The Critique of Everyday Drought: A Feminist Decolonial Analysis of Hydro-Climate Policies in Cape Town, South Africa

Meera Vani Karunananthan

A thesis submitted to the University of Ottawa
in partial fulfillment of the requirements for the
Doctorate in Philosophy degre

Department of Geography, Environment and Geomatics
Faculty of Arts
University of Ottawa

Acknowledgements

I would like to begin by expressing my gratitude to my supervisor, Luisa Veronis, for her guidance, as well as to my thesis advisory committee for their insightful feedback. I am especially fortunate to have benefited from the contributions of trailblazing feminist scholars: Chandra Talpade Mohanty, who served as my advisor, and Beverley Mullings, my external examiner.

I am truly grateful to Faeza Meyer, Ebrahiem Fourie, and the comrades of the African Water Commons Collective in South Africa for their collaboration on this project and beyond. This research would not have been possible without Koni Benson, who grounded my work in Cape Town through her intellectual guidance, invaluable logistical support, and labour of care. I have also benefited greatly from the insights of Cape Town water justice scholars Greg Ruiters, Brian Kamanzi, Anna James, and Suraya Scheba.

I am tremendously fortunate to have been nurtured and inspired over many years by the water justice community, including Marcela Olivera, Adrian Murray, Leonard Shang-Quartey, Miriam Planas, Dante Machio, David Hall, Dinesh Suna, Javier Marquez, Fatou Diouf, David Sanchez, Claudia Campero Arena, Reza Muhammad, Sigit Budiono, Adriana Marquisio, Oscar Olivera, Maude Barlow, Leo Heller, Pedro Arrojo and the many comrades of La Red Vida, the African Water Justice Network, the European Water Movement, and the People's Water Forum.

My heartfelt thanks go to the brilliant friends who have generously offered their guidance and support over the years, including Lynda Collins, Natasha Bakht, Laila Malik, Lucy Trew, Stuart Trew, Carleen Pickard, Susan Spronk, Patti Lenard, Brent Patterson, and Suren Moodliar.

I owe a lifetime of gratitude to my parents for their unwavering love and encouragement; to Sathya and Guru, for sharing the weight of daily life in countless ways to make space for this work; to Rasan Anna, for his steadfast support; and to Divya and Shakti, for being constant sources of joy.

My deepest gratitude goes to Aneel, who makes everything possible, and to Ovya, who has been the bright light through this long tunnel.

This research was made possible by the SSHRC Doctoral Scholarship, the Aileen D. Ross Fellowship, and the Global Affairs Canada/SSHRC International Policy Ideas Challenge award.

Table of Contents

ACKNOWLEDGEMENTS **II**

RESEARCH OBJECTIVES AND QUESTIONS **5**
PERSONAL CONTEXT **6**
HOUSING, LAND AND WATER FROM COLONIAL TO POST-APARTHEID SOUTH AFRICA 9
INTERSECTIONS OF HOUSING AND WATER ACCESS IN CAPE TOWN 14
EPISTEMIC TENSIONS **16**
EPISTEMIC SEGREGATION 16
Citational orthodoxies 16
Disciplinary boundaries in political ecology 18
SINGLE AUTHORSHIP 22
CLASHING TEMPORALITIES OF KNOWLEDGE PRODUCTION 24
NETWORKED KNOWLEDGE: A PATHWAY FOR SOLIDARITY-BASED RESEARCH **27**
THE NETWORK AS EPISTEMIC COMMUNITY 29
Authorship 30
MUTLI-SCALAR AND MULTI-SITED POLITICAL ECOLOGY 31
TEMPORALITIES OF NETWORKED COLLABORATIONS 32
METHODOLOGY: EXCAVATIONS OF THE HIDDEN CITY OF SOCIAL REPRODUCTION **33**
CRITICAL PEDAGOGY AS EXCAVATION 34
CRITICAL POLICY ANALYSIS 37
RACE TERMINOLOGY 39
OUTLINE **40**

CHAPTER 1: "SEEKING A NOW THAT CAN BREED FUTURES": CRITICAL TOPOGRAPHIES OF HYDRO-CLIMATIC RESILIENCE IN CAPE TOWN, SOUTH AFRICA **43**

INTRODUCTION **43**
CONTEXT **45**
CONCEPTUAL TOPOGRAPHIES **46**
POLITICAL ECOLOGIES OF RESILIENCE 46
RESILIENCE POLICIES AS A CATALYST FOR SPATIO-TEMPORAL FIXES 47
RESILIENCE PLANNING AS A TOOL OF RACIAL FINANCE CAPITALISM 48
BLACK FEMINIST POLITICAL ECOLOGIES 49
METHODOLOGY **50**
RESILIENCE PLANNING IN CAPE TOWN **50**
SPATIO-TEMPORAL RUPTURES IN EVERYDAY LIFE **53**
SPATIO-TEMPORAL RUPTURE 1: EXPANDED SPATIO-TEMPORALITIES OF SOCIAL REPRODUCTION 53
SOCIO-SPATIAL RUPTURE 2: THE DISTANT BIG BROTHER 58
SPATIO-TEMPORAL RUPTURE 3: AHISTORICAL FUTURES 61
Embodied apartheid histories 62
DISRUPTURES OF RACIAL CAPITALIST TIME-SPACE **66**
RECLAIMING TIME 67
BUILDING COMMUNITY AND GEOGRAPHIES OF SOLIDARITY 67
POLITICAL POWER 68

REVOLUTIONARY FUTURES 68
CONCLUSION 69

CHAPTER 2: SUSTAINABLE DEVELOPMENT, CLIMATE RESILIENCE AND THE TECHNOLOGIES OF WATER APARTHEID 71

INTRODUCTION 71
WATER JUSTICE LITERACIES 73
TECHNO-FINANCIAL FIXES 76
MATERIAL CULTURES OF FINANCIALIZATION 77
RACIAL CAPITALISM 78
METHODOLOGICAL APPROACH 80
NEW STREAMS FOR PRIVATE CAPITAL 80
TRANSFORMING RISK PORTFOLIOS WITH BLENDED FINANCING 81
INNOVATION, MARKET SEGMENTATION AND DIFFERENTIATED ACCESS 85
WATER INSECURITY AND CLIMATE RESILIENCE 87
THE CASE OF CAPE TOWN 89
CONCLUSION 95

CHAPTER 3: WATER FOR BREAD AND WATER FOR ROSES: CONTOURS OF A FEMINIST DECOLONIAL HUMAN RIGHT TO WATER 96

INTRODUCTION 97
CONTEXT: WATER POLITICS IN CAPE TOWN 98
A CLASH OF HEGEMONIC VS COUNTER-HEGEMONIC RIGHT-TO-WATER PRACTICES 98
WATER RESTRICTION TECHNOLOGIES 99
THE MULTI-SCALAR POLITICS OF RESILIENCE PLANNING 100
THEORETICAL DEBATES OVER THE HUMAN RIGHT TO WATER 101
THE RIGHT TO WATER IN FEMINIST LEGAL THEORY 105
METHODOLOGY AND POSITIONALITY 106
DISCUSSION: FEMINIST PLACE-BASED EPISTEMOLOGIES 107
GROUNDED NORMATIVITY 108
HOUSEHOLDS VS. WEBS OF CARE 109
DECOLONIAL POLITICAL ECOLOGIES AND A BLACK SENSE OF PLACE 111
New green enclosures 112
A black sense of place 113
ABOLITION GEOGRAPHIES 114
Resilience or organized abandonment? 116
Charting Abolition Geographies through Water Justice 117
CONCLUSION 118

CONCLUSION 119

SYNTHESIS OF FINDINGS 120
SEEKING A NOW THAT CAN BREED FUTURES: CRITICAL TOPOGRAPHIES OF HYDRO-CLIMATIC RESILIENCE IN CAPE TOWN, SOUTH AFRICA 121

Sustainable development, climate resilience, and the technologies of water apartheid 121
Water for bread and water for roses: Contours of a feminist decolonial human right to water 122
Key contributions **122**
Limitations **124**
Avenues for future research **125**
References **127**

Abstract

This dissertation offers a feminist decolonial analysis of the power dynamics shaping urban hydro-climate policies in the context of a growing push by the World Bank and other powerful actors to create new opportunities for water-related private investments in the global South. Drawing from the emblematic case of Cape Town, South Africa, this research demonstrates the ways in which finance-driven reforms aimed at making the urban water system more resilient to climate change are intensifying the exploitation of historically marginalized populations – in this case black women living in precarious housing conditions in townships and informal settlements.

My investigation into Cape Town's deepening entanglements with global finance through climate/water resilience strategies foregrounds the experiences of women organizing for water justice in the underserviced margins of the city. To do so, I adopted a collaborative feminist approach combining qualitative field research with critical policy analysis. I conducted 43 semi-structured interviews with women organizers and participated in meetings and events organized by grassroots networks over the course of two visits to Cape Town in 2018 and 2019. The findings of this ethnographic research then shaped the parameters of a critical policy analysis in which 21 documents (technical reports, strategic plans, etc. produced by the City of Cape Town and various public-private policy institutions) were examined with the day-to-day experiences, acts of resistance and aspirations of frontline women in mind.

Building theory from 'situated solidarities' and through the prism of 'a black sense of place', I argue that water/climate resilience policies claiming to modernize or "future-proof" the City have further entrenched apartheid geographies of social reproduction in Cape Town. By centering marginalized perspectives, this study contributes to feminist efforts towards the heterogenization of urban political ecology.

Résumé

Cette thèse propose une analyse féministe décoloniale des dynamiques de pouvoir qui façonnent les politiques hydro-climatiques urbaines dans le contexte d'une pression croissante de la Banque mondiale et d'autres acteurs puissants pour créer de nouvelles opportunités pour les investissements privés. S'appuyant sur le cas emblématique du Cap, en Afrique du Sud, cette recherche montre comment les réformes financières visant à rendre le système hydraulique urbain plus résistant au changement climatique intensifient l'exploitation des populations historiquement marginalisées, en l'occurrence les femmes noires vivant dans des conditions de logement précaires dans les townships et les zones d'habitat informel.

Mon enquête sur les liens entre la ville du Cap et la finance mondiale par le biais de stratégies de résilience hydro-climatique met en avant les expériences des femmes vivant à l'intersection de la race, de la classe et de l'oppression fondée sur le genre dans les marges mal desservies de la ville. Pour ce faire, j'ai adopté une approche féministe collaborative combinant l'analyse critique des politiques et la recherche sur le terrain. J'ai mené 43 entretiens semi-structurés et participé à des réunions et des événements organisés par des réseaux de base au cours de deux visites au Cap en 2018 et 2019. Cette recherche ethnographique a influencé les paramètres d'une analyse critique des politiques dans laquelle 21 documents ont été évalués en gardant à l'esprit les aspirations quotidiennes des femmes de première ligne.

Cette étude contribue à l'hétérogénéisation de l'écologie politique urbaine, qui a été dominée par les perspectives du Nord. En élaborant une théorie à partir de "solidarités situées" et à travers le prisme d'un "sens noir du lieu", je soutiens que les politiques de résilience en matière d'eau et du changement climatique, qui prétendent préparer la ville pour l'avenir, ont renforcé les géographies de reproduction sociale de l'apartheid au Cap.

Introduction

After inquiring about my research, an acquaintance in Ottawa commended my choice of city. "Cape Town is one of the nicer parts of South Africa" he said, "It's not like Johannesburg." The comparison reminded me of a visit in July 2019 to the Siqalo informal settlement in the Cape Flats area of Cape Town. The settlement had grown from a few shacks at the end of 2011, when people began to occupy privately owned land near the township of Mitchell's Plain situated 32 km outside the city centre (Etheridge 2018). Today, it is home to approximately 10,000 residents. The visit was part of a national gathering organized by the Housing Assembly in Cape Town, a network of housing rights activists living in precarious housing conditions in the outskirts of the city. The Housing Assembly's "Political School" was attended by activists from all over South Africa. The dozen or so activists visiting Siqalo were mostly residents of informal settlements in Cape Town and other South African cities, including Johannesburg, Durban, and George. We were accompanied by two residents of Siqalo.

I was struck when someone noted: "Those who say Cape Town is clean and beautiful compared to Johannesburg must see this. Johannesburg's informal settlements are much better than the informal settlements here." He pointed to a large mound of waste, at least four feet high and surrounded by shacks. Others agreed as we walked through paths flooded with putrid-smelling water, strewn with garbage, and likely contaminated with raw sewage. Toilets were crowded awkwardly together at the edges of the settlement, making their access cumbersome and even dangerous, especially for women at night.

City representatives have justified their failure to provide adequate services by arguing that the municipal government is prohibited from building infrastructure on private land (Furlong 2016). Both the City and Western Cape provincial government have refused to purchase the flood-prone land from private owners claiming it is unsuitable for housing (Ground Up 2018). Meanwhile, regular protests for access to electricity have sparked conflicts with neighbours in the township of Mitchell's Plain (ibid.)

Waste disposal arrangements in Siqalo are dreadfully inadequate. We encountered two women residents who were paid by the city to move waste into large containers that were collected on a weekly basis. This was part of a short-term employment scheme—a six-month contract without benefits. It is physically demanding and ultimately futile work. There are no designated areas for waste disposal for residents and storing waste in overcrowded shacks is not an option. As a result, waste is dumped everywhere. Since South African municipalities are increasingly failing to meet national waste management standards in informal settlement, this has become a growing problem (Haywood et al. 2021). The women are deeply concerned about the hazardous nature of their work. "They do not give us gloves or masks," one woman told us before being interrupted by violent coughing. "TB!" she declared and laughed, as if joking, to emphasize her point about their working (and living) conditions.

Tuberculosis (TB) is the leading cause of natural death in South Africa (Statistics South Africa 2018). According to the World Health Organization, "unsanitary living conditions" significantly increase the risk of TB, which is among a host of diseases that are much more prevalent among poor racialized South Africans. Diarrhea, which accounts for 20% of deaths under the age of five, is directly related to access to water and sanitation. Premature death, Ruth Wilson Gilmore (2002: 16) explains, is a defining feature of racism which "pushes disproportionate costs of participating in an increasingly monetized and profit driven world onto those who, due to the frictions of political distance, cannot reach the variable levers of power that might relieve them of those costs."

In Cape Town, residents of informal settlements unable to safely access public toilets often use buckets at night despite the lack of options for the safe disposal of their contents. Indignation for the "bucket system" has become an important symbol of the struggle for dignity in post-Apartheid South Africa (McFarlane and Silver 2016). In the 2015 #RhodesMustFall protests to decolonize higher education, University of Cape Town students dumped a bucket of feces on a bronze statue of 19th century British imperialist Cecil Rhodes demanding its removal from campus (Tharoor 2015). Protesters have also dumped human waste at the Cape Town International Airport and the steps of the legislature and other symbolic sites (Baxter and Mtshali 2020).

Sewage overflow is a persistent problem for people living in the Cape Flats due to substandard infrastructure (Cawe 2021). At one point during our walk in Siqalo, we encountered four small children splashing gleefully in the puddles of water. As the mother of a small child, it felt to me like the familiar sight of a quintessential childhood pleasure until I realized how unsafe it was. A woman in our group wasted no time in shooing them out of the water in isiXhosa. The children, perhaps a little startled by the scolding from a stranger, complied immediately. I was reminded of heartbreaking conversations with mothers in informal settlements about the dangers their children faced daily as they played around raw sewage, open sewers and piles of debris.[1] I looked back at the children as we walked away and sure enough, they were back in the puddles. Who could blame them? There was not a playground in sight.

Later in the walk, we stopped to talk to a woman standing at a communal standpipe, waiting for her 20-litre bucket to fill with water. She complained about how far she needed to walk to fetch water from a tap that trickled painfully slowly into her bucket. It is a dehumanizing experience to stand at a tap waiting for a bucket to fill. This was a recurrent theme in my conversations with women living in precarious housing. The South Africa government reports that 93% of the population has access to clean drinking water (South African Government News 2019). However, the frustrations and physical hardship of women involved in the daily labour of reproducing life in these vastly deficient makeshift communities are not accounted for in the statistical data that declares South Africa an African success story in access to water and sanitation.

Siqalo is a far cry from my acquaintance's experience as a traveler to Cape Town. The city's

[1] In 2018 I had visited the informal settlement in Vygieskraal where parents had been complaining for years about children getting diarrhea from playing near a large open canal. The canal running through the settlement was foul-smelling and filled with all manner of trash. Yet when questioned by the media, a city councillor who sits on the Mayoral committee for health dismissed concerns and claimed the incidents of diarrhea were unrelated to the condition of the canal (Villette 2016). In 2017, the councillor representing the ward, told the media the City planned to educate residents about "pollution and the consequences" (IOL online 2017, par. 5). Residents argue that the waste collection system falls far short of community needs (ibid). In 2020, residents of Vygieskraal encountered their worst nightmare when an eight-year-old child who fell into the canal while playing with friends and the neighbour who jumped into save her both died (Lee-Jacobs 2020). The grieving parents are now urging for the canal to be covered in order to prevent future fatalities.

lucrative tourism industry relies on an idealized image of Cape Town as one of Africa's most coveted holiday destinations emphasizing its pristine natural landscapes, opulent and trendy hotels (see Forbes 2013, Cape Town Magazine 2019), but ignoring the violent history of its foundation. Places like Siqalo are either overlooked altogether or repackaged for niche market of "slum tourists" with a penchant for grittier, more "authentic" or ostensibly ethical experiences (Huysamen et al. 2020).

This doctoral dissertation is the culmination of nearly 15 years of water justice activism, advocacy, and research in collaboration with activists in South Africa and around the world. Before delving into a discussion of my research topic and questions I begin with this visit to Siqalo as a window into the context out of which this dissertation emerged. I highlight the distortions and erasures that are prevalent in epistemologies of the urban to emphasize the need to center knowledge produced in the urban margins within sites of struggles and spaces of solidarity. The vignette also offers a glimpse into the rich practices of critical pedagogy (1983 Freire) and grassroots collective knowledge production that have guided my work as a scholar working from within social movements.

The politics of alliance, argues Nagar (2014: 23), are about making oneself radically vulnerable through trust and critical reflexivity, […] to open ourselves to being interrogated and assessed by those to whom we must be accountable." In this spirit, I begin this dissertation by sharing my journey towards the creation of a finite, individual product within the disciplinary and institutional constraints of academia while attempting to do justice and remain accountable to complex collective processes of shared knowledge production that are constantly evolving. In the following sections, I discuss the theoretical and methodological choices that emerged from my personal challenges in translating collaborative activism and a commitment to solidarity into a research agenda

Compelled by criticisms of Black, Indigenous and People of Colour (BIPOC) scholars regarding the paralysis created by perfunctory performances of feminist standpoint theory (Nagar 2014), I set the context for my research in a self-reflexive overview of my methodological and theoretical choices. In so doing, I endeavour to disrupt distinctions made between methodology and theory

while also going beyond an identity-based practice of reflexivity by engaging more explicitly with the "economic, political and institutional processes and structures that provide the context for the fieldwork encounter and shape its effects" (Nagar 2014: 84).

Research objectives and questions

A primary objective of this dissertation is to investigate the multiscalar production of neoliberal hydro-climate politics in Cape Town, South Africa, as a site of gendered, classed and racialized struggle. My second objective is to further the efforts of feminist scholars to heterogenize urban political ecology by centering marginalized experiences (Reddy 2021, Peake 2016, Pulido 2016). More specifically, I critically analyze urban water and climate policies that have emerged in the aftermath of the Day Zero crisis by centering a 'black sense of place', which Katherine McKittrick (2011:949) explains, "can be understood as the process of materially and imaginatively *situating* historical and contemporary struggles against practices of domination *and* the difficult entanglement of racial encounter." My research locates a black sense of place in black women's individual and collective resistance to water restriction technologies and the alternatives emerging out of these struggles. Thirdly, by building theory from relationships of solidarity, I aim to support the efforts of frontline communities and translocal networks seeking just and equitable hydro-social futures while making a methodological contribution to feminist solidarity-based research.

My research is guided by the following questions:

What are the power dynamics shaping urban climate adaptation and drought management policies in Cape Town?
What are the gendered, racialized and class-based implications of hydro-climate policies that have emerged in the aftermath of Day Zero?
How do emerging trends in neoliberal climate adaptation conflict with the aspirations of those at the frontlines of struggles for water justice?
How are frontline women organizing against neoliberal hydro-climate policies in Cape Town and what are the feminist decolonial alternatives emerging out of these struggles?

In the following sections of this chapter, I present the personal and socio-political contexts that have shaped this work. Next, I discuss the theoretical framework underpinning this research in two parts. First, I discuss epistemic tensions encountered in my journey to reconcile water justice activism with academic research. In the second part, I present my analysis of "networked research" as a pathway towards solidarity-based research. I then describe my methodological approach and outline two methodologies of "excavation" that guide my analysis – critical pedagogy and critical policy analysis. Lastly, I conclude with a discussion of the relevance of my research and an overview of the chapters.

Personal context

In 2011, I began working with South African water justice groups through the Blue Planet Project (BPP) – a global project initiated by the Canadian NGO, the Council of Canadians (Council of Canadians n.d.) to support struggles against water privatization around the world. In 2014, this work took me to Cape Town, where I was introduced to a group of community activists by Koni Benson, a feminist historian and activist researcher currently based at the University of Western Cape.

The group was seeking to understand a new metering system being introduced in Mitchell's Plain where they lived and other townships throughout the city. While the Central Business District (CBD) and surrounding leafy suburbs are comparable in standard of living and modern amenities to any European or North American city, the majority of racialized Capetonians live in the townships or segregated, underserviced neighbourhoods built by the apartheid regime in the low-lying surrounding outskirts known as the Cape Flats.

The municipal government refers to these meters as "Water Management Devices" (WMDs). They were designed to shut off water once a household had consumed a daily amount of 350 litres. Community activists found this amount to be grossly inadequate, especially given the large household sizes in neighbourhoods where these systems were being installed. WMDs were part of a demand management strategy specifically targeting segments of the population who were unable to pay service fees.

Soon thereafter, from 2015 to 2018, a severe drought hit South Africa's Western Cape region, leading to critical water shortages in municipal water dams. By 2017, water levels in city dams dropped to 20% and Cape Town announced the possibility of a "Day Zero"— the day water levels would drop to 13.5% (Millington and Scheba 2021). Taps would be shut off, forcing four million residents to queue for water at public distribution points (Millington and Scheba 2021). To prevent this scenario, the city introduced drastic measures limiting water consumption to 50 litres per person per day at the height of the crisis in February 2018 (SA Government Agency News 2018).

Community activists feared a major setback in their decades-long struggle for decent housing and access to municipal services. They worried that the city would use the pretext of a catastrophic drought to ramp up water consumption restrictions for those living in the economically depressed outskirts. In media statements the mayor had announced new punitive tariffs, and ramping of efforts to have WMDs installed (De Lille 2017, De Lille 2018). She had also warned that those who did not cooperate would be coerced into doing so (ibid).

By the end of the crisis, the Mitchell's Plain community activist group had expanded into a new network of water activists across the city's townships and informal settlements—the African Water Commons Collective (AWCC). The AWCC supports the formation of "water action committees" through which community organizers could document water issues and develop collective strategies to address them. In 2017, the Blue Planet Project contributed funding for transportation enabling community activists to host a city-wide meeting, which resulted in the formation of the Cape Town Water Crisis Coalition to demand greater transparency in the city's drought response measures (Murray 2020).

I joined the coalition's Facebook group to follow discussions from afar before eventually traveling to Cape Town in August 2018, after the threat of "Day Zero" subsided, to support a roundtable discussion on the increasing neoliberalization of water policy and the influence of international actors. The historic drought galvanized global multi-stakeholder bodies, including private banks and multilateral financial institutions, who targeted Cape Town for climate adaptation and drought management initiatives (Bigger and Millington 2019, Millington and

Scheba 2021). Having studied the role of international financial institutions and corporate-driven multistakeholder bodies in influencing water policy in the global South, I began to investigate the web of international actors involved in Cape Town's water and climate adaption strategies as part of my collaboration with frontline activists. These efforts eventually paved the way for a formal PhD dissertation.

Some will recognize the title of this dissertation, "Critique of Everyday Drought" as a play on the title of French sociologist Henri Lefebvre's (1991) three-volume oeuvre, *Critique of Everyday Life*. It was in fact inspired by a statement by Ebrahiem Fourie, a community organizer and a founder of the African Water Commons Collective, who argued at a meeting that from the day he was born, every day had been "Day Zero" for him. Extreme water restrictions were not an emergency measure to tolerate for a few weeks or even a few months, they had become a way of life. His statement was a call to politicize our analysis of drought and drought measures, by emphasizing differentiated experiences. The title is also a reference to the feminist politics of scale, which center the "everyday" as a site of gendered struggle, theoretical analysis and revolutionary praxis (Peake 2016). The title connects three intellectual streams underpinning my research: critical pedagogies, feminist materialism, and feminist urban political ecology. I now turn to the theoretical foundations that animate my work.

Socio-political context

This doctoral research is grounded in solidarity with Cape Town communities resisting water restriction technologies. Aligning with a feminist perspective, I examine these technologies as sites of gendered, racialized, and classed struggle within the realm of social reproduction. By focusing on everyday resistance, I present a contextually rooted analysis of global policies that exacerbate the exploitation of Black women in precarious urban peripheries. In this section, I provide an overview of the intersecting dynamics of land tenure and segregated housing settlements linking contemporary water justice struggles to colonial histories.

Housing, land and water from colonial to post-apartheid South Africa

Housing and land tenure in South Africa are historically tied to patterns of racialized dispossession and segregation that persist into the post-apartheid era and impact access to basic services including water and sanitation. As Neville Alexander (2013) explains land dispossession by colonial and apartheid regimes were instrumental in establishing the economic power of South Africa's white minority. The Natives Land Act of 1913 prohibited black South Africans from owning or occupying land outside designated "native reserves," which constituted only about 7% of the country's land (Feinberg 1993, Alexander 2013). The Act established legal segregation in land ownership and reinforced economic and social disparities. According to Alexander (2013), the limited access to communal land through the reservation system provided a modest means of subsistence subsidizing cheap black labour for mining and agriculture.

Over time, population growth and land degradation eroded the wage subsidy function of reserves, forcing black workers to migrate to cities (ibid). Conditions were worsened by water policies including the 1912 Irrigation and Conservation of Water Act and the 1956 Water Act, which favoured water access for white farmers and further restricted access to non-white populations (Jegede & Shikwambane 2021).

Urban migration coincided with the needs of a growing manufacturing industry that required a more stable semi-skilled labour force after World War II (ibid). The growth of black urban settlements in this period heightened racial tensions and placed an unanticipated strain on urban infrastructure, including water and sanitation services (Miraftab 2012). The 1950 Group Areas Act, a legal cornerstone of the apartheid system, expanded the previous system of spatial segregation by forcibly relocating non-white populations from cities to designated townships or underserviced neighbourhoods in the urban peripheries (Maylam 1990, Benson 2016). During the apartheid era, from 1948 to 1994, the ruling National Party implemented elaborate state welfare programs for white populations while denying adequate access to basic services including water and sanitation in townships (Seekings, 2020; Jegede & Shikwambane 2021).

Although the African National Congress (ANC) government came to power in 1994 on promises of land redistribution and affordable housing, World Bank-promoted neoliberal reforms since the 1990s have undermined these commitments (Miraftab, 2006; Bond et al., 2007; Dugard, 2011). Thus modest attempts to repair the social inequities produced by apartheid have been slow and insufficient. Black South Africans remain relegated to insecure housing on the underserviced city's outskirts (Scheba, 2022; World Bank, 2022).

Among other constraints, the ANC government inherited $25 billion in debt from a racist welfare state that had built generous social programs exclusively for white South Africans (Bond & Malikane, 2019, Seekings 2020). Instead of rejecting this debt through Odious Debt Litigation, the ANC turned to the Growth, Employment, and Redistribution (GEAR) strategy, prioritizing foreign investment and privatization (Bond & Malikane, 2019; McKinley, 2016; Tsheola, 2002). Strict budget controls, encouraged by the World Bank, IMF, and USAID, undermined post-apartheid redistribution, while corporate tax rates remain among the world's lowest (Bond & Malikane, 2019). In the post-apartheid era, social spending as a share of GDP has ranged from 5-8 percent of GDP, far below the 22 percent average in the world's largest economies and grossly inadequate for achieving the redistributive measures required to ensure a dignified life for historically marginalized populations (Bond and Malikane 2019).

Nearly thirty years after the end of apartheid, housing and land tenure insecurities remain emblematic of structural inequality, with racialized communities in precarious housing facing heightened struggles for reliable access to water and sanitation. Statistics South Africa estimates 2,700 informal settlements across the country, which are characterized by inadequate formal infrastructure and lack of access to basic services such as water, sanitation, and electricity. The growth of informal settlements reflects challenges related to rapid urbanization, migration, and a persistent housing backlog. According to official estimates, 13.6% of the population representing about 1.6 million households live in informal housing (Statistics South Africa, 2022).

The term "precarious housing" is used in this thesis to capture a much larger percentage of the population residing in inadequate conditions, including those living in overcrowded homes, shoddily built structures or government-supported temporary shelters, which are not reflected in

statistics on informal housing (Maratlule,2021). The notion of precarity also includes those living in unaffordable housing (ibid). As women interviewed in this study highlight, housing unaffordability is exacerbated by escalating debts incurred by households unable to keep up with their water bills. Chapter 1 elaborates on the gendered impacts of inadequate access to reliable, affordable and sufficient water supplies for women living in precarious housing conditions.

The ANC housing program, launched with the promise of redressing apartheid's socio-economic deprivations, has faced criticism for entrenching spatial segregation through construction of housing far from the city core, often in areas lacking adequate infrastructure (Huchzermeyer 2003). Although the national government had released funds for the construction of 4 million state-funded homes by 2014, only 1.5 million were officially registered (Levenson 2017). In addition to the ANC's adoption of neoliberal austerity measures that have resulted in inadequate funding allocation to match historical circumstances and growing population needs, South Africa's housing crisis is attributed to gross mismanagement and the reliance on a private housing industry that has resulted in shoddy and incomplete implementation of housing construction plans (Levenson 2017).

Other scholars have noted the national government's failure to implement an adequate land redistribution strategy to confront apartheid-era patterns of land ownership (Duncan 2008). The lack of public land for the construction of housing is exacerbated by urban development strategies that prioritize economic growth priorities over the social reproduction needs of historically marginalized communities, as will be discussed in Chapter 3.

Under the 2000 Municipal Systems Act, integrated post-apartheid municipalities became responsible for the financing and provision of water, sanitation and other essential services. The act required municipalities to implement full cost recovery for public services – a policy heavily promoted by the World Bank throughout the global South (Visser et al., 2003; Ruiters, 2007). Full-cost-recovery financing shifts operational and maintenance costs to users via tariffs, often pricing services beyond the reach of marginalized populations (Gualtierri, 2007; Fall et al., 2009). The 1996 South African Constitution guarantees water, housing, and sanitation as human rights, but devolution of power and cost recovery requirements have exacerbated the tensions

between fiscal solvency and service equity in post-apartheid governance (Dugard, 2011; Ruiters, 2007; Scheba, 2022). In 2001, a cholera outbreak in the province of Kwazulu Natal, spurred the national government to enact the Free Basic Water Policy to ensure access to lifeline supplies for vulnerable populations (Anti-privatization Forum 2004). Yet without sustainable public financing to match growing needs, municipalities have turned to administrative and technological strategies to limit access and control costs (Ruiters 2016).

The World Bank (2022) ranks South Africa as the most unequal country in the world based on the wealth distribution. Blaming the situation on "legacies of apartheid" rather than on post-apartheid macro-economic policies promoted by its own initiatives in South Africa, the World Bank argues that race remains the most important driver of inequality more than 20 years after the transition to democracy with the top 10 percent owning 71 percent of wealth, while the bottom 60% holds a mere 7%. Table 1 offers an overview of national policies discussed in this section for their role in contributing to contemporary land and water struggles in South Africa.

Table 1: Overview of key policies regulating access to land and water

1912	Irrigation and Conservation of Water Act	Linked water rights to land ownership automatically excluding Black populations prohibited from owning land under the Natives Land Act.
1913	Natives Land Act	Prohibited Black South Africans from owning or occupying land outside designated "native reserves."
1950	Group Areas Act	Established apartheid system through forcible relocation of non-white populations into townships in underserviced peripheral areas.
1956	Water Act	Consolidated water rights of white farmers.
1994	Reconstruction and Develop Program (RDP)	The ANC's comprehensive strategy for poverty eradication, which included a plan to build 1 million houses within its first 5 years. The plan was scrapped within 2 years and replaced with the GEAR in 1996.
1996	Constitution of South Africa	Introduced a new Bill of Rights guaranteeing socio-economic rights, including the rights to housing and water.
1996	Growth, Employment and Redistribution (GEAR)	Replaced RDP with a market-oriented strategy prioritizing trade liberalization, austerity and privatization.
2000	Municipal Systems Act	Operational framework outlining administrative duties, service responsibilities and financial management requirements of post-apartheid municipalities.
2001	Free Basic Water	Introduced free basic lifeline supplies of water.

Intersections of housing and water access in Cape Town

Cape Town is widely regarded as the most unequal and spatially segregated city in South Africa (Turok et al., 2011). Its informal housing rates are among the highest in the country and patterns of residential segregation have not shifted significantly since the apartheid era. The city's white minority reside in the well-serviced city centre and its wealthy Southern suburbs, while historically marginalized non-white populations reside predominantly in underserviced and increasingly informalized townships (Turok et al,2011, Sheba and Turok, 2020) which are located in a low-lying area Southeast of the city centre known as the Cape Flats.

Statistics South Africa (2022) estimates that one fifth of the population of Cape Town dwells in informal housing compared to 15-18% in Johannesburg and 12-15% in Pretoria. The vast majority of Cape Town's informal settlements have developed in and around the Cape Flats (Cinnamon and North 2023). In 2015, there were 450,000 families on Cape Town's housing waiting list, yet the City has been cracking down violently on land occupations by a growing number unhoused populations with nowhere else to go (Benson and Meyer, forthcoming). There has also been an increase in informal backyard dwellings on formal properties giving rise to a proliferating informal rental market in the outskirts of the city that is overlooked in official data (Scheba and Turok, 2020).

Critical scholars have noted the role of Cape Town's real estate driven urban development agenda in entrenching apartheid spatial inequalities (Bond, 2000; Miraftab 2006; Scheba and Turok, 2020). With property values in Cape Town consistently ranking highest among South African cities (Lightstone Property 2024), the municipal government relies on property taxes from predominantly white affluent neighborhoods (Scheba, 2022). As a result, spatial planning, infrastructure and service delivery priorities in the post-apartheid era have aligned with the needs of real estate and tourism industries rather than the more urgent needs of those living in underserviced outskirts of the city (Miraftab 2006). In Chapter 3, I will discuss tensions between housing needs, land tenure, and the City's ecological restoration initiatives driven in part by an impetus to develop eco-tourism under the banner of resilience planning.

Policies emerging out of the "Day Zero" crisis in 2018 further exemplified this disparity, as long-term shifts in the delivery of water and sanitation services have disproportionately affected historically marginalized communities living in precarious housing conditions (Scheba 2022). Water Management Devices (WMDs) are discussed in this thesis as a focal point of resistance to inequitable water access in Cape Town. Until Day Zero, these devices primarily targeted low-income residents in townships. When wealthy households faced installation due to excessive water use, activists argued this merely served to justify WMDs as tools to punish perceived delinquency, disproportionately impacting working-class residents.

The Day Zero crisis simplified a complex convergence of financial, social, and ecological factors. In reality, Cape Town's water crisis cannot be disentangled from its colonial and racial capitalist roots. Water resources were historically allocated to white landowners, and despite legal reforms to address this imbalance, apartheid-era access patterns remain largely unchanged. Neoliberal reforms administered by the national government in the 1990s under the directive of international financial institutions paved the way for the urban water system's deepening entanglements with global finance capital in recent years.

The following chapters examine the multi-scalar production of hydro-climate policies that have entrenched apartheid-era geographies by prioritizing the interests of capital over the lives of historically marginalized populations. By presenting the affluent city core (including its affluent white suburbs) as a model of urban climate resilience, they obscure the racialized violence inherent in its creation. To borrow Katherine McKittrick's words (2011: 949), these policies serve to "normalize black dispossession, white supremacy and other racial-colonial geographies." Yet black geographies also reflect histories of militant resistance in South Africa, with movements continuously mobilizing for housing and municipal service access ((Miraftab, 2009; Dugard, 2011).

Epistemic tensions

In this section I lay out key epistemic tensions encountered in building bridges between academic theory and knowledge produced outside academic. I explain the barriers produced by practices of epistemic segregation, single authorship and clashing temporalities of knowledge production.

Epistemic segregation

Citational orthodoxies

In academic conventions, the author is required to situate their theoretical contributions within a well-established disciplinary conversation. The literature review usually serves to set the intellectual context and relevance of a research project. But it becomes a site of struggles for scholars like myself, whose work is born out of conversations that take place outside of academic texts. Often, as critical feminist scholars note, research projects incubated in the "segregated conversations" of academic literature (Nagar 2014: 2) are woefully inadequate in addressing the thorny, messy problems of the real world. Naomi Scheman (2014: 181) describes the disjuncture between what she refers to as "disciplinary problems" and problems faced "in the wild." The former are developed in a vacuum by a researcher in pursuit of a question that is "researchable" using available tools and methods and the latter are far more complex.

Mariolga Reyes Cruz (2008) questions citational norms that distinguish research subjects from institutionally recognized intellectual actors. She asks, "Do we cite to locate ourselves in the intellectual traditions that buy us a legitimate place in the academia?" Indeed, disciplinary problems are deemed more publishable and fundable, which in turn enhances their visibility and reach. In a "publish or perish" environment, I am confronted with the reality that my prospects of publication are enhanced by my ability to contextualize and demonstrate the relevance of my work within well-defined disciplinary boundaries (Mclean 2017, Leonard et al. 2023). Furthermore, these conventions are not ideologically neutral. For decades, feminist, Indigenous and decolonial/post-colonial scholars have challenged academic conventions that centre Euro-American worldviews and systems of knowledge (Gregorio Gil 2019, Nagar 2002).

Conventional citational practices discipline unorthodox authors by demanding that they validate their work in relation to hegemonic views in a self-perpetuating practice of building what Ananya Roy (2020) refers to as "canonical power."

Social movements in Cape Town and around the world have claimed their power to "name and frame" through community organizing and alternative practices of documentation (Meyer and Benson, 2021: 15). Yet conventional protocol makes it difficult to bring knowledge produced in other sites and forms into conversation with conventional academic theory on equal footing, not as raw data. Cree scholar Lorisia MacCleod (2018) notes the unequal treatment of Indigenous knowledge within academic publication protocols. The relegation of Indigenous oral teachings to the category of personal communication within academic texts, she argues, constitutes "a scholarly denial of validity to oral histories" (MacCleod 2018).

Recent criticisms (Tàiwó 2020, Nagar 2014) demonstrate the shortcomings of feminist standpoint theory in meaningfully bridging the gaps between researchers and frontline communities. Feminist standpoint theory emerged in the 1990s in opposition to the myth of the objective, impartial white male researcher observing exotic cultures from faraway places. Feminist practices of self-reflexivity push researchers to eschew positivist claims of objectivity and neutrality by making themselves visible as situated and partial producers of knowledge (Stacey 1988, Deveault 1990). Nevertheless, Tàiwó (2020) and Nagar (2014) lament the paralysis that is often created when textual performances of self-reflexivity serve merely as a disclaimer, apology or superficial gesture of deference towards marginalized communities. In the early 2000s, Nagar (2014) observed an abandonment of ethnographic field research by feminist scholars fearful of scrutiny (Nagar 2014). They argue that this refusal to foster a deeper connection between researchers studying social injustices and the communities that experience them deepens the divide (Mullings 1999, Nagar 2014, Tàiwó 2020).

BIPOC scholars promote alternative practices that decenter masculinist and Euro-American knowledge. Roy (Roy et al 2023) calls for a post-colonial "thinking from the south" or from the margins as distinctive from paternalistic approaches of "empowering" or "giving voice." These

practices recognize that there have always been important sites of knowledge production, ways of knowing and sharing knowledge, that have been overlooked in formal academic literature.

Faced with the limitations of "existing review types," Indigenous feminist scholars (Leonard et al.2021) have developed a protocol for reviewing water research that centres Indigenous knowledge. Their Indigenous Review Process goes beyond text-based and individualist approaches that center Euro-American worldviews to emphasize collective knowledge as well as Indigenous science, ways of knowing and cosmologies.

Disciplinary boundaries in political ecology

Political ecology and its more recent offshoot, urban political ecology (UPE), offer valuable conceptual tools with which to challenge positivistic techno-scientific approaches to environmental governance, de-naturalize drought management practices and expose their human toll (Robbins 2011, Loftus 2007). There are many parallels between political ecology—a school attributed to a Marxist cannon—and the ideas circulating within communities and movements for some time. As Davis et al. (2021: xiv) note, conceptual ecosystems are born out of multiple, overlapping histories, which "do not unfold alongside each other in neat chronological order." Political ecology's rejection of positivistic claims of an objective, techno-scientific approach to understanding the environment and its explicitly normative stance in investigating "who produces what kind of socio-ecological configuration for whom" (Heynen et al. 2006:2) makes it compatible with frontline struggles against neoliberal water policies. My own understanding of capitalist hydro-social regimes is deeply influenced by my connection to frontline movements engaged in everyday struggles for water justice. Yet efforts by prominent UPE scholars to police its disciplinary boundaries limit the potential for collaboration and cross-pollination across the many sites of socio-natural knowledge production.

Social movements and frontline communities around the world have long challenged and exposed the power relations in market-based or neo-Malthusian environmentalisms (Martinez Alier et al 2014), which Robbins (2011) refers to as "apolitical ecologies." Indigenous cosmologies have viewed water and nature in relational terms for centuries (Leonard et al. 2023,

Todd 2016 Estes 2019). Nonetheless, these Indigenous conceptualizations of human-non-human relationships have either been criminalized or dismissed as naïve or esoteric before being acknowledged or appropriated by Western scientists for their own gains (Estes 2019). Likewise, the environmental justice movement led by Black civil rights organizers predates political ecology in politicizing environmental decision-making and highlighting the uneven exposure of Black communities in the United States to toxins from landfills (Martinez Alier et al 2014). Yet its contributions as a school of thought are largely overlooked. Indigenous and subaltern struggles against colonial conservationism are often described in political ecology research, yet the movements at the frontlines of these struggles are rarely acknowledged in the intellectual genealogies of academic textbooks (see Robbins 2011, Paulson et al. 2005, M'Gonigle 1998).

Henri Lefebvre, David Harvey, Neil Smith, Erik Swyngedouw, and other Marxist scholars are widely credited for founding *urban* political ecology (UPE), which emerged in the 2000s (Heynen et al. 2006). UPE combines a focus on cities as increasingly important nodes in global circuits of capital and with increased attention to political and economic power dynamics shaping socio-ecological processes unfolding in urban contexts. It overlaps with knowledge produced outside of academic out of long-standing struggles of urban social movements for water, housing, green space and food justice. Yet rather than acknowledging common intellectual threads, complementarity, and likely cross-pollination between the fields, Heynen et al. (2006) argue:

> Because [environmental justice] comes from praxis as opposed to theoretically driven academic research, it provides a distinctly different context through which to understand urban human/environment interactions [...]). Because it is a movement rather than a research program per se, it must explicitly appeal to a broad coalition of either environmentally minded or social justice minded groups thus promoting the widespread dissemination of the struggles endured…although much of the environmental justice literature is sensitive to the centrality of social, political and economic power relations in shaping process of uneven socio-ecological conditions (Wolch et al. 2002; McDonald 2002), it often fails to grasp how these relationships are integral to the functioning of a capitalist political economic system.

There are numerous problems with this framing. First, referring to environmental justice as a movement rather than a research program ignores the more fluid scholarship cultivated by social movements and movement or community-based scholars reflected in the works of Davis et al (2022) Wilson Gilmore (2002), Leonard et al (2023), Gago (2020) and Bruno (2024). Secondly, Heynen et al.'s contention ignores feminist insights that challenge distinctions between "theoretically-driven academic knowledge" and praxis (see Bruno 2024, Nagar 2014, Reyes Cruz 2008).

Much of the discussions surrounding disciplinary boundaries of UPE have centered around the more appropriate or worthwhile scales of analysis for future research in the field. In response, I reiterate the emphasis on intimate scales as central to a feminist approach to UPE in the following section.

The scales of urban political ecology

In recent years, urban scholars have sought to police an increasing heterogeneity and disciplinary fuzziness in both UPE and critical urban studies by calling for greater focus on global processes of urbanization and away from the myriad environmental struggles within the political boundaries of the city – UPE *of* the city, instead of UPE *in* the city, as Cousins and Newell (2019) describe it. Angelo and Wachsmuth (2015) call for "a Lefebvrian moment in UPE scholarship" to see the materialization of Lefebvre's theory of planetary urbanization—an urban condition that would someday subsume the entire world— in contemporary events. Brenner and Schmid (2015) call for a less fragmented and compartmentalized epistemology of planetary urbanization, while Angelo and Wachsmuth (2015) invite researchers to avoid "methodological cityism" by transcending the confines of the traditional city through research that engages with urban processes occurring at the planetary scale.

Yet feminist geographers have consistently challenged theorizations of global political economy that neglect scales where feminized labour and embodied experiences are most visible. Nagar et al. (2002), for instance, found that analysis of economic globalization had systematically

excluded women by overlooking the sites, scales and places where gender interacts with global processes. Likewise, Doreen Massey (1994) suggests that abstract theorizations of global space, such as time-space compression, ignore the "power geometries" shaping differentiated relationships to global flows.

Feminist scholars challenge the use of scale as a gatekeeping project to determine what counts as appropriate UPE scholarship (Peake 2016, Maclean 2018, Roy et al.2020). To insist on a planetary theoretical vantage point, they argue, is to insist on scholarship that performs the "god trick" of "seeing from everywhere." They call for urban theory that is partial, situated, and embodied (Doshi 2017). I am compelled by Chandra Talpade Mohanty's argument that "this experiential and analytic anchor in the lives of marginalized women provides the most inclusive paradigm for thinking about social justice" (2003: 231). Lastly, any theoretical lens that prioritizes global processes has limited potential for collaboration with frontline movements and communities experiencing and confronting environmental harm and deprivation taking place in neighbourhoods, homes, and bodies.

Efforts to police the boundaries of urban political ecology diminish its potential by ignoring ways of knowing and relating to non-human nature that are situated, embodied, and shaped by direct relationships with power. My connections with the AWCC allowed me to investigate the global processes surrounding drought "from somewhere." "Beginning from the lives and interests of marginalized communities." As Mohanty argues, "I am able to access and make the workings of power visible – to read up the ladder of privilege" (2003: 231). Collaborating with the AWCC has made it abundantly clear that a feminist place-based and embodied urban political ecology does not preclude macro-level analysis. On the contrary, a relational, multi-scalar conceptualization of the local, as articulated by Massey (1994), offers a more grounded analysis of global processes. Rather than theorizing at a distance, a collaborative multi-scalar and multi-sited approach to urban political ecology allows differently situated actors to better connect the dots between processes *of* the city and those unfolding *in* the city, seeing many things from many different places in order to trace relevant connections – what Cindi Katz (2011) refers to as "counter-topographies" (see below).

Single authorship

Academic conventions assume an individualistic and proprietary approach to knowledge. A published article is a discrete, time-stamped output attributed to an individual or a finite number of authors. Social movement knowledge, on the other hand, is built collectively, difficult to trace, and often unattributed. Ideas get refined over time; they are reshaped and adapted when shared across cultures, contexts, and generations. They splinter off into multiple new variations to merge with other ideas.

Davis et al. (2021: xiii) offer a critical genealogy of abolition politics that prioritizes collective knowledge:

> We offer a set of ideas and thick descriptions of unfinished practices rather than promoting rigid definitions. We attempt to reveal the common constitutive threads of the work and the promise of abolition feminism rather than constrain it to a sectarian political position…We use the term ecosystem to avoid a prescriptive or reifying framework and to amplify a dynamic ecology of political work, highlighting legacies, analytics and questions often erased and obscured.

Their approach recognizes that ideas that live and evolve in communities often have multiple trajectories. Their work honours less visible intellectual lineages by naming communities, collectives and struggles that gave birth to the rich, messy, and layered conceptual landscape of abolition.

Along the same vein, Nagar (2014) takes issue with protocol that distinguishes theory from methodology. Conventional methodologies and citational practices that fail to adequately recognize non-traditional sources also facilitate or offer institutional cover for the appropriation of collective knowledge as raw data. My detailed account of the walk through Siqalo aims to disrupt notions of observer and observed in the term "participant observation." I seek to make visible the limitations of my capacity to observe in a context that is very much outside my lived

experience and the ways in which I benefited from being with others willing to translate not only language, but important contextual information and details I might have otherwise missed.

The “publish or perish” environment can foster predatory relationships between academics and non-academics. Over the course of my research, I became aware of two external research projects involving many of the same activists in Cape Town, where the power imbalances produced by academic publishing and methodological constraints became evident to the activists who recounted their experiences to me.

In a well-funded research project involving multiple institutions, local water justice and housing activists were deeply involved in extensive data collection activities. However, ethical constraints related to confidentiality meant that these activists were denied access to the data they helped collect. This exclusion prevented them from having the broader contextual information necessary to engage meaningfully in the analysis and shaping of research outputs. As a result, while the researcher, enjoying the status of a participant observer, had access to personal spaces and activities of the activists, the research participants were limited to their own input and had no power to influence the final analysis. This disparity highlighted a significant power imbalance, where the researcher's privileged position allowed them to shape the narrative without the oversight or input of those being researched.

In another incident involving a more junior scholar, activists found multiple flaws in an article about their work and sought to have it corrected. Among other oversights, an activist's written documentation was treated as raw data, and their ideas were published without proper attribution, disregarding their intellectual contributions and violating principles of ethical authorship. Additionally, important details about the time and location of a significant struggle were obscured, turning specific events into a generic backdrop for academic theory. This not only diluted the historical and cultural significance of the struggle but also rendered the publication inaccessible to the local activists who had contributed to it. When the researcher recognized the harm and attempted to rectify the situation, they faced resistance from the publication, which refused to issue corrections after the peer-review process had concluded. The publication

prioritized the validation of anonymous peer reviewers over the views and corrections requested by the activists, further perpetuating the harm done to them.

These cases highlight significant ethical issues in research involving activists and marginalized communities. The differential access to data and decision-making power between researchers and participants can lead to the exploitation and marginalization of the very communities the research aims to benefit. Researchers must ensure transparency and maintain open communication with participants, especially regarding the use and representation of their contributions. Proper attribution and respectful representation of participants' contributions are crucial to maintaining ethical standards and trust. Additionally, institutional pressures on researchers, such as publication quotas, can lead to ethical oversights and harm to research participants. Institutions need to support ethical research practices and prioritize the well-being of participants over metrics.

These events pushed me to question my own approach to anonymity. “Research subjects” had been told that the interviews would be anonymous and consent forms were signed based on this understanding. It had not occurred to me to ask them whether they would prefer to be cited. I was able to secure permission from a few individuals to cite them directly. Others remain anonymous. In many cases, it made sense to assure participants divulging information about their private lives and acts of resistance that every effort would be made to protect their identities. I do not question the importance of ethical protocols designed to ensure the safety of research participants. I do wonder about the extent to which a blanket application of anonymity has contributed to keeping social actors on the frontlines of water justice, climate and other socio-environmental struggles faceless and nameless while academics and NGO personalities act as spokespeople for the cause.

Clashing temporalities of knowledge production

We walk, we do not run because we are going very far; and walking we ask questions.

- The Zapatistas

Naomi Scheman (2014) distinguishes sustainable epistemologies as methods and practices that "cultivate rather than undermine, the ground on which others, especially less privileged others can successfully pursue knowledge, meeting their epistemic needs as they define them." As the Zapatista quote underscores, sustainability requires a pace and rhythm that supports a movement's goals, needs and capacities. The often rigid timelines of academic research determined by grant schedules, publication deadlines and teaching duties can, therefore, be disruptive to sustainable research collaborations with grassroots social movements.

Just like social movements themselves, social movement rhythms are varied and complex. They are shaped by multiple factors, including the urgency of immediate needs as well as the ebb and flow of capacities and opportunities. Frontline organizers are often required to operate at varying paces on multiple timelines as they simultaneously respond to urgent needs while building towards longer-term goals. But the Zapatista saying emphasizes the need for a rhythm that is suited to the movement's long-term vision. The expression is widely cited in popular education to address the overwhelming tendency for frontline organizers to burn out from the frenzied pace of dealing with one urgent crisis after another (Dixon 2023).

First, the idea of walking not running is about setting an inclusive pace that is attentive to the needs of all members of a community or movement. Leah Lakshmi Piepzna Samarasinha (2018) writes about the practice within disability rights movements of moving at the pace of the slowest member in a group to ensure that no one is left behind. Beyond individual abilities and capabilities, maintaining an inclusive pace for collective study also means addressing the capacity needs and constraints of organizers, including those with care responsibilities or those living in precarious conditions who cannot afford data or travel costs required for collaborative work. Unless resource and capacity gaps are identified and addressed, many are excluded.

Connecting with women organizers for this research project meant sitting in their kitchens while they cooked meals, providing food, entertaining their children, and accommodating sudden changes in schedule or cancelation of plans. My first trip to Vygieskraal informal settlement had to be rescheduled because it had rained the previous night and people were busy drying their shacks. I had barely registered the rain in the modern, comfortable home I had rented in the

affluent neighbourhood of Observatory, but this was one of many examples of how the drudgery of survival could get in the way of documenting and sharing knowledge.

Secondly, the phrase 'walking we ask questions' emphasizes iterative nature of grassroots knowledge-building. John Holloway (Sitrin 2005, par 10) describes it as a process of "advancing through experiments." As he explains:

> To think of moving forward through questions rather than answers means a different sort of politics, a different sort of organization. If nobody has the answers, then we have to think not of hierarchical structures of leadership, but horizontal structures that involve everyone as much as possible (Sitrin 2005)

To move forward experimentally requires a pace that allows for unpredictability. It requires an agility that accommodates collective reflection or input, rethinking decisions and potential detours or shifts in direction. This is not possible when researchers are rigid about the timelines, goals, and parameters of their research project. Even in grassroots movements, the desire to rush can lead to a loss of trust, seriously undermining even the most successful social movements (Crass 2013). Social movement victories are not the product of single acts or individual campaigns, but the fruit of collective work sometimes carried out over generations. Dixon (2023, par 5) argues that this notion of a long view is common sense for those who are rooted in "communities in struggle with dense intergenerational relationships and sustained collective memory." On the other hand, external researchers parachuting into communities for short stints may lack this long view and fail to see data collected in field research as part of a longer historical chain or arc.

In the next section, drawing from my experience with water justice networks, I propose "networked knowledge" as a model for solidarity-based as a way to address the concerns discussed above. As a networked researcher, I seek to make visible the epistemic community shaping my work and draw from their ethics of horizontal knowledge production.

Networked knowledge: A pathway for solidarity-based research

The circular, horizontal, networked organization is a metaphor of deep democracy. Democracy is our way of being and operating as a network: our articulation is based on a collective pact guided by the defense of water and based on ideals, values, principles, approaches and political lines of action.

A network articulation can allow a light structure, adapted to needs, changing, in permanent permutation according to the situations we want to address: the issues, the territory, the action. The network is a union of autonomous entities. No one is lost in it, it is a convergence of a common vision and it is this shared vision of purposes and dreams that makes it possible to converge as a network to contribute to its realization.

Through feminism, we have learned that power must be made visible; that roles must be clearly established; and existing inequalities identified in order to venture into the construction of new relationships based on equality, diversity and difference. We offer equal opportunities to ensure that the power of each organization is deployed in its specific contribution. Informality can lead to the tyranny of non-structures.

- *La Red VIDA (March 2021)*

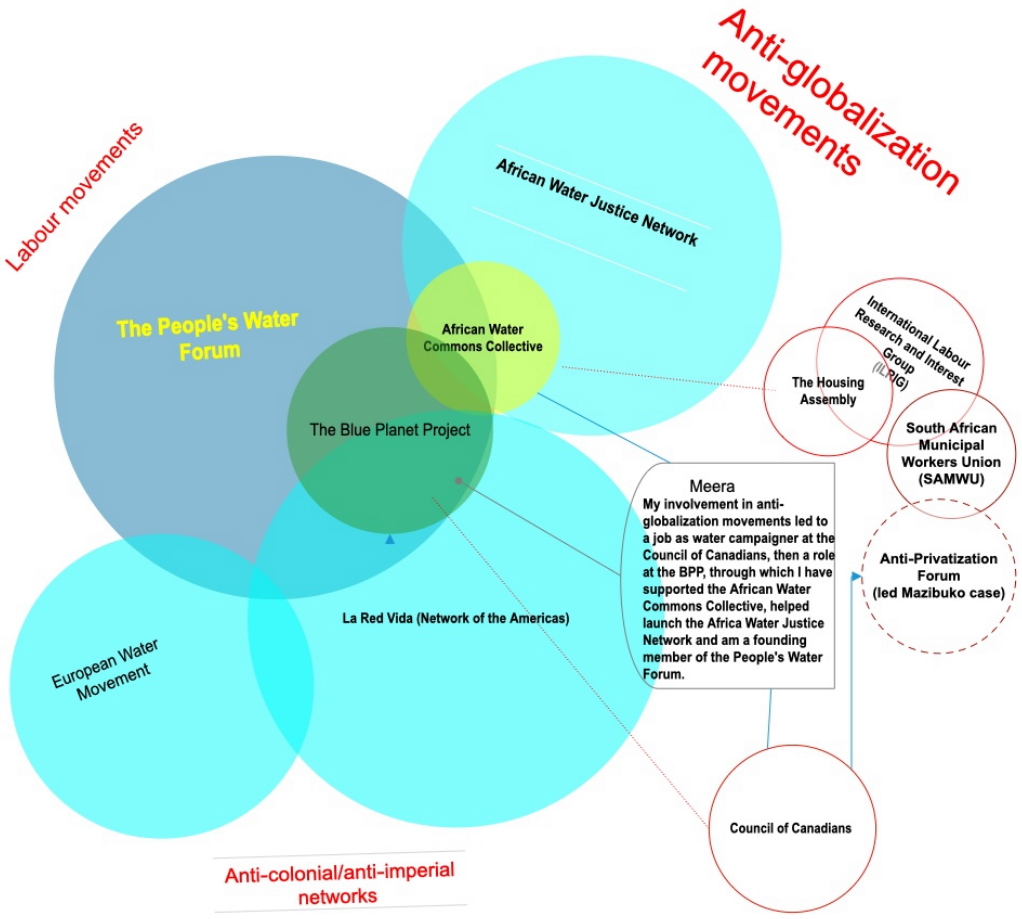
I am inspired by the work of BIPOC feminists, including Ruth Wilson Gilmore, Angela Davis the Combahee River Collective, Richa Nagar, Chandra Talpade Mohanty, and others who have laid the foundation for theoretical engagement that is deeply rooted in their own histories of praxis within social movements. Chandra Talpade Mohanty's (2003) notion of "imagined communities" or "communities of resistance" linked not by geographical, cultural or biological ties but by political affinities is useful in describing my connection to this research as a water justice activist.

Arriving at this research through my work within water justice networks, I have been guided by the politics of horizontal knowledge production articulated in the epigraph above from a

collective statement by La Red Vida, the regional water justice network for the Americas. It is connected to other regional networks including the African Water Justice Network through the global water justice movement and its coordinating platform, the People's Water Forum (Benson and Karunananthan 2023). Networks are not "imagined communities" in and of themselves, but rather they set the terms of engagement. In navigating the tensions of epistemic segregation, clashing temporalities and the politics of authorship, I have been steered by the ethics of networked solidarity articulated by water justice movements.

Over the course of this research project, I was invited to become a member of the AWCC along with my colleague Koni. Although we are not directly impacted by uneven access to water in Cape Town, I saw in this gesture a vision for what Richa Nagar (2014) refers to as "situated solidarities" through which multiple situated actors could work together towards a common goal. Although Koni has been more involved in supporting the day-to-day organizing my involvement is limited to an advisory and support role. Over the years, I have raised funds, connected the AWCC with other funding organizations for small grants, facilitated their involvement in international networks and events, and occasionally responded to requests for input via WhatsApp.

Diagram 1: Water Justice Networks



The network as epistemic community

In defining my research as "networked", I acknowledge the water justice networks as part of the epistemic community that cultivated it. I distinguish the collaborative methods undertaken in this dissertation from the more elaborate community-driven approaches, including participatory action research. While I am the sole author of this work, and the analysis I present is my own, my research stems from longstanding relationships and experiences with local organizing and horizontal pedagogies of frontline water justice groups.

Mohanty (2003:7) defines solidarity as a process of standing together as a 'we' not an 'us and them' against capitalism, patriarchy and other forces of oppression and exploitation. As the Red Vida statement articulates, the network outlines the ethical protocols that define how we stand together without trampling on another. As a woman of colour born in the global South, I blend in more easily with racialized activists in townships and informal settlements than a white researcher would. Yet I am class-privileged and based in the global North with no direct experience living without access to decent housing or adequate public services. I rely, therefore, on community activists not only to translate from Xhosa or Afrikaans to English during these visits but also to highlight what may escape someone without their intimate knowledge of the context. During the visit to Siqalo, others with comparable lived experiences in informal settlements elsewhere in the country were able to process and contextualize the fragments of everyday life we witnessed. To classify this experience as "participant-observation" does not do justice to the generative processes of grassroots research that have shaped my research. I have benefited tremendously from walking together with community organizers with strong local relationships greater intimate knowledge of local contexts.

It is worth noting that tours of informal settlements or photographs exhibiting the lives of people living in poverty are often deeply problematic. Over the last two decades, development NGOs have come under scrutiny for producing "poverty pornography" to publicize and raise funds for their projects. The walk through Siqalo, in contrast, was rooted in social movement practices of bearing witness to injustice. While poverty pornography builds on a sense of otherness in order to entertain or emotionally manipulate the viewer, the social movement practices highlighted in this dissertation are premised on solidarity and the shared humanity between the witness and the witnessed. I also distinguish the act of bearing witness as a community-driven social movement methodology from traditional ethnographic methods that place a community under the gaze of a "neutral" outsider.

Authorship

As Ruth Wilson Gilmore (2007: 27) argues, her commitment to scholar activism does not require her to agree with or "follow every lead proposed from the grassroots." In defining my

scholarship as “networked” I acknowledge that I am fed by and feed into the networks I work with, but do not claim to represent, give voice or speak on behalf of them. My experience in Siqalo highlights community organizing as a site of knowledge production with trajectories that extend far beyond my encounter and its function in my research as “field data.” My research is one of many nodes of knowledge production emerging out of shared learning spaces. Although I am not required to seek consensus from the network on the ideas I publish, I am accountable to these networks and communities for my research and am responsible for its impacts, while at the same time recognizing the collective labour that has nurtured it.

As the epigraph highlights, networks bring together autonomous entities who are bound together by a shared purpose and shared dreams. Power differences are inevitable and must be made visible and negotiated in order to be deployed appropriately. Among other methodologies, the non-hierarchical organizing spaces in which I have been involved practice the principle of “step-up, step-back,” or “take space, make space” which requires members to take responsibility for their relative privilege and power in determining how they contribute to a group (Drawing for Change, n.d.). As a networked researcher, I am in a position to identify areas where my situated knowledge may contribute to productive partnerships with grassroots social movements and to step out of the way when my social location becomes a barrier.

Mutli-scalar and multi-sited political ecology

Political ecology makes visible power dynamics of socio-environmental change (Peet et al. 2011). As feminist scholars argue, accurate analysis of power requires an attention to the intimate scales, sites and places where everyday life and social reproduction labour are carried out (Nagar et al 2002). In addition, the situated pedagogical practices of impacted communities hold a wealth of knowledge with the potential to fill gaps in traditional geographic scholarship (Antaki et al. 2024).

Grassroots movements and frontline communities have played a critical role in collective literacy of water politics that has informed my research (see Olivera 2004, Moore 2023,). In designing a research project that originated “in the wild” (Scheman 2014), my engagement with academic

literature is iterative as it is perpetually shaped and reshaped by experiences and collaborations with water justice movements. A commitment to the issues articulated by social movements, not a textual investigation, drove my theoretical explorations and fieldwork.

Ongoing conversations with activists and connections with frontline struggles enabled me to make connections between academic and grassroots political ecology. Presenting elements of my literature review at a community meeting in Cape Town on October 6, 2018, I shared the notion of the hydrological cycle as a "hydro-social cycle" that is shaped at every stage by political interventions and social interactions (Swyngedouw 2005). While this concept is challenging for my undergraduate (and even graduate) students, the AWCC activists listening to me in their second language (many of whom do not even have a high school diploma) resonated with the idea immediately. They have since incorporated it into their own presentations and recently worked with a graduate student to produce a map of the hydro-social cycle in Cape Town.

In short, my analysis draws from multiple sites of traditional and non-traditional political ecological knowledge. When I began my research, grassroots movements had already been building critical analysis of urban hydro-climate policy. My collaborations with the AWCC and other activist groups cited in this dissertation, have enabled me to develop a grounded analysis of global processes. Rather than theorizing at a distance, a collaborative multi-scalar and multi-sited approach to urban political ecology draws from the knowledge of differently situated actors to better connect the dots between processes *of* the city and those unfolding *in* the city (Cousins and Newell 2019), seeing many things from many different places in order to trace relevant connections. This process joins what Cindi Katz (2001) refers to as "countertopographies", the development of translocal politics by tracing analytical contours linking place-based struggles at multiple sites.

Temporalities of networked collaborations

As a researcher seeking to collaborate through sustainable situated solidarity, I am aware of the importance of being attuned to the multiple temporalities that shape grassroots organizing. Over the course of this research, I have struggled to align the rhythms of grassroots organizing with

the demands on my time as a parent, a student, an activist and, towards the end, a tenure-track academic position. The COVID 19 pandemic brought additional challenges and frustrations.

After exploring participatory action research methods, it became evident that the time, resources and other capacities required for such an endeavour were not available to me at the time I began my dissertation. As the mother of a young child, my schedule was rather inflexible and my longest stretch in Cape Town was a two-month period between August and October 2018. With my colleague Koni's support, I enrolled my daughter in a local school and crammed as much work as I could during the day, dragging her along to the occasional weekend or evening meeting. I returned in 2019 for three weeks and planned to return again in early 2020, but by then, the COVID-19 pandemic had swept the world. These constraints ruled out my ability to carry out a more elaborate vision for participatory research that would have included deeper community involvement at various stages. Nevertheless, these short stints were tremendously productive because I was plugged into local organizing efforts prior to conducting this research, had strong communication with collaborators in-between visits, and had logistics support while in Cape Town.

My ongoing commitment to water justice activism has meant occasionally putting my research goals and timelines on hold to respond to grassroots requests. In turn, various detours and tangential experiences have provided me with deeper insights into my research. I have also made parts of my research accessible to local collaborators by sharing relevant findings from policy research and works in progress to support local efforts, rather than holding onto information in order to protect the novelty of my own work.

Methodology: Excavations of the hidden city of social reproduction

Katz (1998:44) argues that the neoliberal urban agenda is contingent upon rendering invisible "poor people, dirt, dilapidation and the painful effects of the wholesale disinvestment in social reproduction." It is, therefore, imperative for critical scholars to disrupt this agenda by "excavating" these deliberately obscured urban realities. My analysis draws from the findings resulting from two forms of "excavation"—critical pedagogy and critical policy analysis.

Critical pedagogy as excavation

The walk through Siqalo builds on rich traditions of critical pedagogy in South Africa (Sinwell 2022, Cooper 2016). Associated with the teachings of Paulo Freire (1983), critical pedagogy refers to practices of popular education through which marginalized communities gain a collective understanding of their own oppression. Through collaborations and conversations with frontline organizers, my research foregrounds grassroots critical pedagogies, which serve to excavate urban realities of social reproduction through praxis (i.e., popular organizing for water justice and housing rights).

Since the apartheid era, struggles for socio-economic, racial and gender justice have been waged around social reproduction. Social reproduction refers to the perpetuation of human life and socio-natural systems (Federici 2019). Social reproduction scholarship deals with the constellation of tangible and intangible goods and services, infrastructures, resources, social and institutional arrangements responsible for the reproduction and sustenance of people, societies and social systems (Katz 2001, Aruzza et al. 2019). Although social reproduction extends far beyond basic needs, poor racialized women are disproportionately burdened when life-sustaining goods and services, including food, water and shelter are restricted. Struggles against state abandonment of social reproduction are therefore central to an urban revolutionary praxis that is inclusive to those who live at the intersections of race, class and gender-based oppression (Karunananthan 2021). Xhosa-speaking residents classified by the apartheid regime as "black Africans" still largely live in separate neighbourhoods from Afrikaans-speaking people classified as "coloured" (Solomon 2024, Turok et al 2021). In addition to the linguistic and cultural barriers that were deliberately cemented by apartheid spatial segregation, lack of infrastructure including public transportation and public spaces, continues to limit interactions between and within neighbourhoods (Turok et al 2021). Therefore, efforts to transcend barriers in order to create deeper understanding among different historically marginalized groups around common struggles of social reproduction have been vital in building working-class solidarity.

Door-to-door campaigns, community gatherings, and workshops have enabled the African Water Commons Collective and Housing Assembly to gain a broader and more contextualized

understanding of social reproduction issues. The tour of Siqalo lays bare the social consequences of uneven access to water and sanitation. The shooing of children from dirty puddles is one of many daily confrontations with death, revealing the extent to which the everyday gendered work of social reproduction in marginal urban spaces is as much about warding off death as it is about making life. During this research, I have interacted with mothers who have buried children, grandmothers who have buried grandchildren. I have spoken to women who have taken in the children of family members or friends who have passed on. The psychological and physical toll of keeping their families alive in environments where the threat of fatalities is ever-present is a common theme in these conversations.

These excavations serve to build counternarratives to the erasure of black sense of place and normalization of racial violence in the image of Cape Town marketed to tourists, investors and wealthy homeowners. For instance, a Forbes Magazine article explains (2013: par.5):

> …lifestyle-wise, living in the City Bowl is an entirely different experience compared to the rest of the country. No other central business district (CBD) in South Africa can offer the exceptional lifestyle of Cape Town. The city's public transport system works, and ordering an Uber is safe and fast. There are also loads of restaurants, bistros, coffee shops, and pubs to choose from.

The walk through Siqalo disrupts this image. It de-fetishizes and unsettles the post-apartheid capitalist city by exposing its underbelly. In reality, South Africa is the most unequal country in the world (Sulla et al. 2022) and Cape Town is its most segregated city (Turok et al 2021). A white minority enjoys high standards of living in the CBD and leafy suburbs, while most of the historically marginalized populations live in crowded, underserviced townships where they or their families were forcibly relocated by the apartheid regime. Cape Town's highly unequal spatial form is the product of apartheid-era social engineering; but it is also bolstered by complicit post-apartheid development keen to see Cape Town as Africa's most modern city for business-friendliness and a foreign investment hub (see Price Waterhouse Coopers 2018, UNESCO 2017, World Bank 2018). Official policy documents and technical reports only acknowledge informal settlements through decontextualized statistics or images without

analyzing the power dynamics through which they are produced and reproduced (E.g. see Statistics South Africa 2024, CCT 2019, Western Cape Housing Development Agency 2012).

The tendency to treat the city centre and Siqalo as two vastly contradictory landscapes serves to naturalize the racist geographies of post-apartheid segregation. One is treated as the idealized norm, while the other is seen as an aberration. This portrayal promotes what Mckittrick (2011: 948) refers to as "bifurcated racial categories" in which to be Black is to be dispossessed and to be white is associated with freedom. According to McKittrick (2011), analytical preoccupation with Black suffering leads to a denial of a black sense of place and an idealization of white settler "overdevelopment, accumulation and land ownership," which are upheld as the desired norm (McKittrick 2011:950).

As such, the aim of my doctoral research is to examine neoliberal hydro-climate policy through a lens of gendered and racialized struggle. Rather than focusing on black suffering and contributing to the epistemic annihilation of black geographies (McKittrick 2011), my goal was to highlight the agency, labour, and aspirations of marginalized black women, which are not captured in statistics or static aerial photographs of "uneven scenes" (see unequalscenes.com).

This was achieved through ethnographic research consisting in participant observation and 43 semi-structured interviews with frontline women organizers conducted over the course of two visits to Cape Town from August to October 2018 and in July 2019. Thirty-five of the women lived in precarious housing conditions in segregated neighbourhoods built during the apartheid era on the outskirts of the city to house racialized populations. I also conducted seven interviews with women living in a rural area called Witzenburg in the Cape Winelands District. These interviews were conducted during community visits and meetings organized by the network of water justice organizers, the African Water Commons Collective (AWCC). Often during community visits, women gathered in one house and shared their stories in groups of three or four.

Although the AWCC was my main point of contact, I also met with and interviewed activists involved in six other community groups. Interviews lasted on average from 20 minutes to an

hour. Most of the interviews were conducted in English. Consecutive interpretation from isiXhosa and Afrikaans was provided by other activists who accompanied me on community visits. Interviews were recorded on my mobile device, then transferred to password-protected cloud storage. They were transcribed verbatim into Evernote, which has an organizing system and search syntax enabling me to tag and access information easily. Transcripts were subsequently annotated, and information was organized thematically into spreadsheets.

During this time, I also attended six meetings and a protest. This includes two national meetings co-convened by the Blue Planet Project, the AWCC and several other South African organizations bringing together academics, frontline organizers and NGOs from across the country to discuss the national impacts of Day Zero. Community meetings organized by the AWCC enabled me to share and receive input on my research goals, literature and preliminary findings. Other events provided important contextual information. Further details regarding the field research are contained in Table 1 (Appendix 1).

Fieldnotes were handwritten in a paper notebook. Highlights were transcribed into Evernote. The critical policy analysis outlined in the next section was guided by my conversations with frontline women about their daily struggles for water justice and resistance to the city's water restriction measures.

Critical policy analysis

As a second method of excavation, I use critical policy analysis with the aim to disrupt the construction of bifurcated representations of the modern, climate-resilient city by investigating the interrelatedness of spaces of overaccumulation and spaces of disinvestment within a common urban agenda. Critical policy analysis emerged in the 1980s to support efforts for social change by interrogating educational policy in the United Kingdom (Young and Diem 2018, O'Connor and Rudolph 2023). Unlike traditional methods, critical policy analysis investigates the political agenda behind policymaking by examining the role of actors, contexts and values in shaping decisions and outcomes (ibid). I examined official policies and strategies emerging from the 2015-2018 drought in Cape Town to complement the work of water justice activists who were

already deeply suspicious of the city's announcement of Day Zero. They were accustomed to reading city policy and communications against the grain and intimately acquainted with the scarcity discourses mobilized to intensify their hydro-social struggles.

Critical policy analysis enabled me to examine how urban environmental policies maintain the uneven distribution of resources and reify racial segregation by celebrating capital accumulation strategies as environmental solutions. Specifically, I interrogated how the urban hydro-climate agenda intensified racial violence and the exploitation of poor black women at the frontlines of hydro-social conflicts.

I began in 2018 by reviewing city policy documents relating to drought and water management including its Critical Water Shortages Disaster Plan (2017), a water policy bulletin called the Cape Town Water Outlook Report (2018) and its draft Water Strategy (CCT 2019). My goal was initially to investigate how the drought had influenced city water policy. To do so, I also examined older documents including its 2007 Water Conservation/Water Demand Management Plan (CCT 2007). This initial review drew me to a set of emerging discourses connecting Cape Town's drought response measures to climate resilience strategies generated by international institutions with ties to the finance sector.

In 2016, Cape Town was recognized as one of "100 resilient cities." With a grant from the Rockefeller Foundation, the city hired two staff people with a mandate to make the city more resilient (CCT 2019). Resilience discourses have since permeated all city water policy documents and Cape Town has received accolades and awards for its approach to city water resilience from several influential international bodies, including C40, a global network of megacities actively promoting Cape Town's approach elsewhere (CCT 2015). While I read a much larger body of policy documents and technical reports in my initial review in order to familiarize myself with the broader policy landscape, the critical analysis of municipal hydro-climate policies presented in this dissertation focuses on 12 documents which are listed in Table 2 (Appendix 2). Documents were coded by hand and key citations were transcribed into a spreadsheet.

Finally, in 2022, my investigation into resilience led me to look into other multilateral institutions actively involved in promoting climate resilience and water technologies that would enable better conditions for private financing in Africa. I reviewed 19 documents (including World Bank reports, a UN-Water policy framework and websites of water-related investment projects) with the experiences and critiques of Cape Town activists in mind. The texts reviewed for this component of the dissertation are listed in Table 3 (Appendix 3).

Race terminology

Because my research and analysis draw considerably from the work of black scholars, it is important to highlight that the terminology varies from one region to another despite the significant cross-pollination of ideas across borders. Ideas of blackness are central to theories of racism, racial capitalism, black sense of place and several other concepts which are foundational to my research. In this dissertation, I use "black" to designate both of the largest historically marginalized communities[2] to identify social location in a way that is consistent with this scholarship and the language of South African social movements and organizers with whom I collaborated in this research.

However, while I fully reject the racist classifications of the apartheid system, I also acknowledge in this research that their material impacts remain relevant to the analysis of uneven distribution of urban water in modern-day South Africa. The apartheid government's 1950 Population Registration Act included four groups: native, coloured, Asian and white. Statistics South Africa uses the categories "black African, coloured, Indian/Asian and white (Statistics South Africa, 2016). The category coloured designated those of mixed or other racialized ancestry. Therefore, I occasionally uses the categories used by Statistic South Africa when those distinctions are relevant. Those identified as 'black Africans' represent 80% of the population of South Africa, while the "coloured" population is less than 10%(Statistics South Africa 2016). However in the Western Cape province, where Cape Town is situated, 53.9% of the population are identified as coloured and 26.7% as black African (ibid). The breakdown of participants in the research roughly maintains this ratio.

[2] None of the participants in the study identified as Asian or other.

Relevance

The World Economic Forum identifies water scarcity as one of the greatest economic threats of our time (WEF 2015). According to UN-Water (2017), better management of water resources and supply systems is one of the most critical elements of climate adaptation. In March 2023, the United Nations held a historic conference to address growing concerns about water supply shortages and the lack of global progress in achieving universal access to water and sanitation by 2030 as envisioned in Sustainable Development Goal 6 (United Nations 2023). Under these circumstances, the finance sector and its prominent proponents including the World Bank, the WTO and OECD see opportunities to create new channels for stagnating (predominantly Northern) capital in the global South (2022b, Roundtable on Water Financing 2023).

My research offers a situated critique of financialization and finance-driven reforms to urban water and sanitation systems in the global South. By foregrounding frontline struggles for water justice in Cape Town South Africa, I demonstrate the racialized, gendered and class-based impacts of market-based pricing mechanisms, water restriction technologies and other measures being championed by hegemonic actors. The most inclusive solutions, as Mohanty (2003) argues, are derived from the most marginalized locations. As such, my effort to think with water justice organizers living in conditions of precarity in the most unequal city in the most unequal country in the world (Turok et al. 2021) serves to counter the top-down multistakeholder initiatives that have given bankers and corporations a privileged role in developing water policies for the global South (Manahan & Kumar 2021).

In addition, this study contributes to the heterogenization of urban political ecology, which has been dominated by Northern perspectives (Reddy 2021). Through a feminist multi-scalar analysis of urban hydro-climate policies anchored in "situated solidarities" (Nagar 2014), I propose pathways for re-imagining just and equitable hydro-climate futures.

Outline

I present my findings in three articles of which I am the sole author. Each article approaches the research questions from different angles in order to shed the spotlight on different sites and scales of power and struggle.

The first chapter (article 1), titled “Seeking a now that can breed futures: Critical topographies of hydro-climatic resilience in Cape Town, South Africa,” examines the way climate/water resilience policies claiming to ‘future-proof’ the city have served to further entrench apartheid geographies of social reproduction. The aim is to demonstrate the ways in which finance-sector driven measures to adapt the urban water system to climate change are intensifying the exploitation of black women residing in informal settlements by reconfiguring the spatio-temporalities of water collection. This article has been prepared for submission to the International Journal of Urban and Regional Research.

In the second chapter (article 2), “Sustainable development, climate resilience, and the technologies of water apartheid,” I place a greater focus on the global scale where urban water/climate resilience strategies are embedded within international development and aid agenda. I use Cape Town as a case study to offer a grounded analysis of proposals championed by the World Bank and other prominent multilateral bodies to make the water sector more amenable to private financing. Seen through the lens of racial capitalism, I argue that these measures will deepen existing inequities in access to water. This article has been accepted for publication with minor reviews for a special issue of Geoforum on Contested geographies of water financialisation in the 'global South'". Edits requested peer reviewers have been made.

The final chapter (article 3) examines the complex and messy relationship between human rights and popular resistance, linking contemporary struggles for water justice in Cape Town with historical struggles for socio-economic justice in South Africa. Arguing for a pluralistic and aspirational approach, I draw from grassroots organizing and pedagogical strategies of the community-based network the African Water Commons Collective to re-imagine the human right to water from a feminist decolonial perspective. This article has been prepared for submission to the feminist geography journal, Gender, Place and Culture.

In the concluding chapter, I present a synthesis of my main findings and detail the major contributions of this dissertation. In addition, I discuss some key limitations and offer

recommendations for future research directions. For ease of reading, all references are included at the end of the dissertation.

Chapter 1: "Seeking a now that can breed futures": Critical topographies of hydro-climatic resilience in Cape Town, South Africa

for those of us who cannot indulge
the passing dreams of choice
who love in doorways coming and going
in the hours between dawns
looking inward and outward
at once before and after
seeking a now that can breed
futures
like bread in our children's mouths
so their dreams will not reflect
the death of ours

-Audre Lorde, A litany for survival, 1978

Introduction

Doreen Massey (1994: 149) famously challenged the skewed description of globalization as a process of time-space compression, arguing that in a world of faxes, emails and global financial flows, "somewhere in sub-Saharan Africa, there's a woman on foot, who still spends hours a day collecting water." Today, more than 30 years later, although faxes have become obsolete, women all over Africa are still collecting water by foot. This space-time backwardness features prominently in gender and development literature, despite being almost absent in traditional economic geography theory. Consider Aysha, the Ethiopian girl featured on UNICEF's (2016) website along with the caption: "Worldwide, women and girls spend an estimated 200 million hours–daily—collecting water. It's a colossal waste of time." A short video titled *Searching for Water: A Day in the Life* profiles 13-year-old Ayesha on her eight-hour round trip to fetch water for her family. She does not speak to the viewer; information is conveyed only in succinct captions. The viewer is invited to "take action" by donating to UNICEF, but there is no

information about how Ayesha, her family, or her community are taking action to address this "colossal waste of time."

As Katherine McKittrick (2011) argues, narratives that situate "black people and places outside modernity" naturalize their dispossession and death. McKittrick's (2011) work is part of a growing body of BIPOC[3] feminist geography that disrupts "bifurcated-segregated" conceptualizations of space by revealing the entanglements that link Ayesha's waterless reality to that of the modern imagined reader (see Hawthorne, 2019; Mullings, 2021).

Building on this scholarship in this article, I analyze racialized and gendered inequities produced by initiatives that ostensibly aim to modernize the urban water system of Cape Town, South Africa. My aim is to demonstrate how Black women's struggles for spatio-temporal justice against exclusionary water policies stem from the city's deepening entanglements with global finance capital – and not from some absence of modernity. Specifically, I analyze frontline women's resistance to water restrictions; these have become further entrenched by recent initiatives to make the city more resilient to climate uncertainty in the aftermath of a historic drought between 2015 and 2018. To do so, I am guided by feminist theorizations of racial capitalism that highlight the interlocked and mutually reinforcing role of racism and capitalism in the uneven development of space and experiences of time (Pulido, 2017; Robinson, 1983; Gilmore, 2002; McKittrick, 2011).

I first present the context before discussing my theoretical underpinnings and methodology. I then combine feminist ethnographic research with critical policy analysis of official texts to investigate the power geometries (Massey, 1994) of urban water resilience planning through the prism of a black sense of place (McKittrick, 2011). Specifically, I situate multi-scalar hydro-climate policy within contemporary and historical struggles for water justice to foreground black women's geographies. Flipping traditional political economic conceptualizations of the spatio-temporal fix, I examine *spatio-temporal (dis)ruptures* in black women's everyday struggles to ensure a 'now that can breed futures.'

[3] Black ,Indigenous and people of colour.

Context

South African hydro-social politics were forged out of competing visions for life after apartheid. Shortly after the African National Congress (ANC) came to power in 1994, the party's ambitious platform for large-scale wealth redistribution was watered down by neoliberal reforms adopted at the behest of the World Bank (Miraftab, 2006; Bond, 2003; Dugard, 2010). The progressive 1996 constitution declared water a human right, long before this was established in international law (UNGA, 2010). But the responsibility for enacting socio-economic rights fell to municipal governments that in turn were forced to recover costs through user fees and property taxes (Dugard, 2010; Ruiters, 2007; Scheba, 2022).

The World Bank ranks South Africa as the world's most unequal nation, with the wealthiest 10% controlling 71% of the wealth, while the bottom 60% holds only 7% (Sulla et al. 2022). Cape Town is widely considered South Africa's most unequal city and is marked by stark spatial segregation (Turok et al., 2011). The city center and suburban areas, with modern amenities and public services, are predominantly inhabited by the white minority, while the majority of racially marginalized residents live in underserviced, impoverished neighborhoods on the city's periphery.

This research emerged in the aftermath of a severe drought that affected the Western Cape province from 2015 to 2018 (Dube et al., 2022). By November 2017, water reserves were at critical levels, and Cape Town predicted a "Day Zero" in May 2018, the point at which the water supply would shut off (Millington and Scheba, 2020). The municipal government subsequently imposed stringent water consumption restrictions, capping usage at 50 liters per person per day during the peak of the crisis in February 2018. Then-mayor Patricia De Lille chastised residents for excessive water use and declared a shift toward compulsory water conservation measures (Associated Press 2018). The city threatened to install 'water management devices' (WMDs)—a tactic previously only used to manage fiscal deficits caused by non-payment in low-income, segregated townships—in households that failed to reduce their consumption.

At the onset of the drought in 2016, Cape Town received a grant from the Rockefeller Foundation to establish a new resilience planning team to create and implement a 'resilience

strategy' that would serve as an overarching framework for other urban policies, including the city's water strategy and spatial planning framework (CCT, 2019b). Cape Town also became the first city in the world to pilot a Lloyd Bank-funded project called the City Water Resilience Approach (2020). Thus Cape Town's hydro-climate policies are produced at multiple scales deepening its entanglements with global finance and intensifying longstanding clashes between efforts to stabilize the reproduction of capital and struggles for the social reproduction of (historically) marginalized people.

Conceptual topographies

This article situates Cape Town's multi-scalar production of climate-resilient urban water systems within black women's struggles for spatio-temporal justice. By bringing political ecology and racial capitalism theory into conversation with black feminist geographies – both in academic text and grassroots praxis –, I critically analyze emerging climate adaptation strategies as sites of racial encounter.

Political ecologies of resilience

Political ecologists have critiqued the proliferation of market-based climate adaptation strategies that disregard the political and social dimensions of socio-ecological change (Paulson et al., 2005; Taylor, 2015). They consider climate change as endogenous to capital's metabolic relationship with nature (see Taylor 2015). The prominent sub-field of urban political ecology (UPE) emphasizes the growing importance of urbanization and cities as key sites of ecological transformation (Cousins and Newell, 2019; Heynen, 2013). Urban political ecologists interrogate the uneven distribution of risk and expose the power dynamics shaping neoliberal climate mitigation and adaptation strategies (Taylor, 2015; Mackinnon and Driscoll, 2012; Grove et al., 2019).

Some scholars argue that resilience strategies have consolidated into a dominant paradigm linking neoliberal ecological governance, urban planning, and international development (Brown, 2014; Mullenite, 2016). Since the 2010s, the concept of resilience has become ubiquitous in environmental and development policy discussions—from IPCC reports to UN

documents (Brown, 2014)—and was even *Time Magazine's* buzzword of the year in 2013. It is a central theme within sustainable development programs hoping to achieve SDG 11's goal to make "cities and human settlements inclusive, safe, resilient and sustainable" (UNDESA n.d.) .In international development, the emergence of 'urban resilience' coincides with a retooling of the Bretton-Woods system for a post-2008 financial crisis world in which structural reforms are more directly geared towards transforming the resources that reproduce life in the global South—including urban infrastructure and limited water supplies—into financial assets (Standing, 2021; Bigger & Weber, 2021; Bayliss, 2014). Whereas the structural adjustment programs of the 1980s and 1990s imposed fiscal discipline on loan-recipient nation-states, resilience policy creates a new era of "green structural adjustment" targeting sub-national governments across the Global South (Bigger and Webber, 2021).

Resilience policies as a catalyst for spatio-temporal fixes

Harvey (2001) speaks of spatial or spatio-temporal 'fix' to describe the strategies deployed avert crises resulting from the inherent contradictions of capitalism. Falling rates of return caused by market, capital, or labour saturation are resolved by moving capital around in space and time, expanding to new markets, exploiting cheaper labour in new locations or investing in long-term projects (Harvey, 2001; Jessop, 1982). In doing so, the capitalist system maintains compound growth through "temporal deferment and geographic expansion" (Harvey, 2003; Jessop, 1982).

Bigger and Webber (2021) link the advent of resilience programs to the pursuit of new markets for Northern capital currently stagnating in urban infrastructure. The World Bank, in particular, has championed efforts to create new channels for private capital in cities of the Global South, thus taking advantage of increasing climate adaptation needs coupled with their limited access to debt. As such, urban resilience strategies have conveniently emerged to create investable projects out of urban climate adaptation needs. Other scholars (Carton, 2019) have advanced the notion of an ecological "spatiotemporal fix" to theorize global land and resource grabs as part of capital's attempt to resolve its contradictory relationship with (non-human) nature. Put differently, resource extraction, depletion and pollution drives the pursuit of new sources of natural resources in new geographical territories. Despite the multiple barriers to transforming bulk freshwater

resources into tradeable assets, a growing competition for water resources has generated significant enthusiasm for bankable water-related investments (Bayliss 2014).

Resilience planning as a tool of racial finance capitalism

Scholars of racial capitalism argue race-neutral formulations are inadequate for explaining the racial violence that "permeate[s] the social structures emergent from capitalism" (Robinson, 1983: 2). Black feminist geographer Ruth Wilson Gilmore stresses, "Crises are spatially and sectorally uneven, leading to different outcomes for different kinds of people in different kinds of places" (2007: 55). Scholars of urban racial capitalism underscore the way racism, understood as the "state-sanctioned or extra-legal production and exploitation of group-differentiated vulnerability to premature death" (Gilmore, 2007: 28), is inextricably linked to histories of urban environmental management (Pulido, 2016; McClintock, 2018). Racial finance capitalism thrives in segregated landscapes, where the lives of those deemed to represent a "surplus" to the system can be subordinated to investors' needs (Pulido, 2016). As Laura Pulido argues, the "racially devalued surplus place" functions as a "testing ground for new forms of neoliberal practice that will become increasingly common" (2016: 2).

According to Evans (2011), resilience planning embodies the experimental ethos in urban adaptation; it turns targeted cities into laboratories to test new forms of knowledge and technologies. Budding research from Cape Town, Washington DC, and Miami reveals that resilience initiatives exploit and exacerbate uneven socio-environmental vulnerabilities in cities with deep-seated historical inequities (see Grove et al., 2019; Ranganathan and Bratman, 2021; Bigger and Millington, 2020). Chandler et al. (2020: 140) highlight the disconnect between discourse and practice in equity-themed resilience initiatives that simply reconfigure inequitable urban practices, decoupling them from place-specific histories in order to generate an "uneven economy of futurity." Likewise, Bigger and Millington (2020) argue that green debt mechanisms promoted through resilience planning initiatives like "green bonds" offer little more than a "green halo" with little enforcement or accountability. That is, resilience planning establishes financial imperatives of risk management and profit maximization to ensure urban climate adaptation yields returns on investment. These undermine the urban water system's social and

environmental responsibilities towards vulnerable communities and push them into greater states of precarity.

Black feminist political ecologies

Feminist materialists have criticized Marxist geography's failure to ground abstract theorizations in the intimate scales of everyday life and embodied experiences (see Massey, 1994; Nagar et al., 2002). Massey's "power geometries" of spatio-temporal reconfiguration assert that technological innovation creates differential mobility and access; furthermore, hegemonic efforts to create time-space efficiencies tend to have the opposite effect on others. Cindi Katz (2004) adds that processes of time-space compression at the global scale are often experienced by vulnerabilized populations as "time-space expansion."

South African social movements are among the most militant in fighting for decent housing and access to municipal services (Bond and Malikane, 2019; McKinley, 2016). Black women have exerted their space-making power through land occupations, service reconnections, non-payment tactics, and a range of other 'insurgent citizen practices' (Miraftab, 2009; Dugard, 2010; Benson, 2021). As the epigraph from Audre Lorde's 'A Litany for Survival' emphasizes, black women's existential struggles offer critical insights into the effects of capital's attempts to resolve crises by externalizing socio-environmental costs.

This investigation into hydrosocial contestations surrounding urban water resilience in the context of black women's struggles for "a now that breeds futures" offers a grounded and conjunctural analysis of time-space reconfiguration. My focus on embodied spatio-temporal struggles avoids feeding the dominant tendency to reduce black life to biology and marginalized women to victims of geography (Hawthorne, 2019; McKittrick, 2006). In an era of overlapping financial and socio-environmental crises, I investigate the power geometries of time-space by foregrounding place-making, life-generating and future-building activities of those living at multiple intersections of vulnerability. I use the language of spatio-temporal *(dis)ruptures* to emphasize black women's experiences of spatio-temporal injustice (ruptures) and practices of resistance (disruptures) to decenter hegemonic actors.

Methodology

This article forms part of a doctoral research project that grew out of collaborations with community water activists in Cape Town. I first became involved through my work with the Blue Planet Project (BPP), an international water justice initiative and key actor in the global movement against water privatization. The BPP began working with feminist historian Koni Benson in 2014 to support local organizers against WMDs in the township of Mitchell's Plain. By 2017, this group had expanded into the African Water Commons Collective (AWCC), a city-wide grassroots network organizing for water justice in 18 neighbourhoods. In December 2017, the BPP supported the AWCC in holding a city-wide meeting that led to the formation of the Cape Town Water Crisis Committee, a diverse coalition aimed at monitoring and responding to municipal drought politics.

This research is guided by dialogical feminist ethnographic approach and a critical policy analysis. Data collection involved participant observation and interviews conducted over a period of two months in 2018 and three weeks in 2019. During this time, I visited seven neighborhoods with AWCC activists and attended workshops and meetings organized by other grassroots and community groups. I conducted 43 interviews with women organizers living in precarious housing conditions on the outskirts of the city. I also attended two BPP roundtable discussions on water justice issues in South Africa in 2018 and 2019.

In addition, I undertook a critical analysis of 16 water policy-related documents produced in the aftermath of the drought including policy frameworks, technical reports and city public relations materials to learn more about water restriction systems like metering technologies and payment systems. Conversations with frontline women helped me identify key tensions between these documents and black working class women's daily struggles. I use pseudonyms to protect the identities of women who shared sensitive personal stories. Information garnered from experts and key organizers is accurately attributed with their consent.

Resilience planning in Cape Town

The emergence of resilience planning over the past decade coincides with the pursuit of water-related interests by a confluence of powerful actors seeking to address overlapping crises of

stagnant Northern capital and growing concerns related to water scarcity. An IMF (2015) staff discussion note, for instance, highlights the need to strengthen "resilience to water supply variability" by creating macroeconomic policies to help countries increase water-related investments. Resilience planning is not in itself a form of financialization, but a strategy to reformat cities to make them more investable (Bigger and Webber, 2021). For instance, the World Economic Forum, which views water scarcity as one of the greatest global threats, sees resilience planning as a strategy to enlist local actors into building "detailed intelligence on situational vulnerabilities and likely impacts of key risks," ultimately improving the investment environment (World Economic Forum, 2022: 88). The World Bank Water Group spearheads multilateral resilience programs that make water and sanitation services more amenable to private financing.

This approach marks a shift from the private-public-partnership models promoted in the 1980s and 1990s through structural adjustment programs (SAPs), which did not yield the desired gains for private sector partners (Marin, 2009). Resilience planning, therefore, creates opportunities for low-risk, high-yielding commercial investments in the water sector (both in service delivery and resource management). Several public-private policy consortiums have recently emerged to bring international financial institutions, corporations and banks together with governments and UN agencies to introduce resilience planning into urban governance through technical expertise and knowledge-sharing projects. These efforts have positioned bankers and corporations such as Coca-Cola as leading policy experts on urban climate adaptation.

Cape Town's experiences in the aftermath of the historic drought offer insights into the contestations surrounding this emerging spatio-temporal fix. In 2017, as part of the Rockefeller Foundation's 100 Resilient Cities grant, Mayor Patricia De Lille hired Craig Kesson, a business school graduate with ties to the finance sector, to lead the city's resilience planning efforts (CCT, 2017). After overseeing the development and launch of the Cape Town Resilience Strategy (2019) and Cape Town Water Resilience (2020), Kesson left city government to become a partner at Price Waterhouse Coopers in 2021. Not surprisingly, a financial logic underpins the far-reaching objectives of resilience initiatives, which cover an ambitious range of socio-economic and environmental issues including crime, unemployment and poverty. Within a short

period of time, resilience priorities have become embedded in all urban policy areas as an overarching priority.

As part of its efforts to improve the resilience of its water system in the aftermath of Day Zero, the municipal government issued a Green Bond accredited by the Climate Bonds Initiative to raise money for infrastructure upgrades in 2017. In the same year, the Nature Conservancy (2019) established the Greater Cape Town Water Fund as a financing mechanism for watershed restoration initiatives managed by a public-private steering committee that included Coca-Cola Peninsula beverages, PepsiCo, and other large corporate water users.

Several factors made Cape Town a strong candidate for testing water-related investments. For instance, South Africa is an upper-middle income country and perceived to be very investment-friendly. Cape Town is one of the first cities in the world to pioneer the *Water Resilience Approach* (2020), a joint initiative by the Lloyd Bank's Register Foundation and the global engineering firm Arup, with support from the World Bank and the Stockholm International Water Institute. Launched in the aftermath of Day Zero, resilience initiatives have sought to cement and repackage highly contested urban water governance practices as innovative climate solutions (Bigger and Millington, 2020). The city has received accolades from several influential international bodies, including C40, a global network of megacities that now promote Cape Town's approach further afield.

The naturalization of drought – its depiction as an inevitable natural occurrence, rather than a complex "hydro-social" event where physical factors such as low rainfall interact with a range of socio-economic factors – serves to legitimize the call for more stringent measures restricting access to water. The Malthusian framing of population growth as a threat justifies ramping up measures that disproportionately target poor people. Despite empirical evidence showing that wealthy Capetonians (less than 13% of the population) are responsible for consuming 51% of the water, water restriction technologies continue to exclusively target poor residents living in precarious conditions in the underserviced outskirts of the city.

Technological solutions for demand management, such as pressure management and the installation of WMDs in properties, were considered the most-effective demand management

interventions. This ignores the impact of tourism and high-end real estate. The city not only failed to develop measures to crack down on overconsumption in these sectors, a dependence on user fees led it to prioritize services for wealthy communities, including in the form of exclusive service packages for high-end communities. Resilience discourses have thus re-cast existing austerity-driven water restriction mechanisms in the post-apartheid era as urgent climate adaptation imperatives.

Spatio-temporal ruptures in everyday life

The word rupture describes a breach, a tear, or the act of suddenly bursting or breaking apart a physical or social structure. I employ the term in dialectic opposition to the spatio-temporal fix; it denotes the breaches and cracks in the everyday experiences of frontline women who live on the flipside of capital's efforts to repair or fix in place the conditions for its own reproduction. It describes breaches of the post-apartheid social contract, tears in the social fabric of frontline communities, and deepening cracks in survival mechanisms, which play out on axes of time and space as 1) the expansion of spatio-temporalities of social reproduction, 2) the paradox of a distant Orwellian Big Brother city government that enhances its capacity to surveil and control daily life, and 3) the construction of dehistoricized futures.

Spatio-temporal rupture 1: Expanded spatio-temporalities of social reproduction

> "In the village, we must walk to get water. We come to the city thinking it will be better, but again we are walking to fetch water in buckets." - A single mother who moved from the Eastern Cape to an informal settlement for better job prospects

South Africa is often seen as an outlier, a good news story in Africa, where 96% of households have access to clean water (Department of Water and Sanitation, 2018). Yet this aggregate data invisibilizes the spatio-temporal injustices experienced in marginalized women's daily struggles against water restriction measures, which are largely ignored in human rights, development, and political economic literature.

The World Bank utilities reforms in the Global South aim to mitigate billions of dollars of potential revenue loss from "non-revenue water" (NRW) (Kingdom et al., 2006). Following suit, Cape Town has targeted non-payment and self-connections with WMDs, pressure management technologies, and flow restriction devices (Scheba, 2021). Cape Town uses a block tariff system that increases sharply with each block, and tariffs have risen drastically since 1996. Consumption above the Free Basic Water (FBW) supply is now cost-prohibitive for low-income users who find themselves dealing with insurmountable debt (Jaglin, 2008). The city government also punishes those unable to pay water bills by withholding or restricting access to other municipal services.

Cape Town introduced the highest global water rate increase (390%) in 2018 to compensate for a loss in revenues stemming from drastic cuts in consumption during the drought (Dubey 2018). The city also scrapped its universal Free Basic Water Policy (Scheba, 2021). Since this time, lifeline supply has only been available to those who are officially "indigent." The World Bank (2014), a proponent of even more stringent cost-recovery measures, sees such lifeline guarantees as a hindrance to municipal solvency.

Before the emergency drought response measures, WMDs had exclusively targeted low-income residents on the outskirts of the city. Once installed, they limited household consumption to 350 litres per day. This severely affected large households, often with informal extensions and backyard shacks housing family members who were on long waiting lists for formal housing. Middle-aged and elderly women often shelter grown children, grandchildren, and other family members. They also care for the children of family members in precarious situations (since they at least had a house and municipal services). These household matriarchs are often required to enforce routines and rules for sharing water to ensure sufficient supply. Many developed meticulous routines to ensure the best use of their measly water supplies: dishes can be washed with laundry water, but not the other way around; dishwater can then be used to flush toilets or to water garden plots.

To make matters worse, WMDs were often faulty, resulting in water shut-offs that could last for days or even weeks. For instance, Nokuzola sometimes waited up to three days for her taps to flow once her household used their 350-litre allocation. The City has acknowledged that the

technology is difficult to install and more prone to defects than standard connections (Sinclair-Smith, 2019). Households are also responsible for their own repairs, so any leaks result in abnormally high bills or premature shut-offs. When household connections fail to meet basic needs, women must travel, sometimes over long distances, to fetch water for their families. This caused a ripple effect, increasing queues in informal settlements and leading to tensions and disputes between women from different communities.

Some women consented to WMD installation believing their municipal arrears would be erased. For instance, Simone, a 63-year-old grandmother, was shocked to learn that she still owed the city nearly 11,000 Rand (approximately $850 CAD) after agreeing to a WMD. She worried that the city would eventually cut off her water and electricity or that she would be evicted from her home, but the debt was far too steep to pay off on a fixed income. She and her husband each received a social security pension—a maximum of $150 CAD per month per person.

Doreen's household of five (including two grandchildren) was disconnected for nine months, so she had to get water from her sister, whose flow was not restricted. Despite the tremendous inconvenience to both households and the increase in water bills, they were better off than many others. Some of their neighbours dealt with the emotional stress of wondering where to fetch water each day. Violet grew desperate when her family's water supply was shut off for three weeks. She began experiencing dizzy spells, probably due to stress and dehydration. Violet did not receive consistent support from her neighbours and felt she had no choice but to steal while they were away. This did not require breaking into their homes, as taps are often installed in the yard. She is not proud of her actions, but her family was desperate for water. According to the AWCC, elderly people with limited mobility and support sometimes resort to desperate measures like scraping ice out of the freezer or even drinking their own urine to swallow their pills when water ran out.

While the municipal government was forced to shift gears due to persistent community activists organizing against WMDs, the drought legitimized retrenchment and increasing coercion by the state. In 2021, the city finally withdrew efforts to install WMDs in townships and informal settlements. Instead, it required indigent water users to self-restrict to 15 kl per month (Scheba et al., 2021). Those who exceed that amount for two consecutive months would have their

consumption reduced to 6 kl per month by a flow-limiting disc that reduces pressure to a slow trickle for an entire year. Flow-limiting discs are also installed without consent in the homes of those with arrears in municipal bills.

WMDs and other metering devices are the focal point of local organizing and critical water literature. Yet, pressure management technologies likely do more to restrict consumption in low-income Cape Town households. This technology was first installed in 2001 in Khayelitsha, a partially informal township established in 1983—approximately 30 kilometres outside the city centre—to settle 200,000 residents classified as "black Africans." According to Sikhula Sonke, a community-based organization focused on early childhood development, 75% of residents live in shacks and 89% of households are either moderately or severely food insecure. In 2001, the city's Water Conservation and Demand Management (WCDM) plan brought in new pipes with pressure management valves and electronic control mechanisms to restrict the flow of water to Khayelithsa. This "first large-scale advanced pressure management project in the world" has received "numerous awards," according to the head of the city's Water Demand Management and Strategy Branch (Sinclair-Smith, 2019: 7).

According to the city's own estimates people living in informal settlements account for a mere 4 % of Cape Town's total water consumption since they are naturally limited by individual capacities to walk, wait times in queues, and their ability to carry water multiple times a day (CCT 2018). The city government claims it provides a minimum of one tap per 25 households. Yet, according to the NGO Sikhule Sonke (Sikhule Sonke n.d.), one in three residents must walk at least 200 metres to fetch water in Khayelitsha, often making several trips in one day. In theory, the City of Cape Town is in compliance with international human rights norms requiring drinking water sources within 1000 metres of the home (UNDESA, 2004). Nevertheless, water restriction measures like pressure management increase water insecurity and expand the geographies of social reproduction labour in ways that are not captured in official data.

The local government's official rationale for targeting areas like Khayelitsha is that cheap pipes carrying water to townships cannot handle high water pressure leading to excessive water leakage. The devices offer a water savings of 9 million m3/a, which represents a 40% drop in consumption and amounts to a financial savings of US $2.7 million per year (Mckenzie et al.,

2004). While Cape Town may indeed benefit from a leak reduction strategy, leakage is never fully eliminated, even in cities with greater resources and access to more modern technologies (Lerner, 1990). Furthermore, data on urban groundwater recharge suggest potential environmental advantages from leaking pipes. Leaking pipes recharge aquifers and, in so doing, counter the impacts of evapotranspiration in cities around the world (Lerner, 1986, 1990). Given this context, Cape Town's targeted use of pressure management for water conservation to systemically increase the water insecurity of historically marginalized communities lacks a strong environmental basis.

The pressure management system was later extended to other townships, including Mitchell's Plain in 2008. The City views the system as an environmental success (Sinclair-Smith 2015). Meanwhile, women fetching water from communal standpipes frequently complain about having to wait 20-25 minutes to fill a 25-litre bucket of water. This contributes to lengthy queues, even when there are few people. A woman I met at a shared tap in an informal settlement near Mitchell's Plain was visibly exasperated. She pointed to the bucket in front of her: "If my house were on fire, everything would burn down before this bucket is filled."[4] [1] This is a serious concern, as shack fires are a frequent occurrence in informal settlements (Nsetku, 2022).

Finally, the City recovers unpaid water debts from its prepaid electricity meters. The rate deducted depends on the property's value, ranging from a 30% deduction at the lowest end to a 90% deduction for more expensive properties (CoCT Credit Control and Debt Collection Policy, 2023). This means that those unable to pay their water bills must also pay more for electricity. Women who cannot afford electricity must find alternative fuels to cook meals and light their homes. A single mother I met in Mitchell's Plain became unhoused after a cooking fire burned down her shack. Her children, aged 5 and 7, moved into her sister's government-subsidized rental home, which was too crowded to accommodate her. She now moves from one neighbour's yard to another sleeping on a mattress in a makeshift tent fashioned out of an old shower curtain. Worried for her safety, she is up most nights listening for signs of danger.

Stories like these demonstrate the domino effects when municipalities in the Global South deliver basic services on a full-cost recovery basis. Resilience planning has bolstered water demand management initiatives targeting the city's most vulnerable populations and increasing the physical and emotional burden of working-class black women. Unlike the women in the UNICEF stories, most women in Cape Town have access to infrastructure. Nevertheless, the hours spent and distances traveled as a result of technological, administrative and economic constraints are undocumented in official data and invisible in traditional "water and gender" literature.

Socio-spatial rupture 2: The distant Big Brother

Once installed, flow restriction technologies allow the city services to remotely control a household's water consumption. WMDs eliminated the need to pay workers to travel from house to house to read meters, record readings, and generate individualized bills. Controlling the consumption of surplus populations makes city services less fiscally volatile for potential investors and frees up water supplies for capital accumulation. Like the all-seeing, omnipresent "Big Brother" in George Orwell's *Nineteen Eighty-four* (Orwell 2000) the state is ever-present in the lives of women engaged in the daily work of survival. At the same time, it has grown increasingly distant, inaccessible, and unaccountable.

Women with household water connections—often grandmothers in their 40s, 50s and 60s—describe a classic case of Foucauldian *gouvernementalité* (Foucault, 2003). They must enforce restrictions on the water consumption of their loved ones to comply with limits imposed by the state. Policing household water usage and maintaining harmony among different users is stressful. They describe tensions and perceived hierarchies when some must wait to do their chores with water that has already been re-used multiple times. When possible, they supplement with alternative sources of water. Ultimately, they are on the hook for high bills and penalties that will impact all those who depend on them.

At an AWWC meeting in Cape Town held in September 2018, organizers discussed the role of water restriction measures in undermining mutual aid efforts that are vital to community survival. Insufficient water supplies undermine their capacity to extend hospitality, share care work, and put out each other's fires. Water restrictions and high bills have prevented neighbours

from voluntarily helping each other out. Women waiting in queues resent it when those with household water connections supplemented their supplies from nearby communal taps. Households with WMDs are under the impression that those with access to communal taps benefit from an unrestricted supply of water. By constructing zero-sum scenarios of water scarcity and promoting individualized solutions, resilience policies exploit and deepen old wounds.

AWCC organizers view Cape Town's water policies as an extension of apartheid-era politics of divide and conquer that turned marginalized communities against one another. During the crisis, the municipality set up a snitch-line for residents to report on neighbours. A talk radio station promoting the initiative posted information on its website under the heading, "We've got a crisis on our hands, but some people just don't care. Here's how to report an anti-social water waster" (Cape Talk Radio, 2016). Among the "anti-social behaviours" targeted during the drought were car washes run by shack dwellers in Khayelitsha with no other source of income (May, 2018).

Concomitantly, the municipal government has become increasingly distant and inaccessible to black women, whose burden is intensified with each restrictive measure. Water pressure is difficult for community organizers to challenge or negotiate (unlike WMDs, which many successfully rejected or simply left water bills unpaid). Likewise, water debt recovered from prepaid electricity meters is not negotiable, despite the tremendous impact of making do without basic energy.

When Free Basic Water was scrapped in 2018, those who were not formally recognized as indigent—i.e., poor enough to receive free and subsidized services—saw their bills skyrocket. Securing indigent status is onerous and challenging (Gitahu, 2021): it requires paperwork, identification documents, bank statements, and sworn affidavits. For those with limited access to transportation, it is costly and strenuous to travel to numerous offices, including the bank and police station. In addition, many community activists feel like the process gives the municipal government added powers of surveillance and control over their daily lives. To be approved, individuals must consent to the installation of prepaid electricity meters and agree to a municipal debt repayment plan. Indigent status is renewed on a yearly basis, and the municipality reserves the right to investigate compliance and withdraw at any moment. As Ruiters (2018) argues, it is a system designed to discipline the poor and distinguish the worthy from the unworthy. Those who

are poor, but not deemed poor enough, are cut off from free basic supplies and required to pay full price for essential services.

The recent outsourcing of meter installation to a private third party has also increased the distance between the City and its most marginalized citizens. According to Faeza Meyer, founding member of the African Water Commons Collective, private contractors often fail to adhere to the city's obligations to residents when installing meters (Meyer 2018). Companies are paid by the number of meters installed; thus technicians are often under pressure to install as many meters as possible and are not properly trained in how to obtain legal consent. For instance, 52-year-old Amanda says the municipality connected her household to a WMD without her permission. The contractor coerced her elderly mother into signing a consent form while everyone else was out of the house. Her vulnerable mother was not authorized to grant permission and did not understand what she was signing. These struggles with contractors are a far cry from the relationships forged with unionized municipal workers in earlier post-apartheid struggles. Water workers once organized with frontline activists against privatization, prepaid meters, and service disconnections (SAMWU, 2009). South African and global water justice lore describes South African Municipal Workers Union members who would install meters during the day and train their neighbours how to bypass them at night.

While the increasingly "smart city" has enhanced its remote access to homes, those with concerns about faulty meters, seeking to negotiate a larger daily allocation due to household size, or hoping to remove technology installed without consent are told they must go to the City in person. The municipality requires in-person appointments and several official documents, including bank statements and signed affidavits testifying to being unemployed to negotiate payment plans. This is no small feat for those living on the outskirts without access to affordable public transportation. Many describe their frustration at being forced to take expensive private minivan services (the only option available to them) or travel long distances on foot only to be told they are at the wrong office or have not brought the correct documentation. The elimination of a human interface—through sub-contracting and "smart" technologies—makes the municipal government especially inaccessible to older women, who not only face financial and mobility constraints but also struggle to communicate electronically.

Lastly, technological restrictions and administrative barriers not only limit access to water, but also outmaneuver and limit the political capabilities of poor black women. In the 1980s, the ANC called on people to make themselves ungovernable to accelerate the fall of apartheid (Sales, 1984). Self-connections, non-payment, and the rejection of water restriction technologies enabled marginalized communities to assert their collective power and claim their rights to city services into the post-apartheid era. The government of Cape Town has incrementally enhanced its technological and administrative power over marginalized communities' daily water consumption for more than a decade. The water crisis gave the city an opportunity to intensify these efforts. Using the pretext of an extreme weather event, the municipality eliminated universal FBW, overrode procedural rights to implement water restrictions coercively, and adjusted tariff structures. These measures not only deepen the water deficit in black communities but also constrain their decision-making power.

Spatio-temporal rupture 3: Ahistorical futures

> *The problem was that Day Zero was not the beginning. We have to look at water issues from the beginning. […] In South Africa, poor people were moved out so rich white people could grab the best land, even prior to apartheid. When Day Zero hit, we asked why the beer companies were getting water and Coca-Cola was getting water. We know there is climate change and that there are water shortages, but as long as these big companies are wasting water, why should we be denied? […] We don't have swimming pools or gardens. We are using water to survive.*
>
> - Faeza Mayer, People's Water Forum webinar, March 2022

The Cape Town Resilience Strategy (2019: 6) is claimed to offer a "roadmap for a 21st century metropolis." Meanwhile, large segments of the population continue to live in makeshift homes in grossly under-serviced segregated neighbourhoods far from economic activities in the city centre (Turok et al., 2021). Citing the housing rights activists she works with, historian Koni Benson (2021) argues that many live in a "post-apartheid apartheid." Akin to McKittrick's (2011) concept of "plantation futures," there are numerous continuities between past, present and future forms of anti-black violence.

In 2020, the City launched "Our Shared Water Future: Cape Town's Water Strategy" (CCT 2020) echoing priorities of the Resilience Strategy. Contrary to Cape Town's official rhetoric of "shared futures," its urban water resilience strategies protect the conditions for future returns on investments by robbing poor racialized communities of the material conditions for the reproduction of life. By reminding us of the connections between present-day drought and apartheid histories, Meyer (2022) emphasizes the unpaid debt to historically marginalized communities who are still waiting for decent housing and access to municipal services. She challenges the framing of a shared reality by highlighting the unequal distribution of water. Reading resilience policies from the perspective of a black sense of place makes visible the enduring presence of apartheid as "the blueprint for future sites of racial entanglement" (McKittrick, 2011) in Cape Town.

Embodied apartheid histories

In 2017, the municipal executive director warned, "everyone in the city would have to endure some discomfort and inconvenience but this would be better than the alternative, which is extensive disruption at a later point" (CCT, 2017). The demand for collective sacrifice to ensure a water-secure future obscures highly unequal hydro-social conditions. This move erases racial violence in contemporary Cape Town, re-casting a colonial urban water system as the innocent object of future-casting exercises. As McKittrick argues, the "denial of an entangled racial history produced through geographies of encounter, normalizes practices of colonization as it naturalizes overdevelopment, accumulation and land ownership as identifiable-seeable locales of emancipation" (2011: 950).

In August 2019, I accompanied the AWCC on a visit to the partially informal township Khayelitsha, where I met sisters Nkozasana and Bandile skinning and chopping raw chicken meat at their neighbour Anele's kitchen table. They live together with another sister and their five children in the shack their mother built in 1990. Nelson Mandela had just been released from prison and, over the subsequent years, many black South Africans held hope. Their mother moved from rural Western Cape to Khayelitsha in search of a better life for her children. To her, the shack was temporary, as she would soon be able to give her children the brick home

promised by the ANC's *Reconstruction and Development Plan,* which promised a million houses in the first five years (Bond et al., 2011). The plan was scrapped within two years and replaced by the market-oriented Growth, Employment and Redistribution (GEAR), which prioritized economic liberalization and austerity over redistribution (ibid). Now in their 30s, these sisters have been disabused of any hopes of receiving decent government housing. In 2014, Human Settlement Minister Lindiwe Sisulu announced that anyone under the age of 40 was ineligible for free housing; as she put it, the "intention in giving free housing was to right the wrongs of the past […] You the young people have lost nothing" (IOL, 2014). Instead, they received an "in-situ upgrading" scheme – a quick fix to the growing backlog of housing (Huchzermeyer, 2011). The City installed a tap in their front yard, and then a WMD was installed on the tap. Their household of eight struggles to meet their daily needs on 350 litres.

The municipal government, international financial institutions, and a more recent flock of resilience experts consider water restriction technologies to be markers of progress. But they represent the opposite for these sisters. Other neighbours sometimes purchase extra water, paying 18 rand ($1.50 CAD) for a 5-litre bottle, which they cannot afford and thus must rely on the generosity of unmetered neighbours. The sisters are also on the prepaid electricity system. These meters are their only relationship with the state: "The city only comes to check meters and count people," says Nkozasana.

Their neighbour Anele's free-flowing water brings them together to cook and sell chicken for income. She has an 'illegal' self-connection and does not receive municipal bills. Though the pressure from her tap is very low, Anele does not worry about the water running out.But she is concerned about water quality and its impact on her family's health: "The water is very bitter tasting and brown in colour." Nevertheless, she values the greater control offered by unrestricted access to water, which provides some relief to several households. The food they cook generates very little income because most people are unable to pay for it, but it enables a modest circulation of resources between households.

The younger sister, Bandile, begins to weep softly while discussing their mother: "She worked very hard." She sold sheep guts, washed clothes and did other odd jobs for a living." Nkozasana, who dropped out of high school to help her mother, adds, "She worked all the time, even in the

rain." All three sisters are now single mothers, like their own mother. Bandile continues, "Our children are naughty at school." They receive a meal at school, but there is often nothing to eat at home. "This is how our children become gangsters," adds her elder sister. "When there is nothing for them, they will go out and rob people."

In what appears to be a clumsy effort to lighten the mood, Anele says, "they must eat well, look how fat they are." The sisters laugh along, but Nkozasana interjects, "We are not fat because we eat, we are fat because we worry." There is a keen sense that bodies store their historical pain and fears about their children's future. The sisters do not remember apartheid, but they do remember the hardship their mother endured. "My mother could not go to school. She died poor, she had nothing. I could see the effect apartheid had on her and it stays with us." Like their mother, all three sisters have high blood pressure. Contrary to Minister Sisulu's proclamations, apartheid remains a part of their daily reality.

The urban drinking water and sewage system was built in the nineteenth century to serve European neighbourhoods and exclude overcrowded pockets housing African minorities and migrants of colour (Miraftab, 2012). Racist hygiene discourses were foundational to the early politics of spatial segregation in pre-apartheid South Africa. For instance, official narratives accused black residents of poor hygiene practices and unsanitary living conditions during the smallpox epidemic of 1882-83 (ibid). Thousands of black migrants were forcibly moved out of the city to safeguard the health and well-being of European populations. In 1994, more than 40% of the population was without access to safe drinking water and 50% lacked access to adequate sanitation. In rural South Africa, 1.2% of the population used 95% of the water (von Koppen and Schreiner, 2014).

In the transition to democracy, the ANC's promises of decent housing, access to municipal services, and reparation for socio-economic injustices were undermined by the adoption of World Bank-driven structural adjustment policies (Scheba, 2022; Ruiters, 2014). The ambition and scope of rights-based social policies and redistributive measures were stifled significantly as the ANC was forced into a state of austerity, saddled with the debts of a developmentalist apartheid regime that had invested heavily in water infrastructure for white farmers and white cities (von Koppen and Schreiner, 2014).

Cape Town was already pushing demand management strategies in the mid-1990s as part of an Integrated Water Resource Management (IWRM) plan designed by a private consortium (Frame and Kilick, 2004; Sinclair et al., 2020). Driven by international financial institutions and white engineering firms, IWRM was characterized by its emphasis on economic efficiency, which prioritized 'higher value' large commercial users, including agribusiness, big beverage companies and extractive industries (Von Kopfen and Schreiner, 2014; Zwarteveen and Boelens, 2014). White engineers and environmentalists attuned to international trends drove "second generation" policies to manage scarcity without addressing major gaps in equity that would require public investments in "first generation" infrastructure development (Von Kopfen and Schreiner, 2014).

New discourses of climate adaptation propose pathways for the accumulation of wealth that hinge on greater deprivation of historically marginalized communities. According to The Cape Town Resilience Strategy, free services have put "major pressure on municipal finances" as the provision of basic services to informal settlements grows "in extent and complexity" (CCT 2019b: 74). This ahistorical account naturalizes the deprivation of racialized South Africans and erases the state's obligations to them. The Strategy proposes exploring "alternative, innovative and financially feasible mechanisms of service delivery in informal settlements" (ibid), in other words, resegregating black South Africans by moving them off the public urban grid. Concomitantly, the Resilience Strategy calls for upgraded infrastructure in the core to cultivate Cape Town's status as a destination for "hundreds of thousands of visitors who come every year to experience our world-class beaches, mountains and culture" (ibid.: 6). Meanwhile, The Cape Town Water Strategy states that "Cape Town Water is undergoing a transition to a modern, fit-for-purpose, world-class water service provider in line with international best practices" (CCT 2020: 55). According to this logic, vast discrepancies in access and quality of services are not injustices to be corrected, but the result of "fit for purpose" infrastructure planning.

The World Bank's (2023: 11) prescription for governments of the Global South to not "spend more, but to spend better on the right objectives with the use of relevant metrics" succinctly captures the agenda behind resilience planning. The Bank continues to promote austerity measures and divestment from social welfare programs so that limited public funding can be allocated to initiatives that will make public infrastructure more profitable. For historically

marginalized communities, these meansures will mean stricter control of access to services and the exploration of cheaper alternative technologies and off-grid solutions.

Also worth noting is a "women and gender resilience program" highlighted in the Cape Town Resilience Strategy that puts a gender empowerment spin on the organized abandonment of racialized communities. The program provides disaster-response training for women and girls in vulnerable communities—including "first aid, fire safety and burn treatment." Rather than providing communities with the resources required to reduce their vulnerability to disasters, the project trains women who are already deeply overburdened to take on a greater responsibility for ensuring the survival of communities abandoned by the state. Thus as I aimed to demonstrate, contrary to the rhetoric of "shared futures," resilience strategies chart new apartheid futures; They carry forward the geographies of segregation and resistance.

Disruptures of racial capitalist time-space

After the mayor's announcement in January 2018 that coercive measures would be used to reduce consumption (Gatehouse, 2018), the AWCC played a central role in the formation of a city-wide coalition involving residents of wealthy neighbourhoods and small businesses who joined forces to demand accountability and draw attention to vast discrepancies in access to services. The coalition organized protests garnering significant media attention and public support, shifting the public discourse to focus on water injustice. Despite their gains, however, Stellenbosch University scholar Steven Robins (2019) asks whether the tariff hikes, elimination of universal free basic water and new water restriction technologies demonstrate the limitations of "hydraulic citizenship." Robins explains "hydraulic citizenship" as the assertion of belonging in a community through claims to water infrastructure and engagement with water politics.

In this section, I propose that the space-making and future-building efforts of frontline organizers go far beyond *hydraulic citizenship* or policy negotiations with the state. As the situated scholarship of black and Indigenous scholars (Coulthard and Simpson 2016, Davis et al.2021, Gilmore 2007, Mullings 2021) has shown the acts of care and daily resistance that serve to prefigure future worlds. Similarly, I discuss four key gains of collective organizing for water justice as an articulation of feminist prefigurative praxis that decenters hegemonic actors and

approaches contestations surrounding water infrastructure through the lens of black feminist geographies.

Reclaiming time

First, by breaking meters and/or refusing to pay bills, marginalized women disrupt the imposition of racial capitalist time-space in their daily lives. Maintaining a continuous supply of water gives them freedom over their daily schedules and greater freedom in their capacity to share care work. The opting out of a relationship with the racial capitalist/ post-apartheid apartheid state through clandestine connections also eliminates a time-consuming administrative burden.

Building community and geographies of solidarity

Second, scaling up acts of daily resistance through concerted efforts to build solidarity has helped grassroots groups reclaim space-making power in marginalized neighbourhoods. The AWCC helps set up neighbourhood water action communities to collectivize problems. Some communities also established an SMS line so people can reach out to each other in an emergency. For instance, alerts are sent when a City contractor arrives to install a WMD, inviting neighbours to show up and join forces in driving them out. Such actions rescale water as a collective problem, disrupting the government's efforts to alienate neighbours from one another by individualizing their water deprivation. These collective efforts disrupt the role of neoliberal water policies in atomizing communities into individual metered households.

At a city-wide scale, the AWCC's meetings bring together community activists from different neighbourhoods, and apartheid-era communal divides that kept racialized working-class populations apart to feed the regime's politics of divide and conquer (Turok et al., 2021). By building "hydraulic community," rather than "citizenship" (Robbins, 2019), the AWCC disrupts apartheid geographies and charts new geographies of common struggle and solidarity.

Political power

Community organizers claim the city's new SMS line has been ineffective in addressing service-related complaints. Afra, an activist, began organizing collective appeals to get the City's attention. She explains:

> *The government thinks nothing of us poor people. We report leaks, but it takes weeks or months for them to come fix them. Rich people get services immediately. We must send hundreds of texts, but we see they are not interested in us. They think we are not clever, so they install water management devices in our homes.*

Frontline women narrow their distance from the centre of power by banding together to send multiple SMS messages whenever one of them requires the city's attention. Their actions are rooted in a long history of South African social movement politics of "ungovernability" through which communities have maintained their autonomy from oppressive regimes. These ongoing articulations of ungovernability disrupt the politics of hydraulic *gouvernementalité* through which the City asserts its power.

Revolutionary futures

Lastly, neoliberal hydro-climate policies seek to replace a popular ethos of reparation and redistributive justice—long central to black working class organizing—with an ethos of resilience aimed at mobilizing individual sacrifice towards an imagined shared future. Cape Town's resilience planning efforts have drawn on totalizing narratives of climate uncertainty in order to justify its progressive abandonment of the post-apartheid social contract to repair historical injustices. The city's most vulnerable populations are denied access to vital water supplies in the name of urban climate resilience.

In this context, the AWCC's collective knowledge-building efforts contribute to what Paulo Freire (1970) referred to as "revolutionary futurity." According to the Brazilian activist philosopher, new possibilities of futurity can only arise when oppressed people organize to understand the nature of their oppression.

Collective organizing and clandestine acts of resistance save lives and extend the futures of 'those who were not meant to survive' in multiple ways. At the most basic level, by defending their access to sufficient supplies of water, frontline organizers protect challenge the vulnerability of their communities to premature deaths from a host of diseases. In addition, a recent study highlighting the connections between drinking water advisories and youth suicide rates on First Nations reserves in Canada underscores one of the more subtle relationships between water and premature death (Ansloos, 2023). Building on feminist affect theory, Ansloos emphasizes *hydrocolonial affect,* linking "bodies of water" to "bodies of flesh, of knowledge and of bodies politic" (2023: 17). Colonial narratives are disseminated in ways that are lived and *felt*, not merely in texts but also through water infrastructure.

By "creating space for affective knowledges" (Ansloos, 2023: 117), the AWCC counters the psychological trauma of water deprivation. At an AWCC meeting in October 2018, women shared experiences and described the power of storytelling in releasing them from the shame they once felt over their inadequate access to water or inability to pay bills. Together, they build counternarratives against the state's sanctimonious discourses on individual duties to pay and live within their means. The sharing of stories challenges environmental revisionism and denaturalizes drought by documenting the embodied histories tied to their claims for reparative justice.

Conclusion

My objective in this article was to examine the spatio-temporal injustices produced by resilience planning efforts that aim to recalibrate the city of the global South according to the needs of global capital. Resilience planning initiatives introduced in the aftermath of Cape Town's historic drought have disproportionately impacted historically marginalized populations. The lens of black sense of place serves to make visible the racialized and gendered impacts of hydro-

climate policies that pit the reproduction of capital against the reproduction of surplus populations. While most women in Cape Town do not walk long distances to access clean drinking water, policy analysis grounded in lived experiences and affective knowledges is useful in visibilizing their complex spatio-temporal struggles.

Frontline women engaging in collective action and individual acts of resistance in Cape Town assert control over their daily schedules and geographies of care, as well as the narratives that shape them. Their rejection of WMDs, acts of non-payment and self-connections serve as an antidote to the unequal futurity of resilience planning and the sacrifices it demands of them. Combining traditions of ungovernability with practices of mutual aid, the AWCC and its members have built a community of praxis that exposes and disrupts the reproduction of apartheid geographies in the contemporary city through acts that centre the lives of historically marginalized people.Their daily acts of individual and collective resistance disrupt the racial capitalist city's place-making, future-building efforts, emblematized by resilience planning initiatives. This article underscores the generative potency of small acts of care celebrated by Audre Lorde ("like bread in the mouths of children") that pave the way for dreams.

Chapter 2: Sustainable development, climate resilience and the technologies of water apartheid

Introduction

In March 2023, the United Nations held its first water-focused meeting in 46 years with the objective of garnering commitments from different sectors on critical water issues plaguing the planet (UN 2023). The challenges emphasized in high-level panels and key policy documents fell into two broad categories: 1) the lack of progress on Sustainable Development Goal 6 calling for universal access to drinking water and sanitation by 2030 (UN-Water 2018) dwindling water resources, which the World Economic Forum identifies as one of the five biggest threats to economic growth (WEF 2020).

In the year before the UN Water Conference, the World Bank, OECD, and other powerful multilateral institutions released reports (e.g. Roundtable on financing 2022, Mazzucato 2023) and offered inputs to preparatory processes emphasizing a need for private financing in water (Friedman et al 2022). These institutions retain control over development financing grants, giving them enforcement capacity that international human rights mechanisms lack (Wasiq 2023). The publication of this special issue coincides with global water justice movement efforts to consolidate knowledge and build collective resistance to emerging strategies to convert limited water supplies and water-related services into financial assets in a context of deepening global inequity (see DiFelice 2022, Lakhani 2023).

The emphasis on finance and technology also raised questions about the conference's specific regional focus—in this case Africa. Many reports (e.g.World Bank 2021, Roundtable on Financing 2022) released in conjunction with the UN Water Conference promote multilateral interventions to target the vast gaps in water access, sanitation, and hygiene (WASH) in African countries. In 2020, five years after the launch of the 2030 SDG Agenda, UN-Water warned that the world was "alarmingly off-track" for SDG 6's implementation (UN-Water 2020). According to the UN, two billion people lacked access to safe drinking water and 3.3 billion (nearly 46% of the world's population) lacked access to "safely managed sanitation services" (ibid). People

living without access to drinking water and sanitation are overwhelmingly located in the global South, and nowhere is the gap greater than in Africa; indeed "73% of the total population of Subsaharan Africa did not use safely managed drinking water in 2017" (2019 WHO/UNICEF). According to the Global Water Security 2023 Assessment report presented at the UN Water Conference, Africa has the highest rates of water-related deaths. Yet it is important to note that most African countries have sufficient or abundant water supplies. In a media interview, the report's principal author, Charlotte MacAlister, describes this situation as "the paradox of Africa" (Ighobor 2023). This comment recalls Walter Rodney's (1972) insights from nearly half a century ago:

> In a way underdevelopment is a paradox. Many parts of the world that are naturally rich are actually poor and parts that are not so well off in wealth of soil and sub-soil are enjoying the highest standards of living.

Rodney's ground-breaking work challenged the naturalization of African poverty by tracing the roots of underdevelopment to Europe's colonial agenda—i.e., to enrich itself by impoverishing its colonies. In contrast, the Global Water Security 2023 Assessment blames the lack of progress towards SDG 6 outcomes on weak political will, poor management skills, and a deficit in technical know-how in Africa. MacAlister echoes the World Bank and other multilateral institutions in calling for greater private investment and "accelerated capacity building" in Africa (Ighobor 2023). My purpose in this paper is to demonstrate the racial underpinnings of these efforts to purportedly 'save Africans' while creating new channels for investment for Northern capital – a perspective largely overlooked in the literature on water privatization. Inspired by efforts to finetune global solidarity around water justice struggles, this article brings critical water scholarship into conversation with racial capitalism theory to investigate the production and exploitation of differentiated vulnerabilities through water financialization.

In the first section below, I review the relevant literature and explain key concepts. After a brief overview of the methodology, I undertake a critical policy analysis to examine how techno-financial innovations in water and sanitation championed by international financial institutions

(IFIs) and the Paris Club[5] of creditors deepen global inequities. Thirdly, drawing from a qualitative case study of community-based resistance etc. in Cape Town, South Africa I offer a grounded critique of key premises underlying the global call for "techno-financial fixes" in the water and sanitation sector. I conclude by reflecting on the implications of this research for water justice networks.

Water justice literacies

In this section, I review streams of theory that have shaped collective understandings of forces driving water injustice and how to counter them. Examining shifts in strategies of accumulation by dispossession through water, I bring critical water literature into conversation with scholarship on racial capitalism.I read the global drive for "innovative solutions" in water and sanitation as part of a push for techno-financial fixes to racial capitalism.

The water justice movement emerged in the early 2000s, when communities, labour movements and social justice organizations resisting the privatization of water and sanitation services consolidated their actions at the global level through translocal networks. At the turn of the 21st century, these networks were part of a broader anti-globalization movement, which challenged trade agreements, investment treaties, and the various local impacts of market fundamentalism. Working together with communities at the frontlines of struggles against the corporate takeover of local water systems think-tanks and non-governmental organizations including the Public Services International Research Unit (PSIRU), the Transnational Institute (TNI), Food and Water Watch, Focus on the Global South, the Blue Planet Project, the Municipal Services Project, the Polaris Institute and Institute for Agriculture and Trade Policy (IATP) produced a considerable body of knowledge about the adverse social impacts of water infrastructure privatization, the commodification of bottled water, the destruction of watersheds by extractive industries, and water grabs (see Varghese & Murphy 2023, Kishimoto et al. 2020, Hall & Lobina 2012, Hall et al. 2005). Documenting their experiences and building consensus in manifestos launched at key gatherings, they pioneered the concept of "water justice" as the democratic, popular control of

[5] The Paris Club includes 22 creditor states who meet to coordinate strategies on debt: clubdeparis.org

local water systems and water sources (Martinez-Allier et al. 2014). Their focus on the politics of water (and who controls it) distinguished water justice groups from development and human rights NGOs who have narrowly focused on matters of access (Olivera 2004, People's Water Forum, n.d.). Nonetheless, critics including (Voorn et al. 2019 and Bakker 2007) argue that water justice movements have disproportionately focused on the privatization of water and sanitation services, while ignoring other significant processes such as the commercialization or adoption of business practices within public utilities, and the financialization of infrastructure.

Privatization refers to the transfer of a shared resource from public or communal to private ownership and control (Swyngedouw 2005, Bakker 2003). In the 1990s, the World Bank and IMF coerced loan-recipient countries to privatize public services through structural adjustment programs. Most cases of water privatization involved public-private partnerships (P3s)—not a full transfer of ownership—which traditionally operate on 25-to-30-year concession contracts (OECD 2009). Since the early 2000s, this trend has been reversed as a result of strong public opposition forcing governments to terminate private concessions (Kishimoto et al 2020). But Voorn et al. (2019) warn that in their enthusiasm for remunicipalization, water justice movements have overlooked the tendency for local governments to succumb to market pressures by bringing in drastic neoliberal reforms to services that have returned to public management.

A parallel stream of "critical water literature" puts emphasis on the broader political economic context and power dynamics shaping neoliberal water governance as *accumulation by dispossession* (see Swyngedouw 2003, Bakker 2013, Spronk & Webber 2015, Harris & Garcia 2013, Roberts 2008). David Harvey's (2004) notion of accumulation by dispossession re-interprets what Marx referred to as "primitive accumulation" as an ongoing process, rather than an original stage of violent expropriation, through which capital seeks to satiate its need for exponential growth. The concept of accumulation by dispossession gestures to the versatility of capitalism in reconfiguring its relationship with human and non-human nature in order to resolve crises or take advantage of new opportunities.

Given the retreat of multinational water corporations from service delivery, water justice movements have endeavoured in recent years to build literacy on water financialization in order

to enhance their capacity to organize against new forms of dispossession as battlegrounds shift from the more visible threats of brick-and-mortar corporations to the murky and diffused operations of invisible financiers and investors (e.g., see IATP 2021 webinar). Others, however, are skeptical of the theoretical value of financialization including Christophers (2015) who points to the conceptual inconsistencies among other weaknesses in the recent surge of literature on the topic. Echoing this view, Furlong (2021) challenges the notion that contemporary forms of financialization are entirely distinct from previous forms of debt-led infrastructure development in the global South. Rather than insisting on the exceptionality of the current moment, Christophers (2015) and Furlong (2021) call on scholars to engage with historical continuities. Others argue that the proliferation of studies on financialization beyond the field of economics reflect a hegemonic status, or concentration of power that is unprecedented and worthy of deeper investigation (Maher and Aquanno 2021). Nevertheless, Maher and Aquanno (2021) argue that there remains considerable uncertainty regarding the nature of "new finance capital" and its ability to consolidate the emerging power of asset management companies into a coherent new paradigm.

Broadly, the financialization of water refers to various processes through which water or water-related services are turned into financial assets (Bigger et al. 2022, Bayliss 2014, Standing 2021). Although mechanisms for converting nature "into an accumulation strategy" are not new (Smith 2007) recent efforts to aggressively expand the breadth and depth of water-related investment schemes in the wake of overlapping environmental and financial crises have caused social movements to pay closer attention (Bigger et al. 2022).

Fine (2010:97) offers a more specific definition of financialization as the "the increasing penetration of interest-bearing capital across economic and social reproduction." Within this framework, Bayliss et al. (2017:358) highlight the "qualitative and quantitative transformations" shaping economic activity and social life in contemporary capitalism that are made visible in everyday activities. As Standing (2021) notes, financialization entails more than financial transactions; it is about embedding the logic of the financial system into all aspects of social life.

Arguably, financialization is parasitic in its reliance on other modes of capital accumulation that serve to reconfigure water systems to facilitate the generation of profits (Bayliss et al. 2017). Processes of privatization serve to restructure water and sanitation systems for the purposes of efficiency and profit-maximization creating guaranteed revenue streams that can be securitized or turned into a tradeable asset (Bayliss et al. 2017, Allen and Pryke 2013). Efforts to privatize water services, however, have largely failed due to tremendous public opposition (Loftus et al. 2018). In most parts of the world, contextually specific precursory measures are therefore required to make existing water systems more amenable to capital accumulation. Since the 2008 financial crisis, IFIs, banks, and private water companies have become partners and consultants in public policymaking to implement a range of enabling conditions to make water utilities more profitable.

Techno-financial fixes

Historically, capital has resolved crises of overaccumulation of capital, labour, or commodities through geographical expansion, a process called the "spatial fix" (Harvey 2001). Technological innovation has facilitated access to cheap raw materials, labour and new markets. Morgan (2018) argues that barriers to compound growth after the 2008 financial crisis demanded a new set of market-driven innovations called "techno-finance fixes."; that is, finance and technology operate symbiotically to extend capital's reach into new geographical territories and deepen its presence in everyday life. As Bayliss (2014:298) explains, "most investors need instruments and intermediation to get into the business so we have to provide tools, finding ways to share risk to get private finance involved."

More recently, the impetus to stabilize financial markets in the aftermath of the 2020 recession together with increasing competition for water resources have motivated the drive for creative strategies to generate water-related revenue streams (Bigger et al. 2022). Lamenting the lack of suitable channels to satisfy the growing appetite for investments in water, multilateral institutions representing the interests of Northern capital are urging governments to "accelerate" reforms required to meet the growing demand for investments in water (OECD Roundtable on Financing Water 2023). A few days before the UN 2023 Water Conference, a group of thirty investors

issued a statement "calling on policymakers to deliver robust water action" enabling them to "benefit from the opportunities associated with the transition to a water secure economy" (CDP Disclosure Insight Action 2023, par. 3).

In the 1990s and early 2000s, Africa was largely ignored when private water companies expanded into Latin America and Asia, boosted by the World Bank and IMF's structural adjustment programs, which established water privatization through loan conditionalities (Hall et al 2002). Outside of large cities, investments in Africa were perceived by private companies to be riskier and less lucrative (OECD Roundtable on Financing Water 2023).

Whereas structural adjustment programs were premised on the notion that private companies would bring in capital to build, improve and expand infrastructure in the global South, even its proponents now acknowledge that this has not been the case (Marin 2009). Instead, the OECD and other multilateral institutions are now seeking to reconfigure the "global architecture of development finance" in order to make a stronger business case for private capital through "innovative financial arrangements" that would mitigate risks and create new opportunities (OECD Roundtable on Financing Water 2023: 3). These efforts to restructure the development financing landscape to facilitate a greater influx of private capital presents new threats that require deeper investigation. The creation of channels of investment involving a multitude of private investors diffuses accountability. It also puts public systems at the mercy of a global trade and investment regime designed to protect private capital.

Material cultures of financialization

By focusing on the "material cultures of financialization," Bayliss et al (2017) draw attention to the socio-cultural transformations through which financialization becomes embedded in daily life. Specifically, they point to the ways in which "financial risk, metrics and practices become bound up with and normalized through everyday activities" (Bayliss et al 2017: 362). This approach resonates with feminist standpoint theories, which have long challenged the birds-eye approach to global processes that ignores the daily realities of social reproduction (Nagar et al. 2002). As Cindi Katz (2001: 711) puts it, "the arena of social reproduction is where the toll of

globalized capitalist production can be witnessed, and so it is fertile grounds for launching responses to it."

Grassroots water justice networks are well-positioned to interrogate and challenge the material cultures of financialization in everyday life. At the same time, adopting a multi-scalar approach that draws connections between global processes and embodied experiences enables these networks to be more proactive in identifying and challenging international actors and multilateral institutions responsible for transforming people's daily relationships to water. The ability to name and shame specific actors has been critical to social movement success (Benson and Meyer 2015). In this case, their targeted efforts have resulted in the termination of water contracts around the world (Olivera 2004, Kishimoto et al 2015), the shut-down of Coca Cola plants in rural India (Jitendra 2014) the banning of the private water industry in Uruguay (Harris and Garcia 2013), the termination of a World Bank-funded dam project in India, and the moratorium on metal mining in El Salvador (Kennard and Provost 2022) to name a few examples. The involvement of multiple actors operating in obscurity from multiple sites raises questions about how to transfer knowledge gained from these victories to a new context.

Lastly, as I articulate in the following section, the adoption of a multi-scalar approach to understand the material cultures of financialization must also be attentive to the construction of difference and systemic forms of exploitation and discrimination, such as racism, "as a limiting force that pushes disproportionate costs of participating in an increasingly monetized and profit-driven world on those who, due to the frictions of *political* distance, cannot reach the variable levers of power that might relieve them of those costs" (Wilson Gilmore 2002: 16).

Racial capitalism

Scholarship on racial capitalism has proliferated over the past decade, demonstrating the limitations of class-based analysis in explaining how the devaluation of black life shapes processes of capital accumulation in North America (see Jenkins 2021, Pulido 2016, Wilson

Gilmore 2007). In this context, Ruth Wilson Gilmore (2007: 28) defines racism as "the state-sanctioned or extralegal production and exploitation of group-differentiated vulnerability to premature death."

Laura Pulido (2016) and Destin Jenkins (2021) demonstrate how white supremacist logic is embedded in the politics of municipal investment and divestment in American cities—a fact overlooked by most literature on the political economy of water (e.g Swyngedouw 2005, Bakker 2007) . Jenkins (2021) explains that in the USA, post-World War II municipal debt generated an investment stream that was sheltered from high federal taxes. Moreover, it consolidated bondholder power to drive funds toward infrastructure in white neighbourhoods and away from black neighbourhoods that were deemed less creditworthy, thereby largely excluding black people from social spending of the Keynesian era.

Likewise, Pulido's (2016) analysis of Flint, Michigan's water crisis highlights the ongoing legacy of death-dealing public sector entanglements with finance capital. In 2014, the city was declared bankrupt and placed under "emergency management" by Governor Rick Snyder. An unelected emergency manager decided to draw drinking water from the Flint River, which turned out to be dangerously polluted. A lawsuit filed by the Michigan Attorney General named private water company Veolia, former Governor Rick Snyder, and others for misconduct leading to the deaths of eight people (Hersher 2018). Pulido (2016) argues that the spatial concentration of poor Black and Latinx people gave officials the latitude to make reckless decisions that ignored residents' complaints and clear evidence that people were being poisoned. She warns that racially devalued places like Flint serve as testing grounds for processes of dispossession that will become more widespread.

While traditional political economy examines processes of capital accumulation (e.g. Harvey 2004, Smith 2007), the literature on racial capitalism invites a closer examination of the group-differentiated nature of dispossession. As Pulido explains, segregated spaces allow for maximum exploitation of difference. A racial capitalist lens enables us to better investigate the truly vicious potential of water financialization by homing in on these spaces and places where capitalism attempts to carry out its darkest fantasies. Applying this framework at a global scale, this article

offers a grounded reading of emerging financialization strategies that are transmitted culturally by mobilizing contemporary moral discourses of sustainable development and climate adaptation.

Methodological approach

I present my critical policy analysis of reports on innovative financing and private sector participation in SDG 6 published by key multistakeholder bodies in the lead-up to the UN 2023 Water Conference as part of my engagement with a global water justice platform called the People's Water Forum. Critical policy analysis is a normative methodology developed by social movements investigating values and political motives shaping policy decisions (Young and Diem 2018, O'Connor and Rudolph 2023).

My textual analysis is guided by experiences and knowledge shared with me by frontline water justice organizers in Cape Town South Africa as part of my doctoral research conducted in 2018 and 2019. During this time, I visited seven neighbourhoods with a city-wide network of grassroots water justice organizers called the African Water Commons Collective. I also attended workshops and meetings organized by other grassroots and community groups and conducted 43 interviews with women organizers living in precarious housing conditions on the outskirts of the city.
I apply a grounded multi-scalar approach by weighing the claims of development financing literature against the experiences of frontline organizers engaged in struggles for for water justice in Cape Town, South Africa.

New streams for private capital

In the year leading up to the UN 2023 Water Conference, hegemonic actors including UN-Water (2020), the World Bank, multilateral aid agencies, and philanthrocapitalist foundations began rallying around a drive for technological and financial innovations for the implementation of

water-related sustainable development goals. As discussed below, a heavy focus was placed in thematic reports and at preparatory meetings on the need to involve private sector actors to fill resource and knowledge gaps in Africa. In this section, I elaborate on three distinct ways techno-finance fixes proposed in the literature will exacerbate water inequities on the continent: (1) Market segmentation and differentiated access, (2) Transforming risk portfolios with blended financing, and (3) Water security and climate resilience.

The focus is on examining how technology and innovation discourses have been mobilized to justify structural reforms to water and sanitation services within the context of SDG 6. I argue that these reforms serve a three-fold purpose for global finance capital. First, they push for more favourable conditions for private financing by transferring risks to the public sector. Secondly, they seek to produce new streams of revenue from a submarket of poor consumers. Lastly, techno-finance fixes aim to protect investments from the threat of water insecurity while taking advantage of opportunities produced by the increasing competition for freshwater supplies.

Transforming risk portfolios with blended financing

In 2022, shortly/right before the UN Water Conference, the World Bank Water Group and Global Water and Sanitation Partnership[6] launched a new initiative for utilities policy reform and restructuring called Policies Institutions and Regulation (PIR) (World Bank 2022a). The project repackages previous World Bank and IMF reforms to promote P3s in the global South based on the premise of a financing gap that calls for reforms aimed at attracting new sources of investment. Its goal is to improve public utilities' creditworthiness and create "a pipeline for bankable projects" within public delivery systems. The PIR reforms the "risk-return profile" of water investments to cater to a more risk-averse class of investors in search of robust short-term gains (2022a: 20). It calls on governments to leverage public funding to attract commercial financing. In other words, the public "partner" assumes a greater share of the risk through what is referred to as "blended financing".

[6] The Global Water and Sanitation Partnership is a multi-stakeholder body that includes the Bill and Melinda Gates Foundation and agencies of the US, Swiss, Dutch, Austrian, Danish Australian, Swedish and Spanish governments.

The UN-Water's Global Acceleration Framework repeatedly positions the lack of public financing as a matter of "political will" (UN-Water 2020). Likewise, the World Bank's (2021: ix) *Utility of the Future* report recycles old rhetoric: "poor service delivery frequently stems from a vicious cycle of dysfunctional political environments and inefficiencies in water and sanitation utilities." These accounts adopt an ahistorical perspective that ignores the lasting impacts of post-colonial structural adjustment and trade liberalization that severely restricted the policy and fiscal autonomy of governments of the global South. In Africa, governments have struggled to pursue autonomous macro-economic policy and remain bound by ever-increasing debt traps and punitive restrictions on trade and investment treaties (Akyüz 2007). During the 1980s debt crisis, African governments were forced to slash import controls, food subsidies and investments in public services; meanwhile, the IMF reaped millions more from debt repayment than it lent (Parfitt and Riley 1986). UNDESA now identifies rising debt as one of the biggest threats to SDG implementation. Between 2011 and 2020, the debt to GNI ratio of Subsaharan African countries has risen sharply from 23.4% to 47% (UNDESA 2022).

A new report from the Tricontinental Institute for Social Research (2023) advances the argument that the current debt crisis in Africa was largely fueled by a decade of private creditors. In particular, Eurobonds – which were first issued in Ghana in 2007 – have become the primary and fastest-growing form of debt. Eurobond debt has risen by 322%; in comparison, multilateral debt from the World Bank, the IMF, and African Development Bank increased by 144% and bilateral debt rose by 145% (ibid). As African countries begin to default on debt (see Annor 2022), the report presents calls for an alternative to IMF-led austerity measures that would slash public spending to dangerous levels. Despite this context, institutions leading SDG 6 financing talks push for innovative strategies to increase private financing through blended financing mechanisms that divert much-needed public funds into private profit.

Although the claims to have abandoned structural adjustment programs, it still advocates for conditionalities through "performance-based grants." (ref/evidence). The PIR framework pushes for policy and legal transformations to "help mobilize financialization and technical solutions and enhance their impact for WSS services" (2022a: 1). Likewise, the OECD's Roundtable on

Financing (2022) calls for legal and regulatory reform to address threats to revenue generation, including the political pressure to suppress tariffs. The proposed reforms are consistent with three decades of World Bank policy on utilities. They include robust mechanisms for reducing non-revenue water, tariff-setting that ensures full cost recovery, and improving collection rates. The World Bank continues to promote metering technologies, despite acknowledging their widespread rejection across the global South (World Bank 2022a). It considers public resistance against metering and influence over tariff structures to be a "political risk" to investment rather than acknowledging the social impacts of these measures (ibid).

The PIR's "performance-based grants" are expected to keep local governments in line by directing funding to those who comply with benchmarks serving investment needs. The SDG financing reports also prescribe regulatory reforms and guarantee schemes to mitigate risks and ensure more immediate revenues for commercial investors. The development of pooled financing, for instance, would distribute risk by bundling multiple small service providers (OECD 2022, Mazzucato 2023). The OECD (2022) proposes that donor governments create arms-length funds through which ODA (official development assistance) and concessional loans can serve as guarantees protecting commercial investors against non-payment, political or currency risk.

Launched in 2018, the Kenyan Water Sector Trust Fund (KWSTF) is a model intermediary institution championed by the OECD and the Global Commission on the Economics of Water – a new multistakeholder body led by the government of Netherlands and the World Trade Organization among others. The KWSTF attracts commercial financing for bundled water and sanitation projects by leveraging public funds and concessional (below market rate) loans to create more attractive investment packages for private financing. Public funds are used to cover the high upfront costs of transforming utilities for commercial investment through "capacity building and technical assistance" (OECD 2022: 102). In 2021, the KWSTF received a United Nations Public Service Award (UNPSA) under the category of "Enhancing the effectiveness of public institutions to reach the SDGs" (KWSTF online, n.d.).

It should be noted that in addition decreasing rates of ODA for water and sanitation projects in the region, African countries have faced the highest borrowing costs in the world due to discriminatory credit ratings based on distorted risk calculations (UNECA 2023, Salami et al 2011). To divert limited public funds, ODA and concessional loans towards de-risking commercial investments would further undermine the capacity of African governments to deliver basic services to vulnerable communities.

Meanwhile, the OECD warns against bolstering social spending in a time of crisis. Instead, it argues that "historic reliance on public budgets and concessional finance can undermine incentives for accountability and performance in the sector and crowd out private sources of financing" (OECD 2022: 12). Likewise, the WTO-led on the Economics of Water (Mazzucato et al. 2023: 8) advocates "rechanneling today's inefficient domestic subsidies, leveraging on the multilateral development banks and development finance institutions, and crowding in private companies, banks and institutional investors, and philanthropic money" through what it refers to as "Just Water Partnerships." Although such reports are superficially peppered with SDG and human rights language, their solutions are incongruous with the goal of universal access to water and sanitation.

Lastly, the SDG finance literature offers no accountability mechanisms for private sector actors. For example, the OECD (2022: 13) will soon launch a Global Observatory on Financing Water Supply, Sanitation and Water Security to assess countries' progress in creating "enabling environments for investment." Concerning private sector performance, the OECD observatory will "collect and share good practices" (ibid). In the name of sheltering private sector partners from political interference, the powerful multistakeholder institutions promoting blended financing provide no tools for monitoring, evaluation, and accountability of private investors. African countries face a slew of highly prescriptive financing modalities that limit policy and fiscal autonomy as they face an unsustainable and unjust debt burden. In this new era of public-private partnerships, African governments are being strongarmed into leveraging limited sources of traditional funding (ODA, taxes and tariffs) to produce 'sweetheart deals' that minimize risk and maximize revenue for private investors.

Innovation, market segmentation and differentiated access

The institutions pushing to make urban utilities more bankable by increasing tariffs and eliminating subsidies also have plans for the vulnerable populations who will be disenfranchised by these measures. A global drive for 'innovative solutions' seeks to turn them into a submarket for substandard water and sanitation services.

While there is a real need to adapt public infrastructure to meet contemporary challenges of growing urban populations and unpredictable weather conditions, the technologies required to provide clean drinking water and safe sanitation on a large scale have existed for more than a century. Yet multilateral institutions have joined forces with private sector partners in recent years to mobilize a global drive for "innovative solutions" to fill gaps in parts of the world where needs are greatest (i.e., Africa and South Asia).

UN-Water recently launched *The Sustainable Development Goal 6 Global Acceleration Framework,* which emphasizes an urgent need to "leverage and scale up innovative practices and technologies" (2020: 11). Informed by the failure to generate sufficient revenue with previous private water delivery models, the OECD launched the *Roundtable for Financing Water* with the World Water Council, the Netherlands government, and the World Bank in 2017 to take advantage of water and sanitation as a multi-billion dollar market. The World Bank has also launched a "water innovation accelerator" called *Imagine H2O*(Imagine H2O n.d).

The persistent emphasis on innovations for Africa indicates a shift from a linear development logic, which underpinned structural reforms imposed by Bretton Woods institutions in the 1990s and 2000s (Rivero 2001). According to this new logic, governments of the global South were told their populations could enjoy the same standards of living as those in the North if they followed the harsh prescriptions of loan conditionalities including the privatization of water and sanitation services. Not only did private companies fail to meet promises to expand and improve services, the P3 models pursued failed to generate sufficient revenues (Hall and Lobina, Marin 2009)

In a context of post-COVID economic uncertainty, the new drive for innovation responds to a need for channels of surplus absorption for private capital at minimal risk. Rather than being promised the same standards of living as economies of the global North, African governments are now being told to fill their development gaps with cheaper, 'fit-for-purpose' (solutions developed by Northern start-ups that are taking a more segmented approach to water and sanitation markets. In this new logic, poor people, previously considered a burden on the system, are now seen as an untapped segment of the market.

Calling for less less capital-intensive technologies and more advantageous risk-transfer arrangements, initiatives such as *Imagine H2O*, for instance, seek to attract more investment in the "water innovation market," which currently represents less than 1% of venture capital flows (https://www.imagineh2o.org/for-investors/). The project is part of the World Bank's Water Global Practice's (GP) larger initiative called the Water Technology Access Partnership. The former seed funds new ideas, while the latter connects innovative projects with financing and utilities in the global South.

The premise of poor people's willingness to pay (WTP) is central for proponents of market-based pricing, pre-payment technologies, and credit-based systems of water provision. For instance, a widely cited European Commission-funded study found that 90% of West Africans surveyed were willing to pay for water when presented with a limited range of hypothetical scenarios (Markatonis et al. 2018). Oddly, the study excluded what it considers "protest votes" from participants who were opposed in principle to the "valuation scenario." Others, including water.org, which was co-founded by actor Matt Damon, has disbursed $4.1 billion USD in microcredit loans based on the fact that poor people already pay a lot water. The organization invites potential investors to diversify their portfolios through low-risk investment solutions, assuring them that "people are willing to pay at market interest rates" (https://water.org/solutions/watercredit/lending-for-water-sanitation). The organization bases its claims on its estimation that poor people currently pay up to 20% of their household income for water from unsafe sources such as informal water vendors (see water.org/solutions/financing-works). Moreover, it considers water financing as a gateway, noting that 60% of its clients return for additional loans for their house or business (ibid).

However, even optimistic WTP projections fall short of market rates for existing service delivery models. Therefore, international financial institutions and philanthrocapitalist foundations have backed initiatives to develop cheap large-scale systems that would generate sufficient revenues. For instance, in 2020 the Bill and Melinda Gates Foundation spent more than $100 million USD on "breakthrough innovations in [water and sanitation] technologies as well as systems that are practical, cost-effective and replicable on a large scale" (n.d.).

The inaugural winner of the World Bank's Imagine H2O Challenge is Drinkwell—a Bangladeshi water ATM project co-financed by Danone Communities, a venture capital fund from the food giant of the same name. The project founder claims to have unlocked the secret to "leaving no one behind" by allowing people living in informal settlements to purchase water from kiosks using "Water ATM cards that enable the purchase of water in a metered pay-as-you-go manner" (Chowdury 2019). The project website is forthright about its motive to "take advantage of the enormous market opportunity of providing clean drinking water to rural and peri-urban communities that lack access" (https://drinkwellsystems.com/about).

Such projects claim to champion SDG 6. Yet their attempts to create parallel markets of self-funded water and sanitation technologies for poor people contradict the basic human rights principles outlined by the WHO/UNICEF Joint Monitoring Program (JMP 2017). The JMP calls for "equitable access," which requires "progressive reduction and elimination of inequalities between subgroups." Basic and low-cost alternatives are only acceptable as interim measures in the progressive realization of states' human rights obligations to provide "safely managed drinking water accessible on premises (within the dwelling, yard or plot)." To be classified as safely-managed, "water must be available when needed" (ibid).

Water insecurity and climate resilience

As a third area of focus, techno-finance fixes are sought to address growing concerns relating to the economic impacts of water insecurity. The conceptualization of scarcity as an absolute rather than a relative state, defines water according to capitalist desire for limitless growth (Mehta et al

2019). Abstract notions of demand outstripping supply obscure the true "power geometries" (Massey 1994) of water supply and demand.

The links between disproportionate rates of premature death – a defining feature of racial capitalism (Wilson Gilmore 2007) – and the global geographies of access to water are indisputable. In 2017, the Global Burden of Disease Study attributed 1.2 million premature deaths to the lack of access to safe sources of water (Global Burden of Disease Study 2017); these are linked to cholera, hepatitis A, typhoid, dysentery, diarrhea, and other deadly diseases that have largely been eliminated in the global North but remain a major cause of death in Africa (Kariuki 2023).

According to the Global Commission on the Economics of Water: "Our collective actions have pushed the global water cycle out of balance the first time in history" (Mazzucato et al. 2023). This generalized diagnosis makes invisible the racialized, classed and geographic inequities that produce differentiated access and exposure to toxins from contaminated water supplies. Such generalizations regarding human impacts on water feed neo-Malthusian prescriptions that pit human reproduction against that of an externalized nature that must be protected at all cost. These narratives are especially evident in conceptualizations of water crisis in Africa where rapid population growth is repeatedly identified as a threat to water despite the staggering gaps in access to water (see UNESCO 2021, OECD 2009).

Water insecurity is also seen as an opportunity to generate new pathways for capital accumulation (Mehta et al 2019). The OECD Roundtable on Financing Water (2023) and the Global Commission on the Economics of Water stress the need to address water security risks through market-based strategies that align water resource management with economic interests by directing limited water supplies towards more productive uses. Stabilizing the environment for productive use creates opportunities for financial capital. Inroads for the latter have been limited despite the growing appetite and strong economic case, according to the Roundtable (2023).

Market-based initiatives have also been limited by widespread public opposition by communities concerned by the loss of loss of control over local water supplies and the exacerbation of inequities (Loftus 2019). In addition, the financing literature sees "a fragmented political landscape" including the various levels of government oversight and regulatory mechanisms that make water-related investments too onerous (Mazzucato 2023:18). Proponents of market-based strategies therefore propose precursory measures to bring order to the chaos by harmonizing systems through multilateral governance. Co-opting social movement language to argue for a more streamlined approach to water resource management that eliminates political friction at the local level, the GCEW calls for water to be treated as a "global common good" (Mazzucato 2023). The multistakeholder body calls for a more robust global water policy architecture involving a greater role international financial institutions and better alignment with trade policy.

Taxonomy is important tool in forging pathways for investment by creating classifications or criteria for blue/green financial investment. The Roundtable points to the EU's Sustainable Financing Directive as a model for green taxonomies that align regional environmental goals with financial metrics. At the same time, the Roundtable warns that taxonomy alignment must not create reporting procedures that will be overly "complex, burdensome and costly for issuers and investors" (OECD 2022: 105). Instead, public funds should be used to support water utilities and other project developers with technical assistance to develop bankable and taxonomy-aligned projects (ibid). In other words, global environmental commitments offer an opportunity to mobilize and legitimize financial investments, but investors must not bear too heavy a burden of proof with regards to their compliance with environmental measures

In recent years, "climate resilience" has emerged as a taxonomy linking financial instruments such as climate bonds with urban climate adaptation goals. In the next section, I examine the social impacts of a pilot project on water resilience in Cape Town South Africa.

The Case of Cape Town

Hydro-social contestation in Cape Town emblematize the clash between post-colonial reconciliation, decades of austerity measures and emerging initiatives to find new channels for

private investment. They expose the continuities between colonialism, austerity and emerging models of water financialization as different moments of racial capitalism where race and state are renovated to secure the reproduction of capital (Wilson Gilmore 2002). Paying attention to continuities and innovations in grassroots strategies of resistance provide insights regarding the possibilities for solidarity and the construction of alternatives.

As scholars of urban racial capitalism argue, highly segregated landscapes are an ideal milieu for pushing the boundaries of accumulation by dispossession (Pulido, 2016; Jenkins 2021). Thirty years after the fall of apartheid, South Africa remains one of the most unequal countries in the world (Sulla and Zikhali 2018). Poverty rates and gaps rose between 2011 and 2015 among populations classified according to the racist apartheid system as "black African" and "coloured". The poverty rate is near 50 percent (UN-Habitat, 2014), and 93 percent of poor people in South Africa are black African, according to Statistics South Africa. Less than 1% of white South Africans live below the poverty line (Statistics South Africa 2017). Cape Town is widely regarded as South Africa's most spatially segregated city (McDonald 2008, Turok et al. 2021). White residents living in the city centre and leafy suburban neighbourhoods can access modern amenities and public services that rival any European or North American city. Meanwhile, the majority of racialized South Africans live in poorly serviced, poverty-stricken neighbourhoods (townships) on the outskirts of the city.

Although the South African government has made notable progress in expanding access to basic services, struggles for water justice have centred around vast discrepancies in access to a two-tiered municipal water system. While Cape Town boasts of "world-class" infrastructure in the city core, racialized communities living in partially informal townships in the outskirts of the city receive substandard services from cheap infrastructure built during the apartheid era (McDonald and Ruiters (2005). Redistributive measures aimed at compensating for the socio-economic injustices of apartheid were stifled early on in the transition to democracy as the African National Congress (ANC) succumbed to pressures from the World Bank and big business (van den Berg 2014). So-called technological "upgrades" to the urban water system have served to restrict rather than improve access.

In the context of a historic four-year drought beginning in 2015, the City of Cape Town began consolidating efforts with a constellation of international actors to build the “resilience” of its urban infrastructure as part of its climate adaptation strategy (City Resilience Strategy 2019). According to the Cape Town Resilience Strategy, “resilience” refers to the city’s capacity to face the shocks and stresses of an unpredictable future (2019). In 2016, Cape Town received seed money from the Rockefeller Foundation to staff a resilience office that would make the city more climate-resilient (Chacon 2020). High-level staff positions were filled not with biologists or ecologists, but by individuals with business school backgrounds and ties to the financial industry. Resilience discourses have since permeated other areas of city policy to harmonize what technical reports denounce as the city’s “siloed approach” (City Resilience Strategy 2019) by bringing a range of policies into alignment with investment-driven climate adaptation. The Cape Town Water Resilience Profile (2020) was co-authored by a global consortium called The Resilience Shift, a project of Lloyds Bank backed by the World Bank and the Stockholm International Water Institute. The city issued a municipal green bond in 2017—the first in Africa to be certified by the Climate Bonds Initiative—to fund its water resilience initiatives, including the enhancement and scaling up of existing water restriction technologies that had disproportionately targeted the racialized urban precariat outside the urban core (City of Cape Town Green Bond Framework 2017).

In 2017, the city warned of an imminent “Day Zero”—a date when water levels in reservoirs would drop to 13% forcing the city to shut off taps and implement an emergency plan. Ostensibly to prevent this scenario the City implemented reforms that further eroded social security measures forcing historically marginalized communities into deeper states of underconsumption. At the height of the drought, the city threatened to install "water management devices" (WMDs) in homes that failed to reduce their consumption, a practice previously limited to low-income households in segregated townships.

A grassroots network of community organizers called the African Water Commons Collective had been fighting the installation of water management devices (WMDs), a technology that shut off access once a household consumed a daily supply of 350 litres. Community activists considered 350 litres to be grossly inadequate, especially given the large household sizes in neighbourhoods where the devices were installed (personal communication, August 2018).

AWCC organizers who had been going door to door to inform their neighbours of their rights to reject the installation of WMDs were alarmed by the prospect of coercive installation of these devices.

WMDs were introduced in 2004 as part of a Water Conservation and Water Demand Management (WC/WDM) plan that was a condition for the Berg River Scheme, a dam augmentation strategy funded in part by the European Investment Board (EIB). The devices helped reduce high rates of non-payment in townships. An EIB press release boasted that the project complied with the principle of "minimizing negative environmental impacts" even though the strategies outlined in the plan failed to target the largest water users (EIB 2003). In fact, because South African municipalities deliver services on a full cost recovery basis as a result of austerity measures adopted in the 1990s at the behest of the World Bank, the city relies on revenues generated by its largest water users who are billed according to a block tariff system that charges a higher rate for each tier of consumption (Scheba 2021).

At the height of the Day Zero crisis, Cape Town scrapped its universal Free Basic Water policy, making only 6000 monthly litres available to those registered as indigent (Scheba and Millington 2021). Indigent status must be renewed annually and involves onerous and demeaning means-testing, which community activists consider a tactic to control and discipline poor people (Ruiters 2018). Furthermore, grant recipients must have housing tenure, be in good standing with the city, and agree to certain conditions like the installation of prepaid electricity meters. As Ruiters (2016) notes, "the real aim of indigent services is to trap the poor into binding agreements to pay for their services" (172).

As a result of widespread opposition, the city announced it would discontinue water management devices (WMDs) in July 2021. However, before community activists could celebrate their victory, the city announced the installation of discs that would reduce water flow to a trickle in households with outstanding bills (Scheba et al. 2021). These discs had previously been the subject of a massive protest campaign, shortly after the introduction of Free Basic Water (2001) in which members of the South African Municipal Workers Union (SAMWU) joined communities to urge local governments to "ditch the disc." Once again, the measure target

working-class racialized households living on the margins of the city. The city does nt seek consent when installing the flow-reducing discs (as they did with WMDs).

The WMDs and discs are among the many water-restrictive technologies rolled out over the last two decades in areas with deeply inadequate access. After a period of drought in 2001, the first area targeted by pressure management technology was the partially informal township of Khayelitsha situated 20 km from the city centre. The city installed a pressure control system, purportedly to address excessive water leakage in low-quality pipes that could not handle the high flow. This saved 9 million m3 of water, amounting to a financial savings of $US 2.7 million per year. The pressure management system was then extended to Mitchell's Plain and other townships and informal settlements by the 2004 WC/WDM plan. The disc system that was re-introduced in 2021 threatened to further exacerbate the already low water pressure in these areas. Women in informal settlements frequently complain about having to wait 20-25 minutes to fill a 25-litre bucket of water at the communal standpipe. One woman I met in 2018 at a communal tap in an informal settlement stated, "If my house were on fire, everything would burn down before the bucket is filled."

Cape Town's history with water technologies supporting neoliberal austerity measures including full cost recovery policies demonstrate the way policies purported to ensure the sustainability of urban water services have entrenched racial hierarchies. It emblematizes the way climate resilience has become a central node in the intricate web linking global finance to urban water system in the global South. Measures implemented by austerity and debt-driven development have paved the way for Cape Town's deepening entanglements with finance capital. Frontline movements have been relentless in their struggles against water restriction technologies, prohibitive tariffication and substandard services that have maintained apartheid-era hierarchies in access to water. Resistance to inadequate living conditions was central to South African anti-colonial struggles (McKinley 2016, Scheba 2021). Rent strikes and service fee boycotts underpinned the politics of "ungovernability" that contributed to the fall of apartheid (Duggard 2016, Ruiters 2018). Their efforts to obstruct neoliberal water reforms offer insights into the possibilities for producing *disabling* conditions for water financialization through grassroots struggle.

Given the South African government's failure to live up to promises for decent housing and public services, many people in historically marginalized communities view debts accrued from unaffordable municipal services as illegitimate (Ruiters 2018). Contrary to studies emphasizing poor people's *willingness to pay* (e.g. Markatonis et al 2018), frontline women in Cape Town have been particularly militant in their refusal to pay for water as an essential good (personal communication August 2018). They assert their unwillingness to pay through individual and collective acts of daily resistance including clandestine self-connections, non-payment of bills and the rejection of water restriction technologies.

Despite the expensive technological cat-and-mouse game aimed managing poor people's water consumption, "non-revenue water"(NRW) is rising in South Africa (DWS 2023). According to the Department of Water and Sanitation NRW, which includes leaks and unauthorized connections, was at 46.6% in 2023, hindering efforts to attract private sector partners.

The WTP argument is also based on the premise that poor people are willing to pay for cheaper substandard services. Activists in Cape Town make it abundantly clear they want access to the same "word-class" drinking water services as everyone else.

Finally, the SDG financing literature offers ahistorical accounts of "financing gaps" that overlook histories of colonialism, post-colonial structural adjustment and trade liberalization which have been consistently disadvantageous for African economies. While the majority of urban populations in the global North have enjoyed access to state-funded and publicly managed drinking water and sanitation systems (Swyngedouw 2013), African governments are told to establish more favourable conditions for private investors by mobilizing limited public resources and setting higher tariffs. Likewise, climate/water resilience narratives erase histories of injustice by ignoring deep inequalities in access to water and demanding all citizens to make sacrifices in a context of climate uncertainty.

Contrary to scholarly emphasis on the novelty of financialization, community organizers expose the historical roots of contemporary forms of dispossession in their narratives of Cape Town's

"water apartheid" and "post-apartheid apartheid" (Benson and Meyer 2021, AWCC meeting September 2018).

Conclusion

The most powerful multilateral institutions converged at the UN 2023 Water Conference to promote a greater role for private financing in the implementation of SDG 6. Focusing on vast disparities in Africa, bankers, corporate foundations and tech start-ups have positioned themselves as experts on the needs of billions lacking access to water and sanitation. This paper analyzes this global drive for technological innovations in water and sanitation as a techno-finance for racial capitalism. Specifically, I analyze efforts to facilitate new pathways for water financialization in Africa by minimizing risk for private investors; creating a new market of cheaper water and sanitation solutions for poor people and reconfiguring climate adaptation needs.

The SDGs, like all human rights treaties, are non-binding. Yet, IFIs and donor agencies mobilize SDG discourses to legitimize new mechanisms of loan conditionalities and forge new pathways for private financing. Far from being "pro-poor," techno-financial fixes are designed to extract wealth in a context of economic and environmental crisis. They exacerbate inequalities created by centuries of colonialism, structural adjustment, and uneven trade.

The analysis of water justice struggles in Cape Town emphasize the way water restriction technologies, and full-cost recovery policies have entrenched water apartheid. In their rejection of these strategies frontline communities in Cape Town expose the racist nature of material cultures of financialization that prioritize the reproduction of capital over the reproduction of human life.

Unlike remunicipalization campaigns, which focused on the termination of contracts with specific corporations, the financialization of water infrastructure involves a web of actors that are at times harder to identify and target. By focusing on the city, frontline organizers have targeted a visible and accessible node in the intricate web connecting global capital to their taps. By

holding public protests, exercising their rights to reject the installation of WMDs and refusing to pay water bills, they have created a hostile environment for the financialization of water.

Nonetheless, in the past few years the city has deepened its ties to financial capital and ramped up efforts to outmaneuver frontline communities in their resistance to water restriction measures. This raises questions about how water justice networks might scale up local struggles through multi-scalar analysis that helps to identify and target other nodes within the intricate web of racial capitalism.

Chapter 3: Water for bread and water for roses: Contours of a feminist decolonial human right to water

Introduction

In March 2023, the United Nations held its first conference on water in 40 years to address lack of progress on the Sustainable Development Goal 6 related to universal access to water and sanitation (SDG 6; Heller et al. 2023). Meanwhile, social movement networks—alarmed by the prominence of financial institutions and powerful water privatisation proponents at the conference—launched a "water justice manifesto" signed by more than 500 groups declaring "access to water and sanitation [as] fundamental human rights […] not a commodity" (People's Water Forum 2023, par 2). This article reflects and builds on these radical articulations of socio-economic rights by considering the contours of a feminist decolonial human right to water.
The rationale for this feminist articulation is twofold. First, many feminist scholars have challenged how dominant models of "gender and development" centred around professional gender expertise are made compatible with neoliberal programs (Kunz 2017; Ferguson 2015). For example, much development literature dealing with gendered access to water, sanitation and hygiene (WASH) fails to engage with the political economy of water (see JMP 2023; Jalali 2021; MacArthur et al. 2020) and ignores the detrimental impacts of privatization (see Lobina 2005; Lobina and Hall 2007; Loftus and McDonald 2001), including in terms of gender injustice (see Yeni et al. 2021, Mohanty and Miraglia 2012, Roberts 2008). This apolitical framing of gender and development has underpinned Northern governments and multilateral institutions' increasing appropriation of feminist discourses to advance new channels of investment for Northern capital (OECD 2022, Cornwall 2003). The OECD, the European Investment Bank and prominent multinational institutions all highlighted gender equity and human rights when proposing finance-friendly WASH reforms at the UN Water Conference (Heller et al. 2023, EIB 2023, OECD 2023). Moreover, countries such as Canada, the Netherlands and Switzerland—all with a so-called "feminist foreign policy"—are among the wealthy social democracies advocating for increased private sector engagement through financing and technological innovation.

Secondly, the idea of human rights remains an important tool in struggles against water privatisation and commodification, despite academic critiques highlighting its limitations (Bakker 2007, Roithmayr 2010, Bond 2014). Women, especially, play a leading role in such struggles (Karunananthan 2019, Bywater 2012, Parmar 2008). Nevertheless, critical scholars

debating the limitations and radical possibilities of the human right to water have largely overlooked feminist theory and praxis. Therefore, the aim of this paper is to explore a feminist, decolonial and anti-capitalist human right to water by centring the place-based hydro-social struggles of frontline women and community organisers in Cape Town, South Africa.
In what follows, I first make the case for Cape Town as a locus for a grounded analysis of feminist pathways for the human right to water. Next, I provide a theoretical discussion on the human right to water and describe my methodology. My analysis of feminist place-based water epistemologies then weaves feminist geography, decolonial scholarship and racial capitalism theory together with insights from the grassroots organising and everyday resistance of frontline black women agitating for water justice in the aftermath of a historical drought in Cape Town.

Context: Water politics in Cape Town

Black women living in Cape Town's precarious housing conditions are the ideal interlocutors in a conversation about the feminist possibilities of the human right to water. First, counterhegemonic rights-based organising has long been at the heart of gendered and racialised struggles for socio-economic justice in South Africa. Secondly, frontline struggles against water restriction technologies in Cape Town clearly illustrate the dangers of neoliberal approaches. Lastly, as a drought-prone foreign investment hub, Cape Town has been the target of multi-scalar climate adaptation strategies championed by powerful global actors.

A clash of hegemonic vs counter-hegemonic right-to-water practices

In 1996, South Africa became one of the first countries to recognise access to water as a constitutional human right (Dugard 2016)[7] – a win for grassroots movements seeking redress for the socio-economic violence of the apartheid regime. But tests of the human right to water—most notably, the 2009 Constitutional Court ruling in *Mazibuko and Others vs. The City of Johannesburg and Others*—have had disappointing outcomes. In turn, these events have fuelled

[7] Section 27 (1) (b) of the South African Constitution states that "[e]veryone has the right to have access to […] sufficient food and water". Section 27 (2) goes on to provide that "[t]he state must take reasonable legislative and other measures within its available resources, to achieve the progressive realization of each of these rights."

academic scepticism about the value of rights-based litigation in protecting the interests of historically marginalised populations (Danchin 2009; Roithmayr 2010; Bond 2014). Following a 2001 cholera outbreak and widespread popular resistance to service cut-offs for non-payment, South Africa implemented a Free Basic Water policy (Scheba 2022). In response, municipal leaders and utility executives introduced prepayment technologies to address the so-called "culture of non-payment" among poor Black South Africans (Ruiters 2007, Von Schnitzel 2008). These prepaid water meters were also installed to meet the conditions of a World Bank loan and as part of a cost-recovery arrangement with two multinational water companies contracted by Johannesburg water, Northumbrian Water and Suez Lyonnaise (Takacs 2016). The devices shut off supply after dispensing the free basic amount of 6 kilolitres per month. Plaintiffs in *Mazibuko* argued that this was grossly insufficient for meeting the needs of large households, people living with HIV/AIDS, and community emergency water requirements. They also argued that the meters were discriminatory since they were only installed in poor Black neighbourhoods. In 2007, a Johannesburg High Court ruled that the prepaid meters were unlawful and mandated raising the lifeline supply to 50 litres per person (Takacs 2016). The Constitutional Court, however, reversed this decision in 2009, legitimising prepaid meters as "lawful and reasonable" and reducing the minimum supply to 25 litres per person (Constitutional Court of the Republic of South Africa 2007). This was a significant blow for the South African social movements who since 1996 had advocated for socio-economic rights, and for the global human rights and water justice movements closely monitoring the case (McKinley 2016; Dugard 2016). Despite the disappointing legal outcome, frontline organisers in Cape Town continue to assert their human rights when organising for better urban water services in their communities.

Water restriction technologies

The water restriction technologies at the centre of *Mazibuko* remain an important site of struggle for frontline women in Cape Town. The City of Cape Town—often praised as a global water tech leader (Hill-Lewis 2023)—has rolled out a range of water restriction technologies, including smart meters, flow restriction devices and pressure management systems. These cutting-edge technologies almost exclusively target people living in the most rudimentary housing conditions

in townships—segregated, racialised neighbourhoods created by the apartheid government to forcibly relocate people from central urban neighbourhoods (Ruiters 2007).
Cape Town was the first city in South Africa (and a pioneer globally) to implement large-scale pressure management technology (Sinclair-Smith 2019). The City pitched the pressure management technology as a "upgrade" that would drastically reduce the flow rate in non-white neighbourhoods thereby preventing high leakage from low-quality pipes (CCT 2007). This program began in the predominantly "black African" township of Khayelitsha in 2001 (shortly after South Africa's Free Basic Water policy was adopted). The pressure management technology resulted in a 40% drop in consumption in Khayelitsha and was subsequently extended to other townships in the Cape Flats, the low-lying area surrounding the traditional colonial city.

In 2007, the city began installing another technology, individual "water management devices" (WMDs). These devices shut off a household's daily water supply after reaching the free daily supply limit of 350 litres. The City claimed this measure would address the ongoing water leakage concerns and help low-income residents manage water consumption and municipal debt (Sinclair-Smith 2019). However, according to the the African Water Commons Collective's community surveys, the 350-litre allocation is not enough to meet basic household needs. In 2021, the municipal government replaced WMDs with another technology targeting high rates of non-payment in economically depressed neighbourhoods: flow restriction discs reduce the water flow to a trickle in households that fail to pay their water bills.

The multi-scalar politics of resilience planning

The lack of progress on SDG 6 has fuelled a global push for technological innovation and private sector engagement. The struggles of frontline communities can shed light on the racialised and gendered impacts of such technologies, which apply private sector principles and strategies of profit-maximisation to the delivery of public services. The City's Free Basic Water (FBW) policy distributed 6000 litres per month to all Cape Town residents until 2018. Consumption above this lifeline amount was billed using a steep block pricing system aimed at full cost recovery (and, in theory, to deter excessive water consumption). Large households could rarely

meet their needs using only the free lifeline supply and were overwhelmed by rising municipal debt. In 2018, at the height of a historic four-year drought, the municipality restricted FBW to only those officially registered as "indigent." This measure excluded large segments of the population who were not poor enough or simply unable to manage the administrative hurdles or produce the proper documentation to qualify as indigent (Scheba 2021). At the same time, the government dramatically raised tariffs to recover from the sharp decrease in consumption imposed by emergency restrictions.

Cape Town has become a laboratory for new models of finance sector-championed urban resilience planning. The City actively hopes to secure existing investments and develop new channels of capital accumulation in a context of hydro-climatic uncertainty (Bigger and Millington 2020). These experimental urban resilience strategies promoted by big banks, international philanthro-capitalist foundations and bilateral donors (see Grove et al. 2020) were promoted with urgency during the 2015-2018 drought, dubbed the "Day Zero" crisis (referring to the day in May 2018 when reservoir water levels would force the government to shut off its taps (Scheba 2023). Drastic measures were taken to avoid this scenario, further eroding the city's tenuous adherence to human rights norms in the context of crisis. In their daily struggles for water, Black women living in precarious housing in Cape Town simultaneously confront apartheid legacies, urban austerity and structural adjustment, green capitalism, and a neoliberal international development agenda. Their experiences offer insights into the constraints faced by frontline women and the imperative for the re-articulation of the human right to water into an instrument that can effectively serve the needs of frontline women.

Theoretical Debates over the Human Right to Water

On July 28, 2010, the United Nations General Assembly passed Resolution 64/292, codifying the human right to water and sanitation into international law. This historic event was the result of extensive efforts by a diverse coalition of non-governmental organisations (NGOs), trade unions, grassroots groups, and left-wing think tanks, collectively known as the global water justice movement (Barlow 2009). Grassroots movements that articulated radical right-to-water narratives were predominantly led by anti-imperialist grassroots movements in the Global South

(cf. the Northern NGO industrial complex's reformist approach to human rights; e.g., Olivera 2004, Rajagopal 2006, Parmar 2008). They argued against neoliberal developments that undermined access to and control over local water systems. This firm opposition to privatisation and commodification distinguished this movement from other human rights and environmental groups that typically engage with the United Nations (ibid.). Nevertheless, the mixed results of legal challenges have raised questions about the effectiveness of human rights instruments in driving transformative change.

In this section, I review three broad positions emerging from different disciplinary approaches to the human right to water. The first perspective draws on a longstanding Marxist critique of human rights as individualistic and reliant on property rights (Hoffman 2020). For instance, political ecologists have questioned whether the human right to water has really shifted power dynamics in the supply and distribution of water. In an influential paper, Karen Bakker challenges the global water justice movement's framing of "water as a human right, not a commodity" (2007: 433). She accuses water justice activists of "conceptual confusion," noting that human rights do not automatically exclude private sector provision. While Bakker acknowledges that full privatisation would likely undermine the human right to water, the framework allows for some degree of private sector participation. Other detractors have pointed to *Mazibuko* as an important litmus test; it proved the unreliability of rights litigation and diverted social movements' limited resources from other more worthwhile endeavours (Roithmayer 2010, Bond 2014). As Roithmayer (2010, 329) explains, human rights are limited as a "means of checking state power with state power" in the context of neoliberal post-apartheid South Africa.

The second stream of scholarship takes a more pluralistic approach to human rights, shifting the focus from the hegemonic to the counterhegemonic. Critical legal scholars from the Global South have foregrounded the distinct origins of socio-economic rights within anti-colonial movements, challenging notions that all human rights are part of a Western liberal paradigm. According to Bonilla Maldonado (2013), the South African constitution (like others in the Global South) established economic, social and cultural (ESC) rights as a more ambitious articulation of human rights. This approach diverges from constitutions in the Global North that affirm civil and political rights are compatible with free market economies. Social movements and labour

organisations sought concessions like socio-economic rights in South Africa's transition to democracy to establish basic conditions for populations dispossessed by a racist apartheid regime (Duggard 2016).

Similarly, Baxi (1998) and Rajagopal (2006) argue that human rights are neither inherently neoliberal nor revolutionary; they are produced at multiple sites by multiple actors/stakeholders, including Global South social movements. Shifting the gaze from courtrooms to counter-hegemonic practices reveals a more complex landscape, where successes and failures cannot be measured by legal outcomes alone (Rajagopal 2006). Indeed, grassroots movements around the world refuse to cede ground to conservative judges or human rights experts when organising more radical articulations of the human right to water beyond the state (Angel and Loftus 2019). The human right to water has often taken more radical forms in community-run initiatives beyond the state and court systems (e.g., neighbourhood platforms for citizen oversight in Catalonia; Planas and Martínez 2020) and solidarity-based community water systems in Latin America (PAPC online, n.d.).

A pragmatic third perspective in critical scholarship highlights the strategic, conjunctural potential of formal or state-centred strategies involving the human right to water. In a world of increasingly fierce competition over freshwater, human rights should not be seen as a panacea but as tools in an arsenal against complex landscapes of hydrological dispossession (Angel and Loftus 2019, Sultana and Loftus 2012, Morinville and Rodina 2013). While some scholars have sought to identify patterns in the context-specific potential of the human right to water (see Morinville and Rodina 2013), others including Hoffman (2020) argue that the non-linear consequences of "rights-in-practice" preclude simple narratives. For Hoffman (2020), anti-capitalist movements can benefit from the unpredictability of rights-based litigation as an irritant to capitalism's need for legal certainty. Even temporary limits to the extraction of surplus value imposed via socio-economic rights may force capital "to adapt in unplanned ways" (2020 par 10).

Furthermore, recognition of the human right to water has allowed radical movements to access formal decision-making spaces (Rajagopal 2006; Karunananthan 2019). For instance, water

justice activists have used rights-based discourses to challenge corporate capture and private sector interests in global policy spaces, including the 2030 SDG Agenda and the UN Water Conference (Karunananthan 2019; Heller et al. 2023). Activists have used these opportunities to articulate more radical visions of the human right to water within institutional settings (Lakhani 2023). This is consistent with "Third World Approaches to International Law" (TWAIL), which acknowledge the limitations of mainstream human rights frameworks while also viewing them as important spaces of contestation and negotiation (Parmar 2008) that may open sites from the bottom up.

These pragmatic scholars highlight the strategic value of the UN's right to water as "a moral statement in recognizing water for life, and a way to foster transforming the dominant way water has been viewed as a commodity and challenging its valuation as a purely economic good" (Sultana and Loftus 2012: 6). Those engaged in litigation strategies have drawn on the moral power of the human right to water to expose injustices, including the collective punishment of Palestinian people, the disproportionate impact of water shut-offs on Black and racialised communities in the USA, and the contamination of water by the Coca Cola Company in Plachimada, India (Rajagopal 2006, Bywater 2012, Schein 2006, Kelley 2017).

Effectiveness is difficult to measure in the complex terrain of water justice struggles, where movements often pursue multiple strategies at multiple sites (Rajagopal 2006). For South African activists involved in *Mazibuko*, human rights were part of, not a substitute for, a more comprehensive vision of large-scale redistribution. Dale McKinley, one of the founding members of the Anti-Privatization Forum (a broad-based network that supported the legal challenge), argues that rights-based litigation "offered a practical way to engage and organise grassroots struggles" that were unfolding on a "lived capitalist terrain of social relations" (pers. comm., 2020). As Dugard (2016) suggests, the multi-year legal challenges helped build public support and leverage for other political tactics, including grassroots resistance. A strategic or pluralistic right to water aims to offer clear articulations that enhance its potential as a tool for water justice movements (Parmar 2008, Mirosa and Harris 2011, Sultana and Loftus 2012). Over the past two decades, water justice movements have developed and refined their radical articulations of human rights to water, for example through activist declarations, drafting

explicitly anti-privatisation right-to-water legislation, and interventions at international meetings like the UN 2023 Water Conference (Lakhani 2023). Nevertheless, these articulations would benefit from a deeper engagement with feminist theory and the lived experiences of frontline women. Mainstream development and human rights literature, for its part, has much to say about the links between access to water and gender equity but is silent on systemic causes (Parmar 2008). Mainstream experts maintain that human rights are agnostic about modes of delivery despite a growing body of feminist literature on the detrimental impacts of privatisation (de Albuquerque and Winkler 2010). Proponents of private sector engagement are increasingly drawing on depoliticised "gender and development" discourses to champion new mechanisms for capital accumulation in water and sanitation services through innovative financing and technological experiments in the poorest communities.

The right to water in feminist legal theory

Black and Indigenous feminist legal scholars have pushed to attune human rights laws with struggles against colonialism and ongoing processes of racial capitalism (see Williams 1991; Napoleon 2005; Barker 2006; Ritchie et al. 2012; Parmar 2008). For instance, Barker (2006) and Napoleon (2008) show how Indigenous women strategically use litigation to build political and economic power to advance, rather than undermine, broader struggles against colonialism. As such, radical possibilities lie in deeper engagement with the workings of power and feminist praxis within and outside the judiciary system.

South African feminist legal scholar Devina Perumal (2011) argues that *Mazibuko* was a failed opportunity to apply feminist jurisprudence, a school of legal praxis that challenges the dominant values and assumptions of supposedly neutral traditional legal systems. Four of the five plaintiffs were women and the concerns they raised were deeply gendered. Judge Tsoka of the Johannesburg High Court initially adopted a feminist approach when acknowledging how socio-economic rights could alleviate the gendered burden of care in historically marginalised populations. The Constitutional Court's reversal "had the effect of […] normalizing structural patterns of inequality" (Perumal 2011: 25). According to Perumal, the Constitutional Court

ignored the women's experiences of structural inequity, their socio-economic context, and the "relationships between law and social arrangements" (Mossman in Perumal 2011).
Feminist legal theory's emphasis on human rights as a site of struggle serves as a launching point for the following analysis, which aims to respond to calls for a clearer articulation of the human right to water by bringing water justice activism into conversation with feminist geography, and political ecology. Building on Perumal's (2011) critique of *Mazibuko*, I establish the need for a feminist approach to the human right to water that is situated in place. I argue that the human right to water must attend to the ongoing violence of colonialism and racial capitalism through feminist place-based epistemologies if it is to serve the emancipatory ideals of frontline communities. Taking a pluralistic approach, I consider how frontline organisers create possibilities for feminist rights-based praxis within and beyond the state (Angel and Loftus 2019).

Methodology and positionality

The analysis presented here is part of a project that grew out of an initial collaboration with Cape Town activists through the Blue Planet Project, an international water justice organisation where I worked from 2012 to 2020. The Blue Planet Project first partnered with South African professor Koni Benson, currently at the University of Western Cape, to support community organisers in 2014. By 2017, when the city of Cape Town introduced emergency measures to restrict water consumption, the group had already grown into a city-wide coalition of water justice organisers called the African Water Commons Collective (AWCC). In December 2017, the Blue Planet Project funded a city-wide meeting led by AWCC organisers, resulting in a cross-class coalition called the Cape Town Water Crisis Committee to gain understanding of the international pressures on Cape Town's drought management strategy.

This article is informed by the findings of a dialogical feminist ethnographic methodology, including qualitative data collection methods and a critical policy analysis. From August to October 2018 and over three weeks in 2019, I conducted participant observation by visiting seven neighbourhoods with AWCC activists and attending workshops and meetings organised by various grassroots and community groups. During this time, I also conducted 43 interviews with women organisers living in precarious housing conditions on the outskirts of the city. In addition,

I attended two Blue Planet Project roundtable discussions on water justice issues in South Africa in 2018 and 2019. To complement these findings, I analysed official discourses from 26 policy documents, technical reports, and city public relations materials with the objective to identify the tensions between official narratives and frontline women's experiences. My textual analysis was informed by interviews and collaborations with community organisers who identified water restriction measures—including metering technologies and payment systems—as pivotal sites of contestation. I use pseudonyms to protect the identities of the women who shared sensitive information, while information gathered from experts and key organisers is accurately attributed with their consent.

Discussion: Feminist place-based epistemologies

Feminist standpoint epistemologists challenge positivist claims of objectivity and emphasise the situatedness of all knowledge. They also call for research that privileges traditionally excluded perspectives. I join the community of Black and Third World feminist standpoint scholars who view feminism as analytically inextricable from the politics of race and class (Davies et al. 2022). As Chandra Mohanty (2003:231) explains, "the experiential and analytic anchor in the lives of marginalised communities of women provides the most inclusive paradigm for thinking about social justice. This particularised viewing allows for a more concrete and expansive vision of universal justice." In this section, I focus on *place* as a critical dimension of situatedness from which to build a more expansive right to water that decentres Eurocentric epistemologies and unravels the interlinkages of patriarchy, racism, colonialism, class struggle, and other systems of oppression. To foreground Black women's struggles for water justice in the arena of social reproduction, I outline a feminist place-based articulation of the right to water emerging from grassroots praxis through (1) grounded normativity, (2) decolonial political ecologies, and (3) feminist abolition geographies.

My work is aligned with theorisations of South Africa as a settler colonial state (see Oyedemi 2021, Park 2021, Parashar and Schulz, 2021) and counterhegemonic right-to-water practices as struggles against hydrocolonialism (Ansloos 2023). While the South African context significantly diverges from "New World" colonies, my application of North American decolonial and Indigenous feminist scholarship to the South African context is consistent with analysis of

"apartheid as an expression of settler colonialism" (Park 2021). Additionally, my focus on racial capitalism draws from Black radical imaginaries, including those of South African anti-apartheid movements that emphasised the interconnections of class struggle alongside anti-racist and anti-colonial praxis. This work is also guided by Black feminist geographers who challenge theorisations of Black life as placeless, alienated from the environment, and lacking geography or spatial imaginaries (Hawthorne 2019, Nxumalo and Cedillo 2017, McKittrick 2011).

Grounded Normativity

The debate over "sufficiency" in *Mazibuko* illustrates how the methodologies for establishing human rights norms and standards are often obscure, technocratic, and disconnected from the realities of those they claim to serve. Applicants in *Mazibuko* offered detailed accounts of the toll water restrictions take on those with primary, multi-generational care responsibilities in large households in poor Black neighbourhoods with high rates of morbidity and disability (Founding Affidavit 2007, Munyai Affidavit 2007, Makoatsane Affidavit 2007). However, their lawyers and the human rights organisations backing them built the case on the opinions of external technical experts. The demand for a 50-litre core minimum supply, which was ultimately rejected by the Constitutional Court, was based on a report by an American engineer, Peter Gleick (COHRE Amicus Brief 2009). Gleick (1996) derived his proposal from secondary sources including physiological studies, UN reports, and official records of various governments. No intimate knowledge of communities with limited access to water was used in his research. Yet the 50-litre minimum remains the de facto international standard for water sufficiency[1] in UN documents; this process has reinforced a positivist approach to human needs as biologically determined and scientifically calculable (see UNDP 2006, for example). Human rights norm-setting practices elevate the authority of engineers, lawyers, doctors and other "experts" over those with direct, lived experience.

In contrast, the African Water Common's Collective (AWCC) builds what Coulthard and Simpson (2016) refer to as *grounded normativity*— "ethical frameworks provided by […] Indigenous place-based practices and associated forms of knowledge" (2016: 254). They eschew proposals for fixed entitlements and demand unrestricted access for those living in the

underserviced margins of Cape Town. As Faeza Meyer, an AWCC founder, argues, the capacity to waste large amounts of water is structurally limited by basic living conditions: "We do not have big houses and swimming pools; we use water only for basic needs." A recent study confirmed that elite and upper-middle-income Capetonians (representing less than 14% of the population) are responsible for 51% of the city's water consumption (Savelli et al. 2023).

The AWCC's grounded normativity arises from practices of care and solidarity, through which historically marginalised populations can build community and make life possible in inhospitable landscapes. The group draws on grassroots pedagogies to challenge the biocentric narratives that have justified water restriction measures targeting people living in the city's poor racialised neighbourhoods. They began in the township of Mitchell's Plain in 2014, going door to door to speak with their neighbours about the municipal government's efforts to install Water Management Devices. AWCC now supports neighbourhood committees—known as "water action committees"—in 18 neighbourhoods across the city. These water action committees build knowledge by facilitating story sharing and by conducting household water use surveys that track daily consumption and the challenges people face in precarious housing conditions.

The AWCC's embodied place-based practices and grassroots data collection reveal the City's gross underestimation of water needs in low-income neighbourhoods. The stories they collect paint a rich picture of complex relationships with water beyond the "thin theories of needs" that inform minimalist and formulaic approaches to urban water delivery (Fraser 1989). They create counter-narratives against neoliberal climate and water resilience narratives that promote flow restriction technologies and tariff hikes that predominantly impact people living in historically marginalised neighbourhoods.

Households vs. Webs of Care

The AWCC argues that official data vastly underestimates household size in partially informal townships. A neighbourhood visit with the AWCC quickly reveals that Eurocentric conceptualisations of nuclear family-based households are not the norm; households are bigger and more fluid than official data suggests. Household size is in constant flux as people move in and out from one precarious situation to another. In addition to elderly parents, children and grandchildren, people also take on the children of siblings who have fallen on hard times, elderly

neighbours who are unable to care for themselves, friends who have fallen out with their biological families, or relatives from rural areas who have moved to the city in search of employment. Thus, single properties often house multiple generations, including extended family members who live in informal structures like backyard shacks (Radical Educators Network meeting, October 2018). Homes in townships are fluid nodes in extended webs of care and collective survival—their needs are poorly represented by the statistical imaginary of fixed households.

For example, Aziza, a Mitchell's Plain activist in her 60s, lives in a subsidised rental home that supports up to 18 people, including her children, grandchildren, and sister's children. Her sister, whose shack recently burned down, sleeps on a mattress in a flimsy makeshift shelter made from a shower curtain in a neighbour's backyard. She comes to Aziza's home early every morning to wash up, do laundry and care for her young children aged five and seven. Aziza has refused a WMD but is unable to keep up with her water bills and fears she will lose her rental home. She fell behind after receiving a 35,000 rand bill (approximately 2,500 CAD). The City eventually confirmed this was due to a leak in the pipes but claimed she was responsible for reporting and maintenance. Similarly, Doreen is a widowed grandmother living in the Hillview informal settlement. She shares her home with five other family members, including a granddaughter who stayed behind to avoid changing schools when her mother moved out. Doreen has a tap, but her water was cut off for nine months due to a technical failure with the WMD. She relied on a nearby sister to supply her with water on a daily basis.

Free-flowing water enables women in abandoned spaces to collectivise the burden of care through community gardens, collective cooking, and shared childcare initiatives. Women for Change, a group of mothers and grandmothers in Mitchell's Plain, have pooled their own limited resources to prepare and serve breakfast to children in the neighbourhood. They rise early to knock on doors and lure neighbourhood children out of their beds, get them dressed, fed and off to school on time. They hope to prevent gangsterism by keeping children off the streets and in school. However, the project has recently stalled because key members, including Aziza, are struggling to pay their municipal bills.

This grounded analysis of sufficiency norms reveals the oppressive nature of technologically or administratively regulated restrictions that intensify the exploitation of Black women. Free-flowing water nurtures practices of neighbourly solidarity, community-building and collective parenting through organic webs of care beyond the Eurocentric patriarchal structures of the neoliberal household. Water restriction technologies undermine initiatives like Women for Change, which elevate social reproduction from the drudgery of surviving racial capitalism to restorative, creative and community-building work.

Decolonial Political Ecologies and a Black Sense of Place

In 2009, Constitutional Court Judge O'Regan offered an environmental rationale for prepaid water meters: "Ours is a large arid country, often assailed by drought. Redeeming the constitutional promise of access to sufficient water for all, will require careful management of a scarce resource" (O'Regan 2009, 3). Nine years later, the City of Cape Town eliminated its universal free basic water program and introduced stricter measures to address "non-revenue water" and promote "wise use of water" (CCT 2019) within a context of unprecedented drought and future climate uncertainty. In both instances, an ahistorical, neo-Malthusian construction of scarcity (Mehta et al 2019) was used to justify disproportionate water restrictions on communities living at the intersections of race and class-based exclusion. In the post-apartheid era, free basic supplies have been tied to water restriction technologies to control the behaviour and social attitudes of poor people, who are seen to overtax the state by refusing to live within their limited means (Ruiters 2007). These methods of social control have taken on an added environmental cachet in the aftermath of the historic drought in 2015-2018. The logic of "trade-offs"—historically deployed to subordinate human rights to economic development (Parmar 2008)—now uses an ecological veneer to justify the scaling back of modest progress.
Water deprivation strategies also rely on anti-Black narratives that situate Black and colonised bodies outside of modernity (McKittrick 2011). For instance, the Cape Town Resilience Strategy, a Rockefeller Foundation-funded plan launched in 2019, depicts a modern post-apartheid city where underdeveloped townships are an inconvenient remnant of the past (Cape Town Resilience Strategy 2019). Resilience narratives frame sites of white overdevelopment as

part of a modern ecological future, while the racialised outskirts of the city are depicted as a parasitic force that threatens to dismantle progress if not adequately constrained.
Marxist political ecologists challenge false dichotomies like nature-society but have traditionally overlooked the racialised violence of capitalist socio-natural or hydro-social arrangements (Heynen and Ybarra 2021). Therefore, grassroots resistance to neoliberal hydro-climate policies in Cape Town has increasingly aligned itself with Indigenous and anti-colonial praxis that exposes the links between contemporary environmental governance and racialised regimes of property ownership and settler colonial Indigenous elimination (Todd 2016, Daigle 2018, Bhandar 2018, Green 2020).

New green enclosures

The idealisation of white overaccumulation naturalises racialised violence and profits from the erasure of a black sense of place (McKittrick 2011). While the water consumption of poor black populations is heavily regulated, official documents ignore the water footprints of the tourism industry and industrial users associated with a modern, forward-looking city (Cape Town Resilience Strategy 2019, Cape Town's Water Strategy 2020). The Cape Town "Water Conservation/Water Demand Management Strategy" (2007) almost exclusively targets poor racialised communities, despite the much higher rates of water consumption in wealthier white neighbourhoods (Savelli et al. 2023). Because the system relies on user fees from wealthy residents, its "conservation" measures are imposed coercively to prevent poor people from consuming beyond their means (Ruiters 2007, Scheba 2021). The steady flow of municipal water to the traditionally white city centre and increasingly severe regulation of poor, non-white neighbourhoods in the outskirts supports a programme of full municipal cost-recovery and a local economic dependence on real estate and tourism. As McKittrick (2011: 250) puts it, in this "commonsense formulation, [post-apartheid] black geographies are rendered extraneous and unfree sites of violence and danger."

In recent years, hydro-climate policies have complemented shifts in spatial planning aimed at transforming parts of the abandoned hinterlands into sites of capital accumulation. With a backlog of 35,000 houses per year, the municipal government has ramped up efforts to contain

the proliferation of informal housing in the flood-prone outskirts (Johnson 2022). Cape Town's 2017-2022 Municipal Spatial Development Framework (CCT 2017, 18) delineates several new "discouraged growth areas" where the City will not provide basic services in the sprawling informal housing settlements. It hopes to enclose portions of these territories, previously neglected by capital, as "protected areas and conservation areas" in the name of climate-resilient spatial planning (CCT 2017, 64).

The updated 2023 framework reclassifies large areas of land into "critical natural asset areas" "biodiversity and marine protected areas," "ecological corridors" and other conservationist categories. To prevent further "loss of habitat," the City will crack down on "mass land invasion, significant levels of persistent informality and increasing levels of unauthorised occupation of land" (CCT 2023 p. 78). This language represents a new conservationist taxonomy in the criminalisation of everyday black life by coding it as a "threat to "environmental integrity and green infrastructure value" (ibid). In contrast, the targeted revenue-generating activities will enjoy "proactive exemptions and selective protections" (ibid). The city plans to allow eco-tourism to "harvest… natural resources" and other "appropriate land uses" (CCT 2023, 65) in several "protected areas and conservation areas" designated as "destination places and get-aways", "valuable view corridors", "scenic tourist routes" and "heritage assets" (CCT 2023, 84).

A black sense of place

Shortly after Cape Town announced the imminent threat of "Day Zero" in April 2018, AWCC activists organised a meeting that laid the foundation for a broad-based city-wide coalition called the "Water Crisis Coalition" (WCC). This coalition successfully mobilised the support of residents from wealthier neighbourhoods and more than 70 organisations to challenge hydro-social inequities. In 2017, at the height of Cape Town's historical drought, community organisers tried to expose the abusive practices of industrial water users. One of the group's first initiatives was a series of protests in front of Coca-Cola and SAB Miller offices, demanding the city impose stricter restrictions on corporate access to municipally treated water (Browdie 2018). Coca-Cola alone, they argued, consumed the same amount of water as the city's four million residents (ibid). The activists wondered why sacrifices should come from those who consumed the least

while corporate consumers' hefty water use was tolerated. They exposed the unequal hydro-social metabolisms, which had been overlooked in technical reports and much of the early media coverage.

The news agency Ground Up soon revealed that Coca-Cola faced no consequences for blatantly ignoring the drought restrictions (Kretzmann and Joseph 2020) and never reduced consumption. It simply reduced its dependence on the municipal water system once the company secured permits to drill its own borewells after the threat of Day Zero had passed. Meanwhile, household water users faced numerous punitive measures, including severe restrictions on water consumption and steep increases in tariffs that disproportionately impacted poor, racialised residents in the underserviced outskirts of the city (Scheba 2023).

McKittrick (2011: 949) explains "a black sense of place […] as the process of materially and imaginatively situating historical and contemporary struggles against practices of domination *and* the difficult entanglements of racial encounter." The WCC's actions make visible a black sense of place by exposing the apartheid logic of drought response and water conservation measures that discipline black bodies to stabilise white capital accumulation. They expose new ecological efforts that have emerged out of Cape Town's deepening entanglements with global finance and intensified competition for resources (see Bigger and Millington 2019). The water justice protests have served to decolonise ecological epistemologies that protect the reproduction of capital over the reproduction of human life. In so doing, they expose the modern urban water system as a site of anticolonial, anti-racist struggle and contribute to a collective "re-storying of place" (Nxumalo and Cedillo 2017), flipping official narratives that valorise big corporations like Coca-Cola while criminalising life-making practices of surplus populations.

Abolition Geographies

In South Africa, the human right to water is mediated by a socio-technical regime tying colonial histories and apartheid geographies to the contemporary demands of global finance (Von Schnitzler 2008, Bigger and Millington 2019). In this context, frontline women have self-organised to claim their human right to water through practices of civil disobedience and creative

resistance within an ethos of abolition feminism – a movement towards emancipation from the unfreedoms produced by racial capitalism (Davis et al. 2022, Wilson Gilmore 2002).
Sofia is a 50-year-old paralegal who has been unemployed for many years. After 24 years on a waiting list, she recently moved into a new social housing unit where she lives with her adult children, grandchildren, and brother. Her house is poorly built with cheap materials and came with a pre-installed WMD. She and a neighbour created an association to collectively pressure the city to improve services and resolve a long list of grievances related to the shoddy construction of homes in their social housing development. This association now includes 500 neighbours, predominantly women. The group has launched a campaign to disconnect both water management devices and traditional water meters that have left residents with hefty bills. She and her neighbours complain that they are often made to pay for water losses from leaky pipes and faulty plumbing beyond their control.

She argues that vulnerable residents are often misled or feel bullied by aggressive private contractors hired by the city to install WMDs: “Sometimes, the city will send someone to repair a leak and people will wind up with a water management device.” AWCC activists refer to WMDs as “weapons of mass destruction. Faeza Meyer recalls the smell of homes that cannot flush toilets or maintain basic hygiene. The neighbourhood association now uses WhatsApp to organise “street committees.” Residents post a message when a contractor appears at the door and the “street committee,” comprised of members from neighbouring houses, immediately shows up to chase away the unwanted guest. Others have set up clandestine connections to the city water grid so that they no longer have to walk and queue for water at communal pipes. Resistance to water restrictions enabled them to reclaim their labour, protect the health of their families and maintain their dignity.

These actions demonstrate the expansive nature of what Ruth Wilson Gilmore (2022) calls “abolition geographies,” through which communities build bridges towards better futures by cultivating practices of resistance to state violence in everyday life. Abolition geographies are the dialectic opposite of carceral geographies, where “the modern prison is a central but by no means singularly defining institution” (Bhandar and Toscano 2022,18). Just as carceral geographies encompass the homes and highly militarised neighbourhoods of surplus populations, abolition

geographies include the sites of social reproduction that foster collective organising and daily acts of resistance that sow the seeds of liberation (Bhandar and Toscano 2022, Gilmore 2022). Whereas water technologies have served to discipline Black bodies and criminalise social reproduction in racialised spaces, non-payment, self-connections and the destruction of meters serve an abolitionist purpose of "dismantling institutions that are overtly causing social and civil death" (Davies et al. 2022, 55).

Resilience or organized abandonment?

Resilience planning—a climate adaptation strategy—cements Cape Town's carceral geography by justifying greater flows of public funds and water supplies to the highly developed urban core and stricter regulation of life in the abandoned outskirts. The Cape Town Resilience Strategy (2019) was developed in the aftermath of Day Zero to enhance the city's "shock-readiness." The plan calls for more surveillance of segregated townships through neighbourhood watch committees that enlist people "in good standing" to volunteer with local police, ostensibly to resolve gender-based violence, gang violence and other "social ailments." Meanwhile, a corporate-sponsored "Live Well Challenge" compels residents to make better choices to alleviate high morbidity levels. In a context of organised abandonment, social and physical ailments are reduced to individual behaviours; responsibility is shifted onto communities and the gendered burden of social reproduction is reinforced.

Increasingly vulnerable communities live in flimsily constructed, overcrowded homes in close proximity to one another without adequate access to municipal services, including water and energy. Deepening energy poverty in South Africa contributes to the rampant use of unsafe energy sources including paraffin, kerosene and wood, which increase the risk of shack fires. Inadequate water services, Faeza Meyer (2018) argues make it impossible to contain fires, which spread rapidly from shack to shack. It can take up to 20 minutes to fill a 25 litre can at a communal tap due to extremely low water pressure (ibid). Firefighters are ineffective without adequate infrastructure including operative fire hydrants (ibid).

Since 2012, the City of Cape Town has sought to address this problem by providing emergency response training to secondary school girls in low-income neighbourhoods as part of a campaign affiliated with the UN office for Disaster Risk Reduction (UNDRR) called *Women and Girls: the Invisible Force of Resilience* (UNDRR 2012). Rather than address the systemic factors underlying environmental vulnerabilities faced by racialised communities, resilience planning programs put pressure on racialised communities (coded as sites of dysfunction and criminality) to do more with less. The city achieves shock-readiness by bolstering the state's penal capacities and relying on Black women and girls to absorb shocks from chronic disinvestment in social infrastructure under the guise of empowerment.

Charting Abolition Geographies through Water Justice

Metering and pressure management technologies, together with indigent policies and lifeline supplies, have allowed the state to create increasingly oppressive terms of access to water and sanitation services. Frontline women disrupt these multi-scalar processes—which intensify their exploitation in order to meet the insatiable resource demands of racial capitalism—by rejecting water restrictions and prohibitive municipal tariffs. These acts of abolition make way for organic solutions like Women for Change's breakfast program. While the Resilience Strategy promotes greater surveillance, militarisation and social division in racialised neighbourhoods, place-based solidarity efforts address the systemic causes of social dysfunction and bolster community resilience through mutual aid and "social parenting" (Gilmore 2007).

The AWCC's meetings bring organisers from water action committees across the city together to construct "critical topographies" (Katz 2021) and develop joint strategies of resistance that respond to diverse precarious housing conditions in different settlements and neighbourhoods. The AWCC disrupts apartheid geographies by facilitating knowledge-sharing across apartheid-era borders that continue to keep communities classified as "black African" away from those classified as "coloured." They support a collective dismantling of the infrastructures that deprive them of water supplies needed to live a healthy, safe and dignified life.

Conclusion

My aim in this article was to respond to calls for a clearer articulation of the human right to water within transformative agendas of solidarity with frontline communities in struggles for water justice. I outlined a feminist decolonial approach that challenges hegemonic gender empowerment narratives, which tend to facilitate greater private sector engagement in urban water sectors in the global South. In Cape Town, climate resilience strategies have introduced new enclosures and deepened spatial injustices. I argue for radical articulations of the right to water that address these enduring and emerging threats in ways that attend to gendered dynamics of frontline struggles against racial capitalism and hydro-colonialism.

Frontline women's struggles against water restriction technologies in Cape Town reveal how Eurocentric human rights methodologies reproduce and intensify existing hydro-social injustices. More effective human rights methods would centre decolonial feminist place-based epistemologies including grounded normativity, decolonial political ecologies, and a black sense of place. In a global context of overlapping financial, environmental and humanitarian crises, powerful actors have coalesced to stabilise the reproduction of capital by promoting innovative channels of investment in the water sector. Multilateral institutions and "feminist" bilateral aid agencies proffer plans to address gaps in access to water through privately financed technological innovations. However, broader feminist abolition struggles support frontline efforts to dismantle hydraulic systems that contribute to the oppression and exploitation of marginalised women.

As a young organiser fighting for access to water and sanitation in a newly formed settlement explained, "I want what they have, those politicians who come here and make promises. I want a nice home and hot running water." Water justice organisers in Cape Town reject a minimalist approach to the right to water that relegates frontline women to a life of drudgery. By challenging sweetheart deals for corporations such as Coca-Cola, they seek a more equitable distribution that would ensure sufficient water for every home—to paraphrase an old feminist saying: to have water for bread and water for roses too.

Conclusion

This doctoral research project was born out of a collaboration that began through my work at the Blue Planet Project with a network of community water justice organizers in Cape Town called the African Water Commons Collective (AWCC). In 2018, I set out to investigate the hydro-climate policies being rolled out in the aftermath of 'Day Zero' – a day in May 2018 when the municipal government predicted water levels in reservoirs would drop to a level that would force it to shut off all taps (Millington and Scheba 2021). Although Day Zero never came, as I have argued in this dissertation, it created a climate of urgency that enabled the City of Cape Town to enact a series of strategic policy measures that have further aligned its water system with the interests of racial finance capital while deepening hydro-social inequities along the lines of class, gender and race.

In this dissertation, I endeavoured to critically investigate the multiscalar production of neoliberal hydro-climate politics in Cape Town, South Africa, as a site of gendered, classed, and racialized struggle through the prism of 'a black sense of place' (McKittrick 2011). Additionally, the dissertation sought to further the efforts of feminist scholars to heterogenize urban political ecology by centering marginalized experiences (Reddy 2021, Peake 2016, Pulido 2016). By building theory from relationships of solidarity, my third objective was to support the efforts of frontline communities and translocal networks to imagine just and equitable hydro-social futures and to bring them into existence. Finally, I aimed to make methodological contribution to feminist solidarity-based research/

My research was guided by questions regarding the power dynamics shaping the urban climate adaptation and drought management policies in Cape Town. In particular, I was seeking to understand the gendered, racialized and class-based implications of hydro-climate policies that emerged in the aftermath of Day Zero. In this context, how do emerging trends in neoliberal climate adaptation conflict with the aspirations of those at the frontlines of struggles for water justice? How are frontline women organizing against neoliberal hydro-climate policies in Cape Town and what are the feminist decolonial alternatives emerging out of these struggles?

In order to answer these questions, I combined collaborative feminist ethnographic research with critical policy analysis. The ethnographic component consisted in participant observation and 43 semi-structured interviews with frontline women organizers conducted over the course of two visits to Cape Town from August to October 2018 and in July 2019. The interviews were conducted during community visits and meetings organized by the AWCC. The critical policy analysis included XX documents, including xx published by xx.

As explained in previous chapters, race and class overlap strongly in South Africa as part of the ongoing legacy of apartheid (McKeever 2023). Moreover, Cape Town is widely regarded as the most spatially uneven city in South Africa (Turok et al. 2021). In this context, the impacts of reforms to water services enacted in the aftermath of Day Zero were felt most profoundly by poor, racialized people living in informal settlements on the outskirts of the city. Building on the scholarship of Ruth Wilson Gilmore (2002), Laura Pulido (2016), Destin Jenkins (2021) and others on urban racial capitalism, I aim to show that these conditions have made Cape Town an ideal locale for experiments with new modes of capital accumulation. In the sections that follow, I provide a synthesis of my findings, discuss key contributions, reflect on limitations and explore avenues for future research.

Synthesis of findings

Together the three chapters (articles) presented in this dissertation serve to demonstrate the multi-scalar production of neoliberal hydro-climate policies as part of a coordinated effort by powerful global actors to protect the reproduction of capital against the overlapping threats of financial and environmental crises. The first chapter serves to highlight the constellation of international actors involved in urban water/climate resilience in Cape Town, while the second analyzes proposals to reconfigure hydro-social relations in Africa in the context of the UN 2023 Water Conference and the Sustainable development Goals Agenda. My analysis demonstrates that urban hydro-climate policy is embedded within racial capitalism through urban resilience planning, development policy and philanthro-capitalism. In the third chapter, building on the African Water Commons Collective's grassroots pedagogies, I offer a radical re-imagining of the human right to water as an organizing, legal and political tool for challenging hydro-social dispossession at multiple scales.

Seeking a now that can breed futures: Critical topographies of hydro-climatic resilience in Cape Town, South Africa

In the first chapter (article 1), I analyze the impacts of hydro-climate policies adopted in the aftermath of Day Zero in the daily lives of racialized women living in the margins of the city. One of my aims was to interrogate ahistorical constructions of the cultural and geographical contexts that produce gendered inequities in access to water using frontline struggles for water justice using Cape Town as a case study. Contrary to prominent efforts that propose modernization and, by proxy, women's integration into financial markets as a solution to water inequity (see water.org, World Bank 2019), my objective is to demonstrate the intensification of gendered and racialized hydro-social inequities resulting from Cape Town's deepening entanglements with global finance capital. Drawing from conversations and collaborations with frontline organizers, and a detailed analysis of 11 municipal policy documents and technical reports published in the aftermath the drought, I examine the way climate/water resilience policies claiming to 'future-proof' the City have intensified the exploitation of historically marginalized women by reconfiguring the spatio-temporalities of water collection. I conclude by highlighting the ways in which women are disrupting the City's efforts to reconfigure hydro-social relations through daily acts of resistance as well as through collective organizing.

Sustainable development, climate resilience, and the technologies of water apartheid

In this chapter (article 2), I investigate the efforts of international financial institutions and multilateral bodies to address overlapping financial and environmental crises through 'techno-financial fixes'. These fixes seek to: 1) prevent stagnation by creating new channels of investment for private capital in water and water-related services into financial assets, and 2) prevent loss of profits due to water insecurity. Specifically, I analyze emerging initiatives of the World Bank and several powerful multilateral bodies including the OECD's Roundtable on Water Financing and the newly formed Global Commission on the Economics of Water promoting initiatives to reconfigure water management in order to address these threats and create new opportunities in Africa. My critical policy analysis serves to expose the racist

underpinnings of initiatives framed as solutions for sustainable development and climate resilience. Through a qualitative case study of community resistance to climate/water resilience strategies in Cape Town, I demonstrate how emerging techno-financial fixes perpetuate water apartheid by exacerbating existing inequalities and creating new forms of dispossession.

Water for bread and water for roses: Contours of a feminist decolonial human right to water

In this third and final chapter, I respond to calls for transformative articulations of the human right to water. Drawing from collaborative ethnographic research with women at the frontlines of struggles for water justice in Cape Town, I demonstrate the ways in which Eurocentric human rights methodologies reproduce and intensify existing hydro-social injustices. I re-imagine the human right to water by centering decolonial, feminist place-based epistemologies. Taking a pluralistic approach to human right to water, my objective in this chapter is to look at possibilities for rights-based practices within and beyond formal spaces.

Key contributions

Taken as a whole, my doctoral research builds on and furthers the efforts of feminist scholars to heterogenize urban political ecology by centering marginalized perspectives and experiences (see Reddy 2021, Peake 2016). I do so by developing theory anchored in a black sense of place (McKittrick 2011), guided by conversations with frontline women in Cape Town and inspired by their spatial struggles, place-making practices, geographic insights and future-building activities.

Each of the chapters offers a grounded analysis of emerging strategies of capital accumulation by dispossession in water and sanitation. Whereas traditional political economy focuses on strategies and processes of capital accumulation, my research sought to offer a differentiated analysis of dispossession within a context of racial capitalism where dominant strategies aimed at ensuring the reproduction of capital and the reproduction of natural resources increasingly undermine the (social) reproduction and futurity of poor, racialized populations.

My research starts from the premise that protests and acts of resistance led by frontline women within the arena of social reproduction are critical sites of knowledge and radical imagination. Local organizing strategies (e.g., by the AWCC) offered guideposts for my theoretical excavations in policy documents. The metering technologies and payment systems that frontline activists challenged served as a focal point for textual analysis. Through critical analysis of municipal, regional and global policy discourses and practices, I examined the framing and rationalizations provided to justify/support the implementation of these systems restricting the water access of marginalized communities. My investigation into Cape Town's drought management strategies led me to pinpoint connections to other actors and processes operating at the global scale.

Contrary to the view that urban political ecology is better served by an empirical focus on the planetary scale (see Angelo and Wachsmuth 2015), I privilege a feminist place-based and embodied research approach. Rather than theorizing at a distance, I relied on a collaborative multi-scalar and multi-sited urban political ecology that enables differently situated actors to better connect processes *of* the city and those unfolding *in* the city (Cousins and Newell 2019).

It is also important to underline that my research is embedded within networked relationships that facilitated 'situated solidarities' (Nagar 2014). My doctoral investigation tapped into and fed existing grassroots initiatives as part of a process of building networked knowledge of urban hydro-climate policies. My analysis was built through dialogical processes of speaking to community organizers and participating in their collective efforts, including the tour of Siqalo, community workshops, protests, and meetings that took place in the aftermath of the drought.

Relationships built through water justice networks and ongoing dialogue with frontline organizers enabled me to "read up the power structure" (Mohanty 2003) of urban resilience strategies in solidarity with those living at multiple intersections of oppression. By collaborating with the AWCC, I was able to foreground the geographies of women living in the urban margins as sites of possibility for radical imagination and revolutionary futures.

Limitations

My initial methodological design involved at least three main field research trips in Cape Town: in 2018 (interviews and participant observation), 2019 (supplementary interviews and focus groups) and a final visit to receive input on the preliminary findings of my research, which was planned for 2021. Unfortunately, this final trip did not take place due to the COVID-19 travel ban and other life events have prevented me from returning to South Africa since then. Given that most of the participants in this study are inaccessible via electronic communication and have limited capacity to participate in online meetings, these circumstances have hindered my capacity to engage in a more elaborate dialogue about the findings of my research. I have nonetheless been in regular contact with AWCC activists throughout this process and have sought their input on publications that reference their work.

Secondly, given that this research project developed out of my involvement in the AWCC's campaign against water management devices, it focuses primarily on issues of drinking water. Both globally and in South Africa, gaps in access to sanitation are far greater than those in access to drinking winter. This is also an area where the World Bank sees the greatest opportunities for private sector financing (World Bank 2022a). Sanitation issues were also raised in interviews, but I was not able to do them justice within the parameters of this dissertation. As such, there is considerable scope for a more thorough examination of sanitation issues within the parameters presented in this study.

Lastly, only South African nationals were interviewed in this doctoral research project. However, there is growing evidence that migrants from other parts of Africa live in yet more precarious conditions and are more deeply impacted by urban austerity measures (see Fuo 2020). Thus one additional limitation is that their experiences were not included in of my research due to time and resource constraints.

Avenues for future research

As Cindi Katz (2001) argues, the construction of critical topographies that reveal the impacts of capitalist globalization on social reproduction in particular locations enables us to build counter-topographies – a translocal understanding of systems of power generated by connecting place-based struggles. By examining the power at multiple geographical and political scales from a situated perspective, I endeavoured to produce a 'critical topography' (Katz 2001) of urban water/climate resilience. I conclude by highlighting potential avenues for countertopographies that may be built out of this research.

As part of its response to the 2015-2018 drought, the City of Cape Town eliminated universal access to lifeline supplies of Free Basic Water (FBW), restricting the service only to those registered as indigent (Scheba and Millington 2021). Oliver Fuo's (2020) research shows the detrimental role of indigent policies in excluding migrant communities from access to municipal services as part of a nativist trend fueled by increasing competition over scarce social services. Given global trends showing a much greater prevalence in South-South than South-North migration (Schewal and Debray 2023), future research should consider the impacts of financialization of public services on the capacity of Southern cities as hosts.

Although I have emphasized Cape Town's location as a city of the global South, I have also noted its settler colonial history and connections to Indigenous struggles in North America (Oyedemi 2021, Park 2021, Parashar and Schulz, 2021). As such, there are important connections to be made between the work of water justice organizers in Cape Town and that of Indigenous movements and scholars who are challenging epistemic violence and reclaiming traditional authority over water through storytelling and community-based knowledge systems (see Daigle 2018, Leonard et al. 2023, Ansloos 2021). Given the growing concerns that mothers in Cape Town raised linking youth violence to socio-economic injustice, Jeffrey Ansloos'(2023) work linking First Nations youth suicides and long-term drinking water advisories would be especially useful in understanding and challenging "hydro-colonial affects", or the mental health impacts of water dispossession and the community-based practices that counter them.

Since 2018, the Day Zero framing has been used to describe municipal water shortages in other cities around the world. Among them, Mexico's brush with a Day Zero scenario was highlighted the Washington Post (Patel 2024), Bloomberg (Spinetto 2024), and other newspapers. The Resilience Shift, which inaugurated its City Water Resilience Approach in Cape Town enlisted Mexico City into the program shortly afterwards. This development presents an opportunity to connect frontline organizers in Cape Town with organizers in Mexico City who have long been active in challenging water privatization initiatives (see Agua Para Todos n.d.) to construct countertopographies.

References

Akin, David. 2020. “Canada’s desire to do good in Africa outstrips its willingness to spend, new docs reveal.” *Global News*, February 11, 2020. https://globalnews.ca/news/6535115/canada-foreign-aid-africa-relations-spending/

Alexander, N. (1979). *One Azania, one nation: The National Question in South Africa*. Zed.

Angelo, H., & Wachsmuth, D. (2015). Urbanizing Urban Political Ecology: A Critique of Methodological Cityism. *International Journal of Urban and Regional Research*, *39*(1), 16–27. https://doi.org/10.1111/1468-2427.12105

Annor, I. (2022, December 23). Why African countries default on external debt payments. VOA. https://www.voaafrica.com/a/why-african-countries-default-on-external-debt-payments/6889059.html

Ansloos, J. (2023) Hydrocolonial Affects: Suicide and the Somatechnics of Long-term Drinking Water Advisories in First Nations in Canada. *Somatechnics* 13.2, 113–33.

Arruzza, C., Bhattacharya, T., & Fraser, N. (2019). *Feminism for the 99 percent : a manifesto*. Verso

Cawe, P. (February 2021) *Vukani News.* : https://www.vukaninews.co.za/news/township-residents-fed-up-with-blocked-drains-and-sewage-leaks-c86b26c4-3e69-4e43-9de9-e926075b204c

Council of Canadians n.d. Right to Water: Blue Planet Project.
Retrieved June 5, 2024 from:
https://canadians.org/tag/blueplanetproject/)–

Associated Press. (January 18, 2018). Drought-stricken Cape Town tightens water restrictions. Retrieved Dec 3, 2021 from: https://phys.org/news/2018-01-drought-stricken-cape-town-tightens-restrictions.html

Bakker, K. J. (2003). A political ecology of water privatization. Studies in Political Economy, 70(1), 35-58.

Bakker, Karen. 2007. “The “Commons” Versus the “Commodity”: Alter-globalization, Anti-privatization and the Human Right to Water in the Global South.” *Antipode* 39 (3): 430-455. https://doi.org/10.1111/j.1467-8330.2007.00534.

Bayliss, K. (2013) The Financialization of Water. *Review of Radical Political Economics* 46.3.

Benson, K. (2021) *Crossroads: I Live Where I Like: A Graphic History*. PM Press, Binghamton.

Benson, K. And Meyer, F (2015) "Writing My History is Keeping Me Alive: Politics and Practices of Collaborative History Writing," in A Reflexive Inquiry into Gender and Gender-Based Violence: Toward a New Paradigm of Knowledge Production Across Multiple Divides, edited by Pumla Gobodo-Madikizela and Samantha van Schalkwyk p.103-12

Benson, K. et al. (2019) *Africa Women and Water Justice.* United Africa Fund. https://www.uaf-africa.org/wp-content/uploads/2022/10/UAF-AFRICA-WOMEN-AND-WATER-JUSTICE-STRUGGLES-REPORT.pdf

Benson, K., & Karunananthan, M. (2022). *Counter streams*. *Transition, 137*, 88-104. https://doi.org/10.2979/transition.137.1.08

Bigger, P. and N. Millington (2019) Getting soaked? Climate crisis, adaptation finance, and racialised austerity. *Environment and Planning E: Nature and Space* 3.3.

Bigger, P. and S. Webber (2021) Green Structural Adjustment in the World Bank's Resilient City. *Annals of the American Association of Geographers* 111.1, 36–51.

Bond, P. 2014. *Elite transition: From apartheid to neoliberalism in South Africa*. London: Pluto Press.

Bond, P. (2003) *Against global apartheid: South Africa meets the World Bank, IMF and international finance*. Zed, London.

Bond, P., and C. Malikane (2019) Inequality caused by macro-economic policies during overaccumulation crisis. *Development Southern Africa* 36.6, 803–20.
Bond et al. 2011

Bonilla Maldonado, Daniel. 2013. *Constitutionalism of the Global South: The Activist Tribunals of India, South Africa, and Colombia*. Cambridge University Press.

Browdie, Brian. 2018. "Cape Town's bottlers and brewers are coming under fire for guzzling water in a drought." *Quartz*, February 23, 2018. https://qz.com/africa/1214249/capetower-drought-crisis-coca-cola-bottlers-slammed-for-using-too-much-water.

Bywater, Krista. 2012. "Anti-Privatization Struggles and the Right to Water in India: Engendering Cultures of Opposition." In *The Right to Water: Politics, Governance and Social Struggles*, edited by Farhana Sultana and Alex Loftus, 224-240. London: Routledge.

Carton, W. (2019) "Fixing" climate change by mortgaging the future: negative emissions,spatiotemporal fixes, and the political economy of delay. *Antipode* 51.3, 750–69.

Cornwall, A. 2003. "Whose Voices? Whose Choices? Reflections on Gender and Participatory Development." *World Development* 31 (8): 1325–1342.

CCT (City of Cape Town) (2019a) Our Shared Water Future: Cape Town's Water Strategy. Retrieved May 6 2022 from: https://resource.capetown.gov.za/documentcentre/Documents/City%20strategies,%20plans%20and%20frameworks/Cape%20Town%20Water%20Strategy.pdf

CCT (City of Cape Town) (2019b) Cape Town Resilience Strategy. Retrieved May 6, 2022 from: https://resource.capetown.gov.za/documentcentre/Documents/City%20strategies%2C%20plans%20and%20frameworks/Resilience_Strategy.pdf

CCT (City of Cape Town) (2017) Critical Water Shortages Disaster Plan – Public Summary =https://resource.capetown.gov.za/documentcentre/Documents/City%20strategies,%20plans%20and%20frameworks/Critical%20Water%20Shortages%20Disaster%20Plan%20Summary.pdf (accessed 4 June 2024).

CCT (City of Cape Town) (2023) Credit Control and Debt Collection Policy. Retrieved June 4, 2024 from: https://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/Credit%20Control%20and%20Debt%20Collection%20Policy.pdf

CCT (City of Cape Town) (2017) Municipal Spatial Development Framework 2017-2022 Retrieved Jan 8, 2020 from: https://resource.capetown.gov.za/documentcentre/Documents/City%20strategies%2C%20plans%20and%20frameworks/CT_Metropolitan_Spatial_Development_Framework.pdf

CCT ((City of Cape Town) (2023). Municipal Spatial Development Framework 2023. Retrieved October 20, 2023. https://resource.capetown.gov.za/documentcentre/Documents/City%20strategies%2C%20plans%20and%20frameworks/MSDF_Vol_I_Ch1-6_Tech_Suppl_A.pdf

CCT (City of Cape Town) (2017) City of Cape Town Green Bond Framework.

CCT (City of Cape Town) (2021) Climate Change Action Plan. Retrieved October 20, 2023 from: https://resource.capetown.gov.za/documentcentre/Documents/City%20strategies%2C%20plans%20and%20frameworks/CCT_Climate_Change_Action_Plan_Summary.pdf

CDP Disclosure Insight Action (2023). *Open Letter to Governments on the Water Crisis.* https://cdn.cdp.net/cdp-production/comfy/cms/files/files/000/008/143/original/Water_Investor_Letter_-_June_2023.pdf

Chandler, D., K. Grove and S. Wakefield (eds) (2020) *Resilience in the Anthropocene*. Routledge, London.

Coulthard, G., & Simpson, L.B. (2016). Grounded Normativity / Place-Based Solidarity. *American Quarterly 68*(2), 249-255. https://doi.org/10.1353/aq.2016.0038.

Cordoba, C. L., Saltiel, G., Sadik, N., & Penalosa, F. P. (2021). *Utility of the future: Taking water and sanitation utilities beyond the next level*. World Bank Group.

Cousins, J.J. and J. Newell (2019) Urban political ecologies of and in the city. In: T. Schwanen and R. van Kempen (eds.), *Handbook of Urban Geography*, Elgar, Cheltenham.

Daigle, M. 2018. Resurging through Kishiichiwan: The spatial politics of Indigenous water relations. Decolonization: Indigeneity, Education & Society, Special Issue: Indigenous Peoples and the Politics of Water 7(1): 159-172.

Danchin, Peter G. 2009. "Who Is the "Human" in Human Rights? The Claims of Culture and Religion." *Maryland Journal of International Law* 24 (1): 99–124.
Davis, A., Dent. G., Meiners, E. & Richie , B. (2021). *Abolition. Feminism. Now*. Chicago. Haymarket Books

Dawson, Ashley. 2018. "Cape Town has a new apartheid." *Washington Post*, July 10, 2018. https://www.washingtonpost.com/news/theworldpost/wp/2018/07/10/cape-town/#

De Lille, P. (18 January 2018). "Day Zero now likely to happen – new emergency measures. Statement by the City's Executive Mayor Patricia De Lille. City of Cape Town

de Freitas Boullosa, R. , Paul R. & Smith-Carrier, T. (2023) Democratizing science is an urgent, collective, and continuous project: expanding the boundaries of critical policy studies, Critical Policy Studies, 17:1,1-3, DOI: 10.1080/19460171.2023.2184707

Desai, M. "3. The Possibilities and Perils for Scholar-Activists and Activist-Scholars. Reflections on the Feminist Dialogues". *Insurgent Encounters: Transnational Activism, Ethnography, and the Political*, edited by Jeffrey S. Juris, Alex Khasnabish and Alex Khasnabish, New York, USA: Duke University Press, 2013, pp. 89-107. https://doi.org/10.1515/9780822395867-006

De Santo, E.M., P.J.S. Jones, and A.M.M. Miller. (2011) "Fortress Conservation at Sea: A Commentary on the Chagos Marine Protected Area." Marine policy 35.2: 258–260. Web.

de Albuquerque, Catarina, and Inga T. Winkler. 2010. "Neither Friend nor Foe: Why the Commercialization of Water and Sanitation Services is Not the Main Issue in Realization of Human Rights." *Brown Journal of World Affairs* 17 (1): 167–179.

Devicienti, Francesco, Irina I. Klytchnikova, and Stefano Paternostro. 2004. *Willingness to pay for water and energy: an introductory guide to contingent valuation and coping cost techniques*. Washington, D.C.: World Bank Group.

Dube, K., G. Nhamo and D. Chikodzi (2022) Climate change-induced droughts and tourism: Impacts and responses of Western Cape province, South Africa. *Journal of Outdoor Recreation and Tourism* 39, 100319.

Dubey, P. (October 11, 2018) Cape Town Leads the Way to Drought-proof Water Tariffs. *Informed Infrastructure.* Retrieved March 3, 2022 from: https://informedinfrastructure.com/42725/cape-town-leads-the-way-to-drought-proof-water-tariffs/

Dugard, Jackie. 2016. "Testing the transformative premise of the South African Constitutional Court: A comparison of High Courts, Supreme Court of Appeal and Constitutional Court socio-economic rights decisions, 1994–2015." *The International Journal of Human Rights* 20 (8): 1132-1160. https://doi.org/10.1080/13642987.2016.1227324.

Estes, N. (2019). *Our history is the future : Standing Rock versus the Dakota Access Pipeline, and the long tradition of Indigenous resistance*. Verso.

Etheridge, J. (04 May 2018). The history of Siqalo informal settlement and hopes for a new beginning. *News24.* Retrieved August 2, 2023 from: https://www.news24.com/news24/the-history-of-siqalo-informal-settlement-and-hopes-for-a-new-beginning-20180503

European Investment Bank. 2023. *EIB Water Sector Orientation: Building Climate Resilient Water Systems.* Luxembourg: European Investment Bank.

Evans, J.P. (2011) Resilience, ecology and adaptation in the experimental city. *Transactions of the Institute of British Geographers* 36.2, 223-237.

Ferguson, Lucy. 2015. ""This Is Our gender person": The Messy Business of Working as Gender Expert in International Development." *International Feminist Journal of Politics* 17 (3): 380–397. https://doi.org/10.1080/14616742.2014.918787

Foucault, M. (2003) *Society Must Be Defended: Lectures at the Collège de France, 1975-76*. Edited by M. Bertani and A. Fontana. Translated by D. Macey. Picador, New York.

Frame, J. and Killick, M. (2004) Integrated water resource planning in the City of Cape Town Paper presented at Water Institute of Southern Africa (WISA) Biennial Conference, Cape Town, South Africa.

Furlong, Ashleigh (12 May 2016). Buy our land - Siqalo residents tell City *Ground Up.* . Retrieved August 12, 2023 from: https://groundup.org.za/article/buy-our-land-siqalo-residents-tell-city/

Freire, P. (1970). *Pedagogy of the Oppressed.* Continuum, New York.

Gago, V. (2020). *Feminist International: How to Change Everything*. Verso.

Gatehouse, J. (2018) Cape Town water supply near 'point of no return' as reservoirs run dry. CBC, 18 January [WWW Document] URL https://www.cbc.ca/news/thenational/the-national-today-cape-town-water-plastic-amazon-hq-bezos-1.4491573 (accessed 4 June 2024).

Gilmore, R.W. (2002) Fatal Couplings of Power and Difference: Notes on Racism and Geography. *The Professional Geographer* 54.1, 15–24.

Gilmore, R.W. (2007) *Golden Gulag: Prisons, Surplus, Crisis, and Opposition in Globalizing California*. California, Berkeley.

Gool, Kauthar. 2019. "16 Female learners given lessons in resilience." *IOL*, June 30, 2019. https://www.iol.co.za/capeargus/news/16-female-learners-given-lessons-in-resilience-27934380
Global Affairs Canada. 2017. "Canada's Feminist International Assistance Policy." Accessed March 12, 2024
https://www.international.gc.ca/world-monde/assets/pdfs/iap2-eng.pdf?_ga=2.222907099.1981327405.1717218559-71044727.1717218559

Government of Netherlands, n.d. "Equal rights and opportunities for women and girls." Accessed March 12, 2024. https://www.government.nl/topics/development-cooperation/the-development-policy-of-the-netherlands/equal-rights-for-women-and-girls#:~:text=and%20gender%20mainstreaming.-,Gender%20programmes,over%20the%20period%202021%2D2025.

Green, Lesley. 2020. *Rock/Water/Life: Ecology and Humanities for a Decolonial South Africa*. Durham: Duke University Press.

Ground Up (3 May, 2018). Mitchells Plain and Siqalo residents meet to defuse conflict. *Daily Maverick.* Retrieved August 2, 2023 from:
https://www.dailymaverick.co.za/article/2018-05-03-groundup-mitchells-plain-and-siqalo-residents-meet-to-defuse-conflict/

Grove K., A. Barnett, and S. Cox. 2020. Designing justice? Race and the limits of recognition in greater Miami resilience planning. *Geoforum* 117: 134-143.

Hall, D. and Lobina, E. (2012). *Financing Water and Sanitation: Public Realities.* PSIRU.

Hall, D., Emanuele Lobina, & Robin de la Motte. (2005). Public Resistance to Privatisation in Water and Energy. *Development in Practice*, *15*(3/4), 286–301.
http://www.jstor.org/stable/4029962

Hall, D., Bayliss K., Lobina E. (2002). Water privatisation in Africa. Public Services International Research Institute : Greenwich, UK.

Harris, L. M., & Roa-García, M. C. (2013). *Recent waves of water governance: Constitutional reform and resistance to neoliberalization in Latin America (1990–2012). Geoforum, 50, 20–30.*
https://doi.org/10.1016/j.geoforum.2013.07.009

Harvey, D. (2004). The "New" Imperialism: Accumulation by Dispossession. Socialist Register, 40.

https://thetricontinental.org/wp-content/uploads/2023/04/20230410_D63_EN_Web.pdf

Heller L, Karunananthan M, Zwarteveen M, Hall D, Manahan MA, Diouf F. What water will the UN Conference carry forward: a fundamental human right or a commodity? Lancet. 2023 Sep 2;402(10404):757-759. doi: 10.1016/S0140-6736(23)01430-7.

Heymans, C., K. Eales, and R. Franceys. 2014. *The Limits and Possibilities of Prepaid Water Systems in Urban Africa: Lessons from the Field*. Washington: International Bank for Reconstruction and Development/The World Bank Group.

Haywood, L. K., Kapwata, T., Oelofse, S., Breetzke, G., & Wright, C. Y. (2021). Waste Disposal Practices in Low-Income Settlements of South Africa. *International journal of environmental research and public health*, *18*(15), 8176. https://doi.org/10.3390/ijerph18158176

Hill-Lewis, Geordin. 2023. "Cape Town: Lessons from managing water scarcity." *Brookings*, March 22, 2023. https://www.brookings.edu/articles/cape-town-lessons-from-managing-water-scarcity/.

Hutton, G., & Varughese, M. (2016). *The Costs of Meeting the 2030 Sustainable Development Goal Targets on Drinking Water, Sanitation, and Hygiene*.

Huchzermeyer, M. (2011*). Cities with 'slums': From informal settlement eradication to a right to the city in Africa.* Cape Town: University of Cape Town Press.

Huysamen, Monique, et al. "Slums of Hope: Sanitising Silences within Township Tour Reviews." *Geoforum*, vol. 110, 2020, pp. 87–96. https://doi.org/10.1016/j.geoforum.2020.01.006.

Ighobor, K. (2023) Africa: Water-Insecure Africa Gets Some Wins At the UN Water Conference. Retrieved March 2, 2023 from: https://allafrica.com/stories/202304040052.html

IMF (2015) Is the Glass Half Empty or Half Full? Issues in Managing Water Challenges and Policy Instruments. [WWW Document]. URL https://www.imf.org/external/pubs/ft/sdn/2015/sdn1511.pdf (accessed 4 June 2024).

Jaglin, S. (2008) Differentiating networked services in Cape Town: Echoes of splintering urbanism?. *Geoforum* 39.6, 1897-1906.

Jalali, Rita. 2021. "The Role of Water, Sanitation, Hygiene, and Gender Norms on Women's Health: A Conceptual Framework." *Gendered Perspectives on International Development* 1: 21-44. https://doi.org/10.1353/gpi.2021.0001.
Jegede, A. O., & Shikwambane, P. (2021). *Water 'apartheid' and the significance of human rights principles of affirmative action in South Africa*. *Water*, 13(8), 1104.

Jessop, B. (1982) *The Capitalist State*. NYU, New York.

Jenkins, D. (2021). *The Bonds of Inequality: Debt and the Making of the American City*. Chicago: The University of Chicago Press

Jitendra, (2014). Coca Cola has closed 20 percent of its bottling plants in India. Down To Earth.Retrieved June 1, 2024 from: https://www.downtoearth.org.in/news/environment/coca-cola-has-closed-20-per-cent-of-its-bottling-plants-in-india-report-53273

Kariuki, S. (2023). Why cholera continues to threaten many African countries. *The Conversation.* https://theconversation.com/why-cholera-continues-to-threaten-many-african-countries-197799#:~:text=In%20several%20African%20countries%2C%20cholera,4%2C062%20deaths%20in%2019%20countries. (Retrieved March 2, 2023).

Karunananthan, M. (2021). From the Kampung to the Courtroom. In A Feminist Urban Theory for our Time (pp. 162–185). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781119789161.ch7

Katz C (2001) Vagabond capitalism and the necessity of social reproduction. *Antipode, 33*(4), 709–778.

Kennard, M., & Provost, C. (2022). *Silent coup : how corporations overthrew democracy* (First edition.). Bloomsbury Academic. https://doi.org/10.5040/9781350270015

Kelley, Robin D G. 2017. "What is Racial Capitalism and Why does it Matter?" Filmed in Seattle, WA, Simpson Center video, 1:01:02. https://www.youtube.com/watch?v=REo_gHIpvJc

Kennard, M., & Provost, C. (2022). *Silent coup : how corporations overthrew democracy* (First edition.). Bloomsbury Academic. https://doi.org/10.5040/9781350270015
Kirkpatrick, C., Parker, D., & Zhang, Y.-F. (2006). An empirical analysis of state and private-sector provision of water services in Africa. *The World Bank Economic Review*, *20*(1), 143-163.

Kimemia, D. K., and A van Niekerk. 2017. "Energy poverty, shack fires and childhood burns." *SAMJ: South African Medical Journal* 107 (4): 289 291. 10.7196/samj.2017.v107i4.12436

Kingdom, B., R. Liemberger and P. Marin (2006) The Challenge of Reducing Non-Revenue Water (NRW) in Developing Countries. https://documents1.worldbank.org/curated/en/385761468330326484/pdf/394050Reducing1e0water0WSS81PUBLIC1.pdf (accessed 4 June 2024).

Kirkpatrick, C., Parker, D., & Zhang, Y.-F. (2006). An empirical analysis of state and private-sector provision of water services in Africa. *The World Bank Economic Review*, *20*(1), 143-163.
Kishimoto S, Steinfort L and Petitjean O (eds) (2020) *The Future is Public: Towards the Democratic Ownership of Public Services*. Amsterdam: Transnational Institute

Kretzmann, Steve, and Raymond Joseph. 2020. “Big business guzzled water as Cape Town’s dam levels plummeted.” *Center for Investigative Journalism*, October 29, 2020. https://ccij.io/article/guzzling-water/.

Kosoy N, Corbera E (2010) Payments for ecosystem services as commodity fetishism. *Ecological Economics*69(6): 1228–1236.

Kunz, R. 2017. “Beyond depoliticisation: the multiple politics of gender expertise.” In *Qui sait? Expertes en genre et connaissances féministes sur le développement*, edited by C. Verschuur, 73-87, Paris: L’Harmattan.

Kyüz, Y. (2007) *Global Rules and Markets: Constraints Over Policy Autonomy in Developing Countries*. Third World Network. Retrieved March 2, 2023 from: https://www.twn.my/title2/ge/ge10.pdf

Leonard, K. David-Chavez, D., Smiles D., Jennings, L.,Anolani Alegado,R. Lani Tsinnajinnie, Joshua Manitowabi, Rachel Arsenault, Rene L. Begay, Aurora Kagawa-Viviani, Dawn D. Davis, Vincent (Billy) van Uitregt, Hawlii Pichette, Max Liboiron, Bradley Moggridge, Stephanie Russo Carroll, Ranalda L. Tsosie, & Andrea Gomez. (2023). Water back: A review centring rematriation and Indigenous Water research sovereignty. *Water Alternatives*, *16*(2), 374–428.

Lerner, D.N. (1986) Leaking Pipes Recharge Ground Water. *Groundwater* 24.5, 654–62.

Lerner, D.N. (1990) Groundwater recharge in urban areas. *Urban Atmosphere* 24.1, 29–33

McKenzie, R., Seago, C., & Bhagwan, J. (2004). Benchmarking leakage from water reticulation systems in South Africa. *Water SA, 30*(5), 25–32

MacKinnon, D. and K. Driscoll Derickson (2012) From resilience to resourcefulness: A critique of resilience policy and activism. *Progress in Human Geography* 37.2.

Manahan, M. & Kumar, M. (2021). The Great Takeover: Mapping of Multistakeholderism in Global Governance.

McGinity, R., & Salokangas, M. (2014). Introduction: 'Embedded research' as an approach into academia for emerging researchers. *Management in Education, 28*(1), 3–5. https://doi.org/10.1177/0892020613508863

Marin, P. (2009) Public-Private Partnerships for Urban Water Utilities. [WWW Document]. URL https://ppp.worldbank.org/public-private-partnership/sites/ppp.worldbank.org/files/ppp_testdumb/documents/FINAL-PPPsforUrbanWaterUtilities-PhMarin.pdf (accessed 4 June 2024).

Markantonis, V., Dondeynaz, C., Latinopoulos, D., Bithas, K., Trichakis, I., M’Po, Y., & Moreno, C. (2018). Values and Preferences for Domestic Water Use: A Study from the Transboundary River Basin of Mékrou (West Africa). *Water*, *10*(9), 1232.

Marshall, C. (1997). *Feminist critical policy analysis*. Falmer Press. https://doi.org/10.4324/9780203982938

Martinez-Alier, J., & Shmelev, S. (2014). Between activism and science: grassroots concepts for sustainability coined by Environmental Justice Organizations. *Journal of Political Ecology*, *21*(1), 19–60. https://doi.org/10.2458/v21i1.21124

Marutlulle, N. (2021). A critical analysis of housing inadequacy in South Africa and its ramifications. *Africa's Public Service Delivery & Performance Review, 9*(1), 16 pages. doi:https://doi.org/10.4102/apsdpr.v9i1.372

Massey, D. (1994) *Space, Place, and Gender*. Minnesota, Minneapolis.

Mazibuko v. City of Johannesburg, [2008] Judgement 06/13865 High Court of South Africa (Witwatersrand). https://www.saflii.org/za/cases/ZAGPHC/2008/491.pdf

Mazibuko v. City of Johannesburg, [2009] Filing Sheet CCT 39/09. Constitutional Court of South Africa. https://www.escr-net.org/sites/default/files/Amicus_Mazibuko_0.pdf

Mazibuko v. City of Johannesburg, [2009] Applicants' Submission CCT 39/09. Constitutional Court of South Africa. https://collections.concourt.org.za/bitstream/handle/20.500.12144/3582/Applicants%27%20Heads%20of%20Argument-13710.pdf?sequence=26&isAllowed=y

Mazzucato, M., N. Okonjo-Iweala, J. Rockström and T. Shanmugaratnam (2023), Turning the Tide: A Call to Collective Action, Global Commission on the Economics of Water, Paris.

McKinley, D. (2016) Lessons in community-based resistance? South Africa's Anti-Privatisation Forum. *Journal of Contemporary African Studies* 34.2, 268–81.

McClintock, N. (2018) Urban agriculture, racial capitalism, and resistance in the settler-colonial city. *Geography Compass* 12.6, e12373.

McKittrick, K. (2002) "Their Blood Is There, and They Can't Throw It Out": Honouring Black Canadian Geographies. *Topia: Canadian Journal of Cultural Studies* 7, 27-37.

McKittrick, K. (2011) On plantations, prisons, and a black sense of place. *Social & Cultural Geography* 12.8, 947–63.

McKittrick, K. (2006). Introduction: Geographic Stories. In *Demonic Grounds*(NED-New edition, pp. ix-). University of Minnesota Press.

Meyer, F. (2022) World Water Day webinar. People's Water Forum.

Meyer F. (2018) “Personal and collective histories of organizing in Cape Town.” Interviewed on October 2, 2018.

Mohanty, C. T. (2003). *Feminism Without Borders: Decolonizing Theory, Practicing Solidarity*. Duke University Press.

McDonald, D. A. (David A., & Ruiters, G. (2005). *The age of commodity : water privatization in Southern Africa*. Earthscan.
Millington, N., & Scheba, S. (2020). Day zero and the infrastructures of climate change: Water governance, inequality, and infrastructural politics in cape town's water crisis. *International Journal of Urban and Regional Research*, *45*(1), 116-132. https://doi.org/10.1111/1468-2427.12899

Morgan, Trish. (2018) The techno-finance fix: A critical analysis of international and regional environmental policy documents and their implications for planning
Murray, A. (2023.) Rivers of Resistance: Water for Life, Not Profit. Amsterdam: Transnational Institute.

Millington, N., and S. Scheba (2020) Day zero and the infrastructures of climate change: Water governance, inequality, and infrastructural politics in Cape Town's water crisis. *International Journal of Urban and Regional Research* 45.1, 116–32.

Miraftab, F. (2006) Feminist praxis, citizenship and informal politics: Reflections on South Africa's anti-eviction campaign. *International Feminist Journal of Politics* 8, 194-218.

Miraftab, F. (2009). Insurgent planning: Situating radical planning in the global south. *Planning Theory* 8.1, 32-50.

Miraftab, F. (2012). Colonial present: legacies of the past in contemporary urban practices in Cape Town, South Africa. *Journal of Planning History* 11.4, 283–307.

Mullenite, J. Resilience, political ecology, and power: Convergences, divergences, and the potential for a postanarchist geographical imagination. *Geography Compass* 10.9, 378–88.

Mullings, B. (2021) Caliban, social reproduction and our future yet to come. *Geoforum* 118, 150–158.

Murray, A., Meyer, F. & Fourie, E. (2023) Workshopping Water Justice: linking struggles from the Cape Flats to the rest of the Continent, Globalisation, Societies and
Education, DOI: 10.1080/14767724.2023.2165478

Nombembe, Philani. 2020. “Police reinforcements sent to Ocean View as gangs go to war.” *Soweten Live*, December 27, 2020. https://www.sowetanlive.co.za/news/south-africa/2020-12-27-police-reinforcements-sent-to-ocean-view-as-gangs-go-to-war/

Nagar, R. (2014). *Muddying the Waters: Co-authoring feminisms across scholarship and activism.* University of Illinois Press.

Nagar, R., V. Lawson, L. McDowell and S. Hanson (2002) Locating globalization: Feminist (re) readings of the subjects and spaces of globalization. Economic Geography 78.3, 257–84.
Nature Conservancy (2019) Greater Cape Town Water Fund. [WWW Document]. URL https://www.nature.org/content/dam/tnc/nature/en/documents/GCTWF-Business-Case-April-2019.pdf (accessed 4 June 2024).

Nsetku, M. (December 30, 2022). 190 people in Cape Town have been killed in informal settlement fires this year. *IOL. https://www.iol.co.za/capeargus/news/190-people-in-cape-town-have-been-killed-in-informal-settlement-fires-this-year-74b4cd83-883b-40d2-846b-6b27af31060a*

OECD. 2022. *Blended finance for gender equality and the empowerment of women and girls*. Paris: OECD Publishing.

OECD Roundtable on Financing Water. 2023. *Framework for assessing the enabling conditions to finance water security.* Paris: OECD Publishing.

OECD Roundtable on Financing Water. (2022), *Financing a Water Secure Future*, OECD Studies on Water, OECD Publishing, Paris, https://doi.org/10.1787/a2ecb261-en.

OHCHR**.** 2003**.** ***General Comment No. 15: The Right to Water (Arts. 11 and 12 of the Covenant)***. Geneva: Office of the High Commissioner for Human Rights. **https://www.refworld.org/pdfid/4538838d11.pdf**

Olivera, O. 2004. *Cochabamba! Water War in Bolivia*. Cambridge: South End Press.

Oyedemi, T. D. (2021). Postcolonial casualties: "Born-frees" and decolonisation in South Africa. *Journal of Contemporary African Studies*, *39*(2), 214–229. https://doi.org/10.1080/02589001.2020.1864305

Orwell, G. (2000). *Nineteen eighty-four*. Penguin Books in association with Martin Secker & Walburg.

Peake, L. (2016). The Twenty-First-Century Quest for Feminism and the Global Urban. *International Journal of Urban and Regional Research*, *40*(1), 219–227. https://doi.org/10.1111/1468-2427.12276

Peoples Water Forum 2023, Water Justice Manifesto: Accessed Jan 10, 2023 https://thepeopleswaterforum.org/2023/02/28/water-justice-manifesto/

Park, A. S. J. (2022). Settler Colonialism and the South African TRC: Ambivalent Denial and Democratisation Without Decolonisation. *Social & Legal Studies*, *31*(2), 216–237. https://doi.org/10.1177/09646639211022786

Parmar, Pooja. 2008. “Revisiting the Human Right to Water. *Australian Feminist Law Journal* 28: 77–96.

Paulson, S., L.L. Gezon and M. Watts (2005) Politics, Ecologies, Genealogies. In S. Paulson and L.L. Gezon (eds), *Political Ecology Across Spaces, Scales, and Social Groups*, Rutgers, New Brunswick.

Peet, R., Robbins, P., & Watts, M. (2011). *Global political ecology*. Routledge. https://doi.org/10.4324/978020384224

Perumal, Devina Nadarajan. 2011. “Women's socio-economic [in]equality and gender [in]justice: Feminist reflections on the right of access to water in Mazibuko and Others v City of Johannesburg and Others [2009] ZACC 28.” *Agenda: Empowering Women for Gender Equity* 25 (2): 17–26.

Piepzna-Samarasinha, L.. (2018). *Care Work : Dreaming Disability Justice*, Arsenal Pulp Press, 2018. *ProQuest Ebook Central*, https://ebookcentral-proquest-com.proxy.library.carleton.ca/lib/oculcarleton-ebooks/detail.action?docID=5396334.

Posel, D. (1991) *The Making of Apartheid, 1948–1961: Conflict and Compromise* (Oxford, Clarendon); ‘The Apartheid Project, 1948–1970’, in R. Ross, A. Mager and B. Nasson (eds), *The Cambridge History of South Africa, Volume 2* (Cambridge, Cambridge University Press, 2011), pp. 319–68; J

Pulido, L. (2016). Flint, Environmental Racism, and Racial Capitalism. *Capitalism Nature Socialism* 27.3, 1–16.
Pulido, L. (2017). Geographies of race and ethnicity II: Environmental racism, racial capitalism and state-sanctioned violence. *Progress in Human Geography* 41.4.

Rajagopal, B. 2006. Counter-hegemonic International Law: rethinking human rights and development as a Third World strategy. *Third World Quarterly*, *27*(5), 767–783. https://doi.org/10.1080/01436590600780078

Reddy, R. N. (2021). OF HOLY COWS AND UNHOLY POLITICS: Dalits, Annihilation and More-than-Human Urban Abolition Ecologies. *International Journal of Urban and Regional Research*, *45*(4), 643–657. https://doi.org/10.1111/1468-2427.13028

Resilience Shift (2020) Cape Town Water Resilience Approach.
.
Ranganathan, M. and E. Bratman (2019). From Urban Resilience to Abolitionist Climate Justice in Washington, DC. *Antipode* 53.1, 115-137.

Robins, S. (2019). “Day Zero”, Hydraulic Citizenship and the Defence of the Commons in Cape Town: A Case Study of the Politics of Water and its Infrastructures (2017-2018). *Journal of Southern African Studies* 45.1, 5–29.

Robinson, C. J. (1983). *Black Marxism: The making of the black radical tradition*. Zed.

Rodney, W. (1972). *How Europe Underdeveloped Africa*. Bogle-L'Ouverture Publications.

Roy, A., Wright, W. J., Al-Bulushi, Y., & Bledsoe, A. (2020). "A world of many Souths": (anti)Blackness and historical difference in conversation with Ananya Roy. *Urban Geography*, *41*(6), 920–935. https://doi.org/10.1080/02723638.2020.1807164

Ruiters, G. (2007) Contradictions in municipal services in contemporary South Africa: Disciplinary commodification and self-disconnections. *Critical Social Policy* 27.4, 487–508.

Ruiters, G. (2014) Spaces of hope: rethinking trade union–community alliances and citizenship in a post-alliance era in South Africa. *Politikon* 41.3, 421–41.

Ruiters, G. (2018). The Moving Line Between State Benevolence and Control: Municipal Indigent Programmes in South Africa. *Journal of Asian and African Studies*, *53*(2), 169–186.

Salami, A. et al (2011). Development Aid and Access to Water. African Development Bank. https://www.afdb.org/sites/default/files/documents/publications/wps_140_development_aid_and_access_to_water_nv1_22.pdf

Scheba, Suraya. 2022. "Viewpoint – The South African water sector: Municipal dysfunction, resistance and future pathways." *Water Alternatives* 15 (3): 632–649.

Scheba, S. F. Meyer, K. Benson, M. Karunananthan, V. Farr and L. (2021) New packaging, same deal: City of Cape Town's new proposal to replace water management devices with the drip system will further water apartheid. *Blue Planet Project* blog, 12 May [WWW Document]. URL https://blueplanetproject.net/2021/05/12/new-packaging-same-deal-city-of-cape-towns-new-proposal-to-replace-water-management-devices-with-the-drip-system-will-further-water-apartheid/ (accessed 4 June 2024).

Scheba, A., & Turok, I. (2020). "Informal Settlements and Urban Governance in South Africa: Some Insights from Cape Town." Journal of Housing and the Built Environment, 35(2), 687-709.

Schein, Richard, ed. 2006. *Landscape and Race in the United States*. London: Routledge.

Scheman, N. (2014). Scheman, N. (2014). *Engenderings: Constructions of knowledge, authority, and privilege*. Routledge.

Seekings, J. (2020). The National Party and the ideology of welfare in South Africa under apartheid. Journal of Southern African Studies, 46(3), 555-573. https://doi.org/10.1080/03057070.2020.1833618

Shang-Quartey, Leonard. 2017. *The Fall of Prepaid Meters in Ghana: An Account of Civil Society Organizations' Campaign for Human Right to Water. Water Citizens Network of Ghana*.

Ottawa: Blue Planet Project. https://blueplanetproject.net/wp-content/uploads/2023/02/e3fa0-watermeters-ghana-3.pdf

Sikula Sonke (2021): https://www.sikhulasonke.org.za/about-khayelitsha.html

Sitrin, M. (February 1, 2005). "Walking we ask questions:"an interview with John Holloway. *Left Turn.*
Retrieved Jan 2, 2020 from: https://leftturn.org/"walking-we-ask-questions"-interview-john-holloway/

Smith, N. (2007). Nature as Accumulation Strategy. *Socialist Register*, *43*

South African Government Agency News (January 18, 2018). Cape residents limited to 50 litres of water.
Retrieved April 12, 2024 from
https://www.sanews.gov.za/south-africa/cape-residents-limited-50-litres-water

South African Government News (March 22, 2019). 93% of South Africans have access to water services.
Retrieved April 12, 2024 from:
https://www.sanews.gov.za/south-africa/93-south-africans-have-access-water-services

Statistics South Africa (2024). General Household Survey 2023.
Retrieved June 1, 2024:
https://www.statssa.gov.za/?page_id=1854&PPN=P0318&SCH=73897

Standing, G. (2021) *The Corruption of Capitalism*. Third edition. Biteback, Hull.

Sulla, V., Zikhail, P. & Cuevas P. (2022). Inequality in Southern Africa : An Assessment of the Southern African Customs Union (English). Washington, D.C. : World Bank Group.
Retrieved November 18, 2023 from:
https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099125303072236903/p1649270c02a1f06b0a3ae02e57eadd7a82

Taylor, M. (2015) *The Political Ecology of Climate Change Adaptation*. Routledge, New York.
Turok, I., J. Visagie, and A. Scheba (2021) Social Inequality and Spatial Segregation in Cape Town. In M. van Ham et al. (eds.), *Urban Socio-Economic Segregation and Income Inequality: A Global Perspective,* Springer, London.

United Nations. (2021, March 21). *UN world water development report 2021 'valuing water'*.
https://www.unwater.org/news/un-world-water-development-report-2021-%E2%80%98valuing-water%E2%80%99

United Nations. (n.d.). *SDG 6 global acceleration framework*. United Nations.
Retrieved March 30, 2023 from: https://www.unwater.org/our-work/sdg-6-global-acceleration-f

United Nations Department of Economic and Social Affairs (UNDESA) (n.d.). Water Action Agenda. Retrieved March 30, 2023 from: https://sdgs.un.org/partnerships/action-networks/water

United Nations Economic Commision for Africa (UNECA) (2 August, 2023). Experts call on African regulators to surpervise the work of credit rating agencies. Retrieved May 20, 2024 from: https://www.uneca.org/stories/experts-call-on-african-regulators-to-supervise-the-work-of-credit-rating-agencies

Tharoor, I. (March 19, 2015). South African protesters flung poop on a statue. That sparked a conversation about white privilege. Washington Post https://www.washingtonpost.com/news/worldviews/wp/2015/03/19/south-african-protesters-flung-poop-on-a-statue-that-sparked-a-conversation-about-white-privilege/

Todd, Z. (2016). An Indigenous Feminist's Take On The Ontological Turn: "Ontology" Is Just Another Word For Colonialism. *Journal of Historical Sociology*, *29*(1), 4–22. https://doi.org/10.1111/johs.12124

Western Cape Housing Development Agency (2012). *Western Cape: Informal Settlement Status.* Retrieved May 18, 2024: http://thehda.co.za/pdf/uploads/multimedia/HDA_Informal_settlements_status_Western_Cape.pdf

Turok, I., Visagie J., and Scheba, A. 2021. "Social Inequality and Spatial Segregation in Cape Town." In *Urban Socio-Economic Segregation and Income Inequality: A Global Perspective,* edited by Maarten van Ham et al., 71–90. London: Springer.

UN Water. 2023. "Joint Monitoring Program for Water Supply, Sanitation and Hygiene (JMP) – Progress on household drinking water, sanitation and hygiene 2000-2022: Special focus on gender." United Nations. https://www.unwater.org/publications/who/unicef-joint-monitoring-program-update-report-2023

UNDP. 2006. *Human Development Report 2006: Beyond scarcity: Power, poverty and the global water crisis*. New York: UNDP.

United Nations General Assembly (28 July, 2010) Res. 64/292 https://documents-dds-ny.un.org/doc/UNDOC/GEN/N09/479/35/PDF/N0947935.pdf?OpenElement

van Koppen, B. and B. Schreiner (2014) Moving beyond integrated water resource management: developmental water management in South Africa. *International Journal of Water Resources Development* 30.3, 543–58.

Williams, Patricia. 1991. *The Alchemy of Race and Rights*. Cambridge: Harvard University Press.

Varghese, S. & Murphy S. (2023). Synergies among agroecological transitions and the UN Decades on Water and Nutrition. *Institute for Agriculture and Trade Policy.*

Water.org (n.d.) "Access to affordable financing is a barrier between people in need and water and sanitation solutions." water.org/solutions/financing-works (retrieved February 1 2023).

WHO/UNICEF (2019) *Progress on Household Drinking Water, Sanitation and Hygiene* 2007-2017. *Special Focus on Inequalities.* New York.

World Bank. (2021, February 9). *Bangladesh receives $200 million from World Bank for safe water and sanitation services in rural areas*. The World Bank. https://www.worldbank.org/en/news/press-release/2021/02/09/bangladesh-receives-200-million-from-world-bank-for-safe-water-and-sanitation-services-in-rural-areas#:~:text=DHAKA%2C%20February%209%2C%202021%20%E2%80%93,clean%20water%20in%20rural%20areas.

World Water Council (n.d.) Retrieved June 2, 2024 from: https://www.worldwatercouncil.org/en

World Bank (2022 a) *Water Supply and Sanitation Policies, Institutions, and Regulation: Adapting to a Changing World : Synthesis Report (English).* Washington, D.C. : World Bank Group. http://documents.worldbank.org/curated/en/099015208242275252/P165586002283004a086e105a00d8430696

World Bank (2022 b) What you need to know about nature-based solutions to climate change [WWW Document]. URL https://www.worldbank.org/en/news/feature/2022/05/19/what-you-need-to-know-about-nature-based-solutions-to-climate-change (accessed 4 June 2024).

World Economic Forum (2015) "Global Risks Report." Retrieved June 11, 2018 from: http://reports.weforum.org/global-risks-2015/

World Wildlife Fund (2023). Four ways financial institutions can shape a nature-positive global economy. https://wwf.panda.org/discover/our_focus/finance/bankable_nature_solutions/?7533966/Four-ways-financial-institutions-can-shape-a-nature-positive-global-economy

Zwarteveen M.Z. and R. Boelens (2014) Defining, researching and struggling for water justice: some conceptual building blocks for research and action. *Water International* 39.2, 143–58.

Appendix 1

Table 1: Field research overview

Semi-structured interviews	Field visits	Meetings	Organizations
42 participants **Residence:** Beacon Valley , (Mitchell's Plain Bishop Lavis, ygieskraal, Khayelitsha (Site C), Khayelitsha (BM) Hillview 2 informal settlement, Greenpoint informal settlement, Siqalo informal settlement, Pelican Park, Manenberg and Witzenburg **Mother tongue** 10 – isXhosa speakers 31- Africans speakers 1 - Zulu **Age** Under 20: 1 20 -30: 2 30-40: 6 40-50:13 50-60: 8 60 – 70: 3 Unavailable: 9	Beacon Valley (Mitchell Plain) Vygieskraal Khayelitsha Site C Khayelitsha (BM section) Siqalo informal settlement Pelican Park Witzenberg	Decent housing protest Radical Educator's Network Sept 12, 2018 National water justice roundtables Sept 19, 2018 AWCC workshop Sept 28, 2018 AWCC workshop Oct 3, 2018 Housing Assembly National meeting July 21 -25, 2019 National water justice roundtables July 26, 28 2019	African Water Commons Collective Housing Assembly Water Crisis Coalition Women for Change Green fingers Community Garden Radical Educator's Network Bishop Lavis Action Committee Witzenberg Rural Development Centre

Appendix 2

Table 2: Municipal policy documents

Document	Author	Support
Cape Town City Water Resilience Approach (2019)	The Resilience Shift Lloyd's Register and Arup	Rockefeller Foundation, Arup, SIWI, OECD
Cape Town Resilience Strategy (2019)	City of Cape Town	Rockefeller Foundation (100 Resilient Cities)
2017-2022 Municipal Spatial Development Framework (2017)		
City of Cape Town (2019) Our Shared Water Future: Cape Town's Water Strategy.		
City of Cape Town (2023) Municipal Spatial Development Framework		
City of Cape Town (2021) Climate Action Plan		
Water Outlook Report (2018)		
CCT Credit Control and Debt Collection Policy (2023)		
Cape Town City Characterization Report (2019)	The Resilience Shift Lloyd's Register and Arup	
Cape Town Water Fund (2019)	The Nature Conservency	The City of Cape Town and the Western Cape government, the South African Department of Water and Sanitation and Environmental Affairs South Africa are listed on the steering committee along with Coca Cola, World Wildlife Fund, Nedbank, Remgro Ltd and South African Biodiversity Initiative.
Critical Water Shortages Disaster Plan (2017)		
City of Cape Town Green Bond Framework. (2017)		

Appendix 3

Table 3: Development financing literature

Document	Lead institution	Supporting orgs	Description
OECD Roundtable on Financing. (2023) *Framework for assessing the enabling conditions to finance water security.* Paris: OECD Publishing	OECD Roundtable on Water Financing	The Roundtable on Financing Water is a global public-private platform established by the OECD, the Netherlands, the World Water Council and the World Bank.	Report
OECD (2022), *Financing a Water Secure Future*, OECD Studies on Water, OECD Publishing, Paris, https://doi.org/10.1787/a2ecb261-en.	OECD Roundtable on Water Financing		Report
Mazzucato, M., N. Okonjo-Iweala, J. Rockström and T. Shanmugaratnam (2023), *Turning the Tide: A Call to Collective Action.* Global Commission on the Economics of Water, Paris.	Global Commission on the Economics of Water	The Commission is convened by the Government of the Netherlands and facilitated by the Organisation for Economic Co-operation and Development (OECD). Members include the WTO.	Report
World Bank (2022). *Water Supply and Sanitation Policies, Institutions, and Regulation: Adapting to a Changing World : Synthesis Report (English).* Washington, D.C.: World Bank Group. http://documents.worldbank.org/curated/en/099015208242275252/P165586002283004a086e105a00d8430696	World Bank	Global Water Supply and Security Partnership Set up in 2017 by the Worldbank and at least 9 other bilateral and	

		philantropic development partners	
Water.org	Water.org	Founded by Matt Damon and Gary White Partners/funders include Starbucks, Stella Artois and the Bank of America	Website of start-up fund to accelerate innovation in water
Sustainable Development Goal 6 Global Acceleration Framework	UN-Water	Supported by UN-Water Interagency Trust Fund through contributions from: Government of Sweden Swiss Agency for Development and Cooperation (SADC) Ministry of Foreign Affairs of the Netherlands BMZ (German Federal Ministry for Economic Cooperation and Development	Policy framework for UN system and multistakeholder partners
Imagine H2O Accelerator	Imagine H2O Asia	Supported by the World Bank's Water Technology Access Partnership	Website
UNESCO and UN-Water (2021) The United Nations world development report 2021: valuing water.	United Nations	Chapter leads and contributors include the World Bank,	Report

		the Global Water Partnership, Water.org	
World Bank Utilities of the Future	World Bank		

Appendix 4

Certificate of Ethics Approval

28/08/2018

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

Numéro du dossier / Ethics File Number	S-06-18-808
Titre du projet / Project Title	Rights to the Thirsty City: counter-topographies emerging out of women's resistance to neoliberal environmental policy in vulnerable settlements
Type de projet / Project Type	Thèse de doctorat / Doctoral thesis
Statut du projet / Project Status	Approuvé / Approved
Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)	28/08/2018
Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)	27/08/2019

Équipe de recherche / Research Team

Chercheur / Researcher	Affiliation	Role
Meera Vani KARUNANANTHAN	Département de géographie / Department of Geography	Chercheur Principal / Principal Investigator
Luisa VERONIS	Département de géographie / Department of Geography	Superviseur / Supervisor

Conditions spéciales ou commentaires / Special conditions or comments

04/09/2020

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

Numéro du dossier / Ethics File Number	S-06-18-808
Titre du projet / Project Title	Rights to the Thirsty City: counter-topographies emerging out of women's resistance to neoliberal environmental policy in vulnerable settlements
Type de projet / Project Type	Thèse de doctorat / Doctoral thesis
Statut du projet / Project Status	Renouvelé / Renewed
Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)	28/08/2018
Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)	27/08/2021

Équipe de recherche / Research Team

Chercheur / Researcher	Affiliation	Role
Meera Vani KARUNANANTHAN	Département de géographie / Department of Geography	Chercheur Principal / Principal Investigator
Luisa VERONIS	Département de géographie / Department of Geography	Superviseur / Supervisor

Conditions spéciales ou commentaires / Special conditions or comments

28/08/2019

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

Numéro du dossier / Ethics File Number	S-06-18-808
Titre du projet / Project Title	Rights to the Thirsty City: counter-topographies emerging out of women's resistance to neoliberal environmental policy in vulnerable settlements
Type de projet / Project Type	Thèse de doctorat / Doctoral thesis
Statut du projet / Project Status	Renouvelé / Renewed
Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)	28/08/2019
Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)	27/08/2020

Équipe de recherche / Research Team

Chercheur / Researcher	Affiliation	Role
Meera Vani KARUNANANTHAN	Département de géographie / Department of Geography	Chercheur Principal / Principal Investigator
Luisa VERONIS	Département de géographie / Department of Geography	Superviseur / Supervisor

Conditions spéciales ou commentaires / Special conditions or comments

Appendix 5: Consent form

Women's campaigns against water metering

INTERVIEW CONSENT FORM

Invitation to Participate: I, _____am invited to participate in this research project led by Meera Karunananthan of the Department of Geography at the University of Ottawa. This project is conducted independently from the organizations and agencies from which participants may be recruited.

Purpose of the Study: I understand that the purpose of the study is to gather information about women's campaigns against water metering in Cape Town and Bangalore.

Participation: My participation will consist of participating in an interview with the researcher for approximately one hour. This audio recorded discussion is designed to help the researcher gather information about the experiences and goals of women engaged in campaigns against water metering.

Benefits: My participation will help the researcher to understand how women engaged in campaigns against water metering are impacting the city and global policy processes that are shaping city politics. This information will help the researcher to develop recommendations for policy and practice for NGOs involved in supporting water justice campaigns. It will also contribute to a better understanding of women's campaigns for water justice.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I may withdraw from the study at any time and/or refuse to answer any questions. I will be compensated for any transportation or other costs incurred even if I choose to withdraw from the study.

Inconveniences and Risks: There are no foreseeable risks to participating in this focus group interview.

Recording and Storage of Data: I have been informed that the interview will be audio recorded. The notes, audio recordings and any written transcripts resulting from this discussion will be retained by the investigators for the sole purpose of research in this study. They will retain these notes in their personal research office in a locked file cabinet until 2028, at which time the notes, recordings and transcriptions will be destroyed. I may request a copy of the audio recording of the interview and/or any written transcripts.

Confidentiality and Anonymity: Information provided during the interview will remain confidential and anonymous. Only information that has been pooled with results from other interviews and stripped of personal identifiers may be used for public communication of research results. It is

possible the researcher(s) may wish to use anonymous/unattributed quotations from this interview in scholarly journal articles stemming from this project, to illustrate important findings. Such quotations, should they occur, will be referenced using pseudonyms or codes and will not contain any information that might conceivably be used to identify the source or the participant. I have been informed, however, that given the nature of the focus group discussion the researchers cannot guarantee the protection of my identity from the other participants. Thus, I have been given the option to refrain from disclosing my name to the group or to withdraw if I so wish. Moreover, the researchers have requested all participants to respect the confidentiality of the information shared during the focus group discussion and the anonymity of the other participants.

Questions, comments or requests for withdrawal: For any questions or concerns about this project or consent document, or to withdraw from the project, the principal investigator can be contacted at the following e-mail address: xxx

Should I have any ethical concerns regarding this project or my participation in this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, 550 Cumberland Street, Room 154, (613) 562-5387, or ethics@uottawa.ca.

Acceptance: I, _____, agree to participate in the above research study. I understand that by accepting to participate I am in no way waiving my right to withdraw from the study.

There are two copies of the consent form, one of which is mine to keep.

Participant's signature: _____ Date: _____

Researcher's signature: _____ Date: _____

Appendix 6: Interview Guide

Study on women's resistance to water metering technologies in Cape Town

Interview guide

A) Demographic data (age, gender, education level, name of township, type of housing)

B) Relationship with the city and access to water

1. Do you have running water in your home?
2. Do you access water from other sources to meet your daily needs?
3. Do you pay water bills? How much (monthly rate, percentage of income)?
4. What are your biggest constraints in terms of accessing water?
5. How long have you faced these constraints?
6. How do these constraints impact your life?
7. How do you overcome these constraints?
8. Describe your day-to-day relationship with the city? (how do you pay your bills, how does the city communicate with you, how do you register complaints and dissatisfaction with the services?

C) Organized activities of resistance

1. Are you involved in an organization?
2. If so, how are you involved?
3. If so, when did you get involved and why?
4. How are you engaged in actions of resistance to water metres/city water policies?
5. What does the phrase "water for all or the city must fall" mean to you?
6. What are your long-term goals with regards to your campaign for water justice? (What you would like to see happen for you, your family, your neighbourhood as a result of your resistance?)

C) Water crisis

1. How did you hear about the Cape Town water crisis?
2. Is there a water crisis in Cape Town?
3. Has your access to water change since recent announcements of a water crisis in Cape
4. If so, how?
5. What are your sources of information about city politics?

D) Imaginings of the city

1. What would your ideal situation be with regards to access to water and sanitation services?
2. What type of city would you like to live in?
3. Has your activism changed your relationship to the city?

4. What would you be able to do if you had the access to water you needed?
5. What have you learned through your activism about your ability to make change?
6. What consequences should the city face for failing to deliver water?
7. Have city policies or outcomes changed as a result of your activism?