivery and a focus on shifting to more sustainable cities, the place and role of the Kuils River as a necessary extension of Cape Town's waste infrastructure must be rethought. Coupled with growing climate uncertainty and the effects of the severe Cape Town drought in 2016/2017, infrastructural planning strategies for the future must include how the river is managed and interacted with and how it shapes everyday practices.

From Policy of Management to Policy of Connection

Safe water is critical for human and multi-species well-being, however, the dominance of neoliberal approaches to water management have often marginalised groups whilst creating policies that are biased towards the wealthy and powerful, enabling better access and control of resources for them (Enqvist & Ziervogel, 2019). The state of the Kuils River has impacted Cape Town citizens differently depending on race, class, gender and historical legacies, to name a few. Addressing the injustices experienced by residents living with the river has often required political negotiations, confrontations and protest. The responses from the City about the crises of pollution of the river have been controversial, such as the confrontation with academics raising awareness on the plight of the river and communities described above, the encounters with members of the Sandvlei community that were often felt as dehumanising, especially considering the long history of intentional neglect of black and coloured Capetonian's needs through colonial and apartheid rule carried into the way neoliberal governance has favoured the wealthy citizens in the supposedly democratic state. Water justice requires the recognition of water rights, as well as more democratic processes of participation in decision making concerning this natural resource and its ecosystems. Crises such as the pollution of the river are therefore not just about issues around quality and quantity, they are also about a 'crisis of governance' (Ziervogel et al., 2017). Governance approaches often linked to dominant ideas of what is considered as 'good governance', for instance, participation in liberalised markets, public participation and justice, however, conflicts

can arise when attempts to address injustices come up against other objectives such as increasing efficiency and cost recovery (Enqvist & Ziervogel, 2019). Priorities then become about keeping the system working.

River management in the city has overlooked the many ways of knowing and being with the Kuils River which I argue has peripheralised concerted efforts to rethinking the place and roles of rivers in the city. I believe that this occurred to the extent that key management strategies are unable to see critical issues that need to be resolved. Therefore, not only was it essential to highlight, in this paper, how river management in the city adopted a certain kind of 'seeing' and 'knowing' of the Kuils, which is characteristic of the modernist state (Linton, 2010), it can be argued that some state actors have become 'unseeing' in respect to relationality between water systems, human and multispecies communities and issues of justice, as they view their world through linear progressivist lenses adopted from Western modernity, to which the goal is the replication and application in a context that is very different to Euro-American waterscapes. What has not been considered are the local meanings embedded in Kuils River relations, nor have the exchanges, reciprocal and co-creative relationships people have with the landscape been considered in approaches to how to manage it.

Sandvlei deal with the pollution of the river, then struggle to prove the harm being caused because the emotions do not fit with the science. The number of *E. Coli* in a water sample collected on occasion, at one or two locations at a particular time of day carries more weight in techno-scientific governance, than the stories of illness told by Sandvlei community members because numbers are assumed to be free from bias, which they are not. The reliance on a particular way of knowing the river (i.e. through measurement and technicalities) allows for the ability to ignore the problem and harm, histories of injustice and extractive relations to the Earth and people of colour, since it does not fit with the science. But this is dehumanising and enacts violence on those that have to live with the Kuils. It breaks down relationships between people and the government, communities and the river. Understanding the number of E. Coli in the Kuils is an important tool for environmental governance, however, this should not be used to replace the experiences conveyed by communities. What this paper therefore calls for is for an environmental governance that goes beyond techno-scientific management to include relationships and experiences on the ground, to include care and well-being as the basis for how the river is managed rather than the sole focus on what Latour (2004) refers to as the 'gods of reason' in any centre-right knowledge economy, which are economic productivity, technical efficiency and scientific objectivity.

Thinking the river through its multiple relationships enables the ability to make links to the bigger picture, which is to create an environmental justice that can address injustices and the extractive relations of the past and present, environmental challenges of the Anthropocene era in the present and accountability to future generations, geologies and ecologies. It is therefore necessary to create spaces where transdisciplinary dialogue, grounded in everyday experiences of communities living with the river, can occur. People and multi-species communities need to be a part of the conversations of how their environments are managed. Operating in disciplinary silos, where we 'know more and more about less and less' is no longer viable, because the world we live in and the problems unfolding are not disciplinary: on the contrary, they traverse multiple lives, landscapes, boundaries and cultures.

Conclusion

Urban river management in the city is dominated by scientific and engineering approaches and solutions to water quality and quantity problems which emanate from what are claimed to be "objective" standpoints. However, these so-called objective approaches are not neutral, but are a result of a social, political and cultural imagination of the Kuils River as an extension of Cape Town's sewer network, and the interventions on the river are often geared towards making it work better by just attending to the technical aspects. When the river is presented as a singular unified object that exists in a landscape out there in 'nature' the river and surrounds are presented as "just space", taking it out of its relationships to people and multi-species communities. Drawing on one perspective of what the river is and what its role in the city is imagined to be, makes invisible the complex urban ecology in which service delivery protests are many, infrastructure is failing, wetlands and biodiversity are declining, the climate is changing and new forms of chemicals are entering into the environment. What this demonstrates and what this paper argues is that the river is not one single thing, it is multiple because it is constantly making, unmaking and shifting relationships through landscape alteration, and acquires different meanings depending on context, time and how it is interacted with. This paper therefore calls for is a paradigm shift in the way the Kuils River is managed and governed, to make space and acknowledge the multiple and varied relationships that exist with it. What is needed is much more than perfunctory 'stakeholder engagement' to understand the multiplicity of relationships, or limiting focus to managing risk and being reactive to environmental disasters. Rather, the goal should be the development of more democratic, evidence-based, big-picture thinking, problem-solving scholarship, governance and engagements to support river relations in the context of the Anthropocene era.

Acknowledgments:

This work is drawn from the PhD dissertation which was supported by the Water Research Commission and The National Institute for Humanities and Social Sciences. The PhD dissertation was supervised by Professor Lesley Green, director of the Environmental Humanities South Programme, Department of Anthropology, University of Cape Town. My sincere gratitude to Kuils River communities of Sandvlei, Sarepta, Durbanville, Khayelitsha and Kuils River for opening up their homes and sharing their stories to make this research possible.

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