



# Engineering

*In Pursuit of Climate Adaptation*

# Vulnerability



SARAH E. VAUGHN



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SARAH E. VAUGHN

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## ABBREVIATIONS

CAP	Conservation Adaptation Project
CARICOM	Caribbean Community
CDC	Civil Defence Commission
EDWC	East Demerara Water Conservancy
GD	Georgetown Datum
GDP	gross domestic product
GHRA	Guyana Human Rights Association
GUYSUCO	Guyana Sugar Corporation Inc.
GYD\$	Guyanese dollars
LCDS	Low Carbon Development Strategy
MMA Scheme	Mahaica-Mahaicony-Abary Scheme
NDIA	National Drainage and Irrigation Authority
NGO	nongovernmental organization
PAHO	Pan American Health Organization
PNC	People's National Congress
PNC-R	People's National Congress-Reform
PPP	People's Progressive Party
TVA	Tennessee Valley Authority
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change



UNICEF	United Nations Children's Fund
UN IPCC	United Nations Intergovernmental Panel on Climate Change
UN REDD+	United Nations Program on Reducing Emissions from Deforestation and Forest Degradation
VCA	vulnerability capacity assessment
WUA	Water Users Association

In Guyana, English is the national language, but Creole, or what is locally called *Creolese*, is widely spoken in both urban and rural areas. I became familiar with Creolese through daily conversation, reading newspapers, and attending seminars in the Department of Language and Cultural Studies at the University of Guyana, Turkeyen campus. To make the text easier to read, I have opted to translate interview quotations into Standard American English, adding Creolese terminology where relevant.

Race in Guyana also takes on fluid linguistic categorizations. The national census, for instance, has seven designated racial categories: African, Indian, Portuguese, Chinese, European, Amerindian, and Mixed Race. In daily conversation, however, many people use the terms *Afro-Guyanese* and *Black* when referring to African; *Indo-Guyanese* and *East Indian* when referring to Indian; *White* when referring to European; and *Indigenous peoples* when referring to Amerindian. To this end, it is important to note that the country name Guyana derives from the word Guiana, the original name for the region that formerly included the colonial territories of present-day Guyana, Suriname, French Guiana, and parts of Brazil and Venezuela. When noting the Dutch and British colonial eras, I refer to people of African and Indian descent by the historical denotation Afro-Guyanese and Indo-Guyanese, respectively.

Finally, I use a mix of pseudonyms and given names to identify people. I adhere to the requests of those who wanted me to refer to their given names and of those who wanted pseudonyms. All government agencies, nongovernmental organizations, development agencies, and engineering firms are identified by their most commonly used names. The engineering agency the Ministry of Public Works changed its name to the Ministry of Public Infrastructure circa 2014. For the sake of clarity, I identify the ministry by its current name in reference to ethnography I conducted between 2009 and 2019.

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INTRODUCTION. "Where Would I Go?  
There Was No Place with No Water"

In the years immediately following a disastrous flood in 2005, the Guyanese state embarked on the multimillion-dollar enhancement of irrigation and drainage infrastructures. In August 2009 when I visited, earthmoving equipment dotted the coastline. These machines clawed through peatlands, locally known by the Creolese term *pegasse*, in an effort to reinforce a dam. Excavations were gaining momentum because of the state's plans for ventures in carbon markets and the World Bank's Global Environment Facility grants. The enhancements were not the first in Guyana's history but were building on over two centuries of engineers transforming the country's Atlantic coastal region into a place suitable for sugar plantations. The state insisted that these enhancements were different because they would offer a first step toward adapting the nation to climate change. They are expected to help the country better withstand torrential rainstorms and make it easier to store and drain water during a flood. The extreme nature of today's climatic events has compelled the state's rethinking of coastal life in Guyana. This has led me to treat climate adaptation as requiring analysis on its own terms, as a large-scale project that alters understandings of settlement or

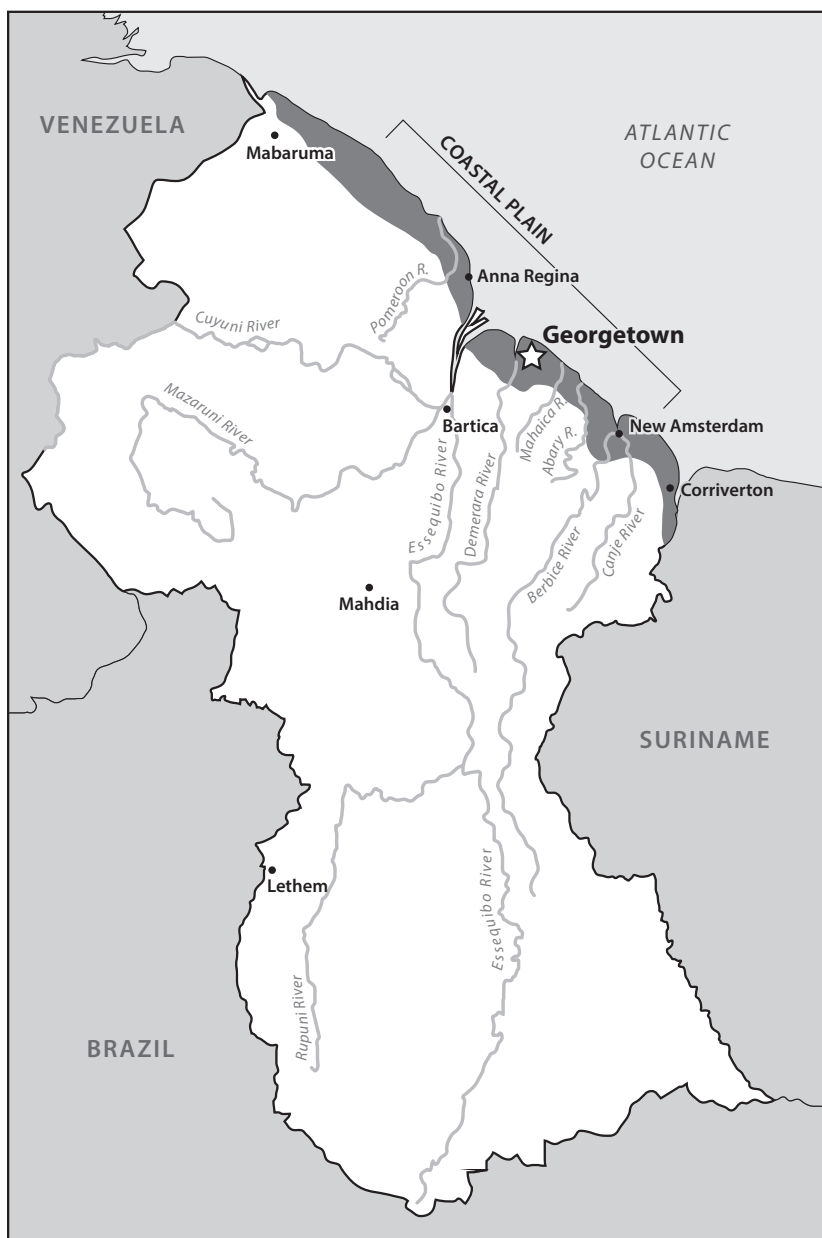


the multilayered processes that contribute to dwelling and the habitation of a place.

Climate adaptation and its connections to settlement provide this book's unifying theme. I draw on ethnography, oral histories, colonial records, photographs, and engineering reports to make these connections visible. I ask: How can Guyanese who felt abandoned by the state during the 2005 disaster come to believe in or at least consider climate adaptation? What can their vulnerability tell us about the persistent forms of technological optimism that frame climate adaptation as a project that has the potential to advance and sustain the settlement of nation-states? What would it mean for the state or the citizen not to partake in climate adaptation? And what would such a refusal do to one's sense of belonging? The climate adaptation of irrigation and drainage infrastructures has occurred along Guyana's low-lying coastal plain, where roughly 90 percent of the country's population resides. In addition to enhancing irrigation and drainage infrastructures, climate adaptation has enabled many to mobilize support from state officials and NGOs for water, disaster preparedness, food security, housing, and environmental conservation. Even still, many Guyanese face difficult dilemmas as they attempt to square the 2005 disaster and their past experiences of state abandonment with climate change.

My aim in this book is twofold. First, *Engineering Vulnerability* tells the story of how climate adaptation's importance lies not only in its technological feats but also in constituting political imaginations. Each chapter focuses on the ways knowledge of flooding becomes situated in Guyanese state-sponsored climate adaptation projects. This focus gives ethnographic specificity to popular and academic understandings of climate change as a lived reality of settlement rather than as an abstract risk. Climate adaptation reshapes the links between forms of state welfare and reform. By making these links visible through ethnography, this book complements scholarship on climate adaptation policy making and postdevelopmentalism.

Second, I analyze climate adaptation by tracking the demands people make on one another as they recognize that race is a source of vulnerability to climate change. The book contributes to theories of vulnerability to climate change by foregrounding the enactment of race beyond human bodies to include flood-prone environments. Throughout, I explore the coproduction of vulnerability and race as exemplified through questions about scale, measurement, and temporality that climate-related flooding in Guyana incites. My aim is to develop an analytical framework that takes seriously the uneven and speculative ways race comes to shape climate adaptation. Put another



MAP 1.1. Map of Guyana

way, this book explains why climate adaptation in Guyana has gained traction alongside racialized apprehensions about the suitability of the coast for future settlement.

## From Disaster to Climate Adaptation

The 2005 disaster was a life-altering event for most Guyanese I know. It came on the heels of a national surge in crime and violence tied to the racial calculus of electoral politics, especially among the coast's Afro-Guyanese and Indo-Guyanese residents. The surge in crime pitted generations against each other and reignited the racial sentiment that Guyanese call *apaan jaat*, a Bhojpuri-Hindi phrase loosely translated into Creolese as "vote for your own kind." The state was nearly twenty years into a transition from socialism to market liberalization during the height of the crime surge. But the transition had not loosened the state's grip on the economy, and elected political elites supporting the interests of an international business class emerged.

During this time, the People's Progressive Party (PPP) held both the majority of seats in parliament and the presidential office. Known as a party serving Indo-Guyanese interests, the PPP took steps to concentrate executive power over all aspects of national decision-making. Such efforts were nothing new, as they reflected the political opportunism during socialism under the then ruling Afro-Guyanese political party, the People's National Congress (PNC). The 1997 and 2001 national elections, nonetheless, were overshadowed by feelings of discontent among Afro-Guyanese and sympathetic Indo-Guyanese.<sup>1</sup> People protested in the streets for constitutional reforms and, among other things, a national agenda to eradicate poverty, corruption, and racial discrimination in public sector hiring. But when the storms came in 2005, few were prepared to expand the dialogue about *apaan jaat* to include climate change.

Torrential rains pounded Guyana's coast from late December 2004 to early January 2005. Houses once protected on stilts were transformed into marooned islands. Leptospirosis, a zoonotic waterborne disease, knew no boundaries, wreaking havoc across rural and urban environs alike. Roads were damaged, leaving many with no place to sell and buy food, supplies, and water. The flooding was prolonged by a major dam system, the East Demerara Water Conservancy (EDWC), overfilling with water. In response, the Civil Defence Commission (CDC), a state-sponsored disaster relief agency, and NGOs repurposed school buildings into shelters and pickup points for relief hampers (emergency rations). Even when the rain stopped, the talk of floodwaters

persisted as engineers and state officials affiliated with the Ministry of Agriculture worked to reinforce the EDWC. By the spring of that year, the country was fortunate enough to count only thirty-four people dead.

One of the places hardest hit was Sophia, a former squatter town located on the fringe of Guyana's capital city, Georgetown. I became familiar with Sophia through the work of residents involved in climate change awareness and disaster preparedness activities sponsored by the Guyana Red Cross. By the early 2000s Sophia was known as an Afro-Guyanese working- and lower-middle-class neighborhood, with many residents in transition working to secure land titles. Sophia's unfinished network of canals and sloped terrain shaped the state's timid disaster response. Residents recount using refrigerators as boats to meet state officials at public roads to retrieve relief hampers. Margaret, one of the residents who participated in the Red Cross activities, knew these roads well. I frequented her vendor stall where she sold sweets and refreshments (see figure 1.1). As a street vendor she could map the spaces



FIGURE 1.1. Boys sitting at Margaret's vendor stall

where floodwaters were most prone to accumulate, the makeshift bridges residents maintained for emergency evacuation, and areas not to visit when the sky turns gray.

This know-how, she insisted, informed all the “mess” she saw during the disaster. I asked what she meant by “mess”: “At some point you knew no one was coming. Back then, I was a security guard at the Georgetown Botanical Gardens and Zoo. People [zoo staff] called in to tell me animals—the manatees—were going to swim into the streets. We saw caiman in the canals here too. Everyone just had to do their thing . . . until it ended.” I asked if all the mess made her want to go somewhere else to wait out the storms. “No. Where would I go? There was no place with no water.” The rainfall was unprecedented, and the flooding was inescapable. And by the time the storms came, Margaret realized that she and state officials were too late to change course or, simply, to retreat to higher ground.

In the months following the initial storms, the national government partnered with the United Nations (UN) Economic Commission for Latin America and the Caribbean to report disaster statistics. The estimated damages were in excess of GYD\$93 billion (US\$465 million), and the floods reversed that year’s gross domestic product growth from 0.4 percent to -2.6 percent (World Bank 2009). Economic damage was severe in the country’s agricultural, manufacturing, and retail sectors. Subsistence farmers, small-business owners, and street vendors suffered the most because of a paralyzed supply chain and liquidity constraints. The state attempted to revitalize the economy by providing relief checks to workers as well as to those categorized as living in low-income households.

There are no reported statistics that break down the distribution of relief checks by race. Yet the checks can still provide helpful insight about the influence of *apaan jaat* on the disaster. According to the 2002 census, Guyana’s 750,000 citizens were distributed across seven racial groups: 43.5 percent Indian, 30 percent African, 16.7 percent Mixed Race, 9.2 percent Amerindian, and less than 1 percent Portuguese, Chinese, or European (Beaie 2007, 27). Roughly two-thirds of the population lived in poverty, with the majority counted as Indo-Guyanese and concentrated in rural coastal areas (Gampat 2002).<sup>2</sup> At the same time, the distribution of wealth tells another story: there was a small—but growing—upper class of Indo-Guyanese with access to capital for small-business development and a large proportion of Afro-Guyanese concentrated in the ranks of the lower middle and working classes (Gampat 2002, 16–17). Everyone—including an elite business class—was in

need of disaster assistance. The 2005 disaster momentarily blurred the life chances of Guyana's racial majority and minorities while underscoring the ecological and material contingencies of *apaan jaat* to statecraft.

Engineers responded with a promise to adapt Guyana's coast to torrential rainfall, sea-level rise, and erratic storms related to climate change. By May 2005, they were already pouring millions into damming and building canals in ways that anticipated the attempts to revive the levee system and hurricane-ravaged coast of post-Katrina Louisiana just a few months later (Bijker 2007). And while these coastal disasters had very different causes, infrastructural origins, needs, and environments, race emerged in both locales as a condition of vulnerability.

A state-mandated evacuation during Hurricane Katrina, for instance, has contributed to a New Orleans diaspora of African Americans that is reconstituting the racial demographics of the city and surrounding Mississippi delta region (Adams 2013; Johnson 2006, 147). Engineering priorities for building levees and reclaiming wetlands have followed suit by focusing on areas deemed worthy of real estate and business reinvestment. Unsurprisingly, these areas are majority White with capital to rebuild (Bullard and Wright 2009). On the other hand, Guyana's 2005 disaster did not involve a state-mandated evacuation nor inspire the long-term mass exodus of residents to other parts of the country.<sup>3</sup> So whereas in New Orleans engineers have attempted to separate areas of the coast into adaptable and inadaptible zones, in Guyana—at the time of writing, no such distinctions have been made.<sup>4</sup> All racial groups have become associated with state-sponsored climate adaptation, albeit in different, uneven, and tenuous ways.

Engineers have focused their climate adaptation efforts on the EDWC. The 355-square-mile (571-square-kilometer) structure comprises what is locally called a *water conservancy* (reservoir), a forty-two-mile (67-kilometer) embankment dam, and an intricate system of primary and secondary channels that connect to canals that drain water into the Atlantic Ocean (Bovolo 2014). The embankment dam's walls are composed of compacted soil, sand, clay, and rock. In 2005, when water overtopped the EDWC, many blamed engineers for not closely monitoring where erosion along the embankment dam was occurring. Trenches and canals were also clogged with trash, particularly in Georgetown, which made engineers' decisions about when to release water from the EDWC inconsistent. Engineers releasing water between high tides was crucial for avoiding further flooding in residential and farming areas adjacent to the EDWC. While they were eventually able to release

water between high tides, the danger of water overtopping the EDWC has become the primary motivation shaping engineers' commitments to climate adaptation.

The possibility of repeated disastrous flooding, however, cannot in itself explain why climate adaptation has taken hold in Guyana. The contested role of global governance in climate adaptation is, in many ways, central to the EDWC's enhancements. The term *climate adaptation* has its roots in ecological theories of resilience that assume a sociobiological system can absorb shock, transform, and ultimately maintain itself in the face of external stresses. Integrated into UN-related climate-policy agendas in the late 1990s, climate adaptation is treated as an alternative to the steps nation-states have already taken to reduce carbon emissions (Pelling 2010).<sup>5</sup>

In the most basic policy terms, climate adaptation involves nation-states governing in response to actual or expected climate change effects. The UN climate governance institution, the Intergovernmental Panel on Climate Change (IPCC), has called on political leaders across the Global North and Global South to advance climate adaptation projects. The UN IPCC has designated funding sources for those countries that cannot afford to do climate adaptation on their own. The diplomatic value of the UN IPCC, then, is in its claim to inclusivity and commitment to the differential needs, expertise, and ambitions of nation-states responding to climate change. To date, UN IPCC funding for adaptive interventions has ranged from the enhancement of infrastructure systems, ecosystem services, and information networks to health care across urban and rural sites (Adger et al. 2005; Orlove 2009).

Guyana has not only benefited from but also helped define the trajectory of such UN IPCC initiatives. In 2009, President Bharrat Jagdeo held a press conference in Guyana with a handful of foreign dignitaries to release the Low Carbon Development Strategy (LCDS), a report detailing the country's plans for climate adaptation (Government of Guyana 2010, 11). Ambitious in scope, LCDS looks to the country's forests as a resource for carbon trading schemes with Norway. The funds raised from these schemes are intended to partially sponsor the long-term adaptation of, among other things, irrigation and drainage infrastructures.<sup>6</sup>

The LCDS also contributes to the government's Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC). The communication highlights the improved management of engineering data and technologies as an invaluable component of climate adaptation. Climate change in Guyana is expected to materialize as a 4.2-degree increase in average temperature, 10-millimeter decrease in rainfall,



and 40-centimeter sea-level rise by the end of this century (Solomon et al. 2007). Laying out these national data around the various blind spots of the UNFCCC, the LCDs creates a critical nexus between transnational climate negotiations and research networks needed to sustain them.

Jagdeo made a plea for the LCDs through diplomatic partnerships with Conservation International, lecture tours at foreign universities, and interviews with celebrity environmentalists, including American actor Harrison Ford. He also attended the fifteenth session of the UNFCCC in 2009 in Copenhagen. Selling the LCDs to a sympathetic audience, he explained that all Global South nation-states are not alike and that those that are not high emitters of carbon dioxide emissions have a stake in climate negotiations. Guyana was not alone in taking such a stance, as chronicled in the documentary *Island President* (2011). At Copenhagen, Guyanese envoys aligned themselves with those from the Caribbean and the Maldives, a country that had taken the lead in previous UNFCCC meetings representing small island states. They argued that, although it is not a literal island, Guyana is a *small island state*—a country with a population so at risk it will either get wiped off the map by climate change or never be able to afford to adapt on its own (see also Sealey-Huggins 2017).<sup>7</sup> Their use of the phrase *small island state* offered a way to put climate change at the center of Guyana's modern understanding of itself as a nation. It signaled that the composition of the nation's future population—its size and demographics—is in question.

More than a simple description of geography, the phrase *small island state* is symbolic of Guyana's concern that climate change has the potential to drive a further wedge between its racial majority and minority groups. Arjun Appadurai (2006) has articulated similar insights in his analysis of the sovereign preoccupation with scale and population or what he calls "the fear of small numbers." Globalization in the post-Cold War era, Appadurai notes, has rested on the assumption that with the expansion of free markets, finance capital, human rights, and democracy, racial inequalities would recede worldwide. But in many instances the opposite has unfolded, with racial inequalities deepening and violence becoming a mainstay of national political life. This anxiety about well-being, about the lack of consensus between racial populations, and about the enumeration of racial populations via census data creates the conditions for "the fear of small numbers." Moreover, the sense of social injustice that characterizes the fear of small numbers is not bound to any single identity or geopolitical territory. As the Copenhagen meeting demonstrates, the fear is often rationalized through efforts at comparing levels of socioecological degradation across as well as within nation-state contexts.



The fear of small numbers, in other words, is not limited to the question of the human: the binary preoccupation with racial majority and minority has, over time, ravaged environments or the terrain nation-states call home.

Against this backdrop of fear and diplomacy, climate adaptation may not only hinge on efforts to design so-called resilient infrastructure systems. It also seeks to influence public attitudes about the importance of lessening racial inequalities while bringing attention to the fact that all people—no matter their race—are vulnerable to climate change. By *race*, I mean “a set of sociopolitical processes that discipline humanity into full humans, not-quite-humans, and nonhumans” worthy of survival (Weheliye 2014, 4). Climate adaptation puts pressure on this conventional framing of race as a hierarchy of difference predicated on the “administration of life” or a biopolitics of the population (Foucault 1990). This is because climate adaptation creates space for people to develop a racialized awareness about the contingencies, risks, and instabilities that characterize the environments in which they live.

Scholars, for instance, have begun to ask if combining the insights of the climate sciences with paleoanthropology provides a new vantage point on race as a social construct (Gunaratnam and Clark 2012). This proposed shift in perspective warns against treating climate adaptation as an inherently progressive project that advances humanity along a predetermined path.<sup>8</sup> In turn, those typically counted as on the margins of society stand in as key figures for reconstructing the nation-state’s histories of interracial strife as well as its solidarities (see also Abu El-Haj 2002; Collins 2015; Thomas 2011).

Improving race relations in climate adaptation often coalesces around compensation for resettlement and community-level climate change awareness programs that emphasize inclusivity. By not dismissing long patterns of suffering, such forms of redress demonstrate the difficulty involved in simultaneously attributing responsibility for racial inequalities and envisioning antiracist futures. Climate adaptation, in other words, demands a precise historical accounting of the ways in which people speculate about the end of race.

*Engineering Vulnerability* offers such an account by analyzing climate adaptation’s unfolding in the daily lives of ordinary citizens and a variety of experts. Climate adaptation’s impacts on Guyana cannot be evaluated with censuses and statistics alone. Enhancements of the EDWC and related irrigation and drainage infrastructures enable Guyanese to reconsider how they want to live and to what extent they care or even interpret racial sentiments, such as *apaan jaat*, as shaping their futures. I understand these reflections as essential to climate adaptation, whereby people evaluate how past events

contribute to vulnerability in the present, in order to consider what actions are needed to live with climate change moving forward. Climate adaptation is eerie: the lessons of the past are known only indirectly, and the future is associated with a world filled with risk instead of aversion to it. Why and how people decide which pasts matter for enacting climate adaptation is the question that animates the rest of this book.

## Vulnerability

The EDWC is the thing that connects all Guyanese to the coast. It is the object of intervention in climate adaptation whereby national life is situated in an emergent, sometimes ill-maintained system of irrigation and drainage infrastructures. Many think about the EDWC only when they have flashbacks about the 2005 disaster, see too much water in their yards, or hear meteorologists warn of a rain-drenched forecast. This is why community-oriented interventions such as the Red Cross project in Sophia have become ubiquitous throughout the country since 2005. Many people have come to see such interventions as complementing engineers' efforts to enhance the EDWC. But in no way do the actions of ordinary citizens and engineers rely on similar timelines, histories, or technologies. Their actions are discontinuous, with multiple origins and sites of knowledge production about flooding. No single person can make climate adaptation happen, nor does anyone appear to have the desire to claim such authority. All individuals come equipped with their own perspective on what counts as vulnerability, and in the process of climate adaptation they seek to become aware of what the EDWC is doing.

In the Atlantic coastal subregion called the East Demerara Coast, the main source of irrigation and potable water is the EDWC.<sup>9</sup> Torrential rainfall similar to the weather in 2005 has informed engineers' efforts to create models to monitor the EDWC's water levels. They use these models to determine when to release water to stop the EDWC from overtopping and its pegasse-laden walls from eroding. Whereas engineers once emphasized the storage of floodwaters in the EDWC, climate adaptation unfolds with the sole purpose of building large canals that can drain floodwaters quickly and coordinate with nearby rivers.<sup>10</sup>

Engineers' decision not to abandon but redesign the EDWC brings into focus neocolonial associations of irrigation and drainage infrastructures with sugar plantations, the political geography of terrain qua the nation, and day-to-day experiences of *apaan jaat*. Specifically, climate adaptation complicates

ideas of coastal Guyana as a place where vulnerability is structured by a dependency on the engineering inventions and sciences of its colonial past. I often heard people lament that they did not altogether trust the work of engineers but nevertheless hoped that they could figure out how to maintain the EDWC. This skepticism toward state-sponsored climate adaptation mobilized many to take climate adaptation into their own hands. From building embankments on their property to creating flood evacuation routes, they envisioned vulnerability as manageable in discrete and pragmatic ways.

Anthropologists analyzing climate change have increasingly theorized vulnerability less as a condition of exposure than as an effort in becoming aware of disturbance (Vaughn 2019).<sup>11</sup> Anna Tsing (2015, 35) argues that the “art of noticing” involves people telling stories about the flourishing of biological and social life in the ruins of capitalist landscapes. Adriana Petryna (2015) offers the concept of the horizon to detail the practices that push people to take action even when climate change appears daunting or out of control. They and other scholars have shown that vulnerability is reproduced in everyday encounters with environmental transformations that are often unintentional or without precedent (Barnes and Dove 2015; Cons 2018; Crate 2011; Günel 2019; Moore 2019; O’Reilly 2017; Whittington 2016).<sup>12</sup> Vulnerability constitutes a complex set of ethical relations that draw people into caring about environments in ways they never would if they felt more secure (Khan 2014; Mathews 2017). Questions of how vulnerability maintains specific social arrangements of care become especially acute in climate adaptation. What happens when people decide not to draw direct attention to the things that make them vulnerable? Are there some forms of vulnerability that are more essential than others?

These questions are not neutral for Guyanese who aim to pursue climate adaptation in ways that do not get stalled by *apaaan jaat* or undermined by it. *Apaaan jaat* has functioned as a means for upholding a *racial political order* wherein an individual’s racial identity or affiliation with a racial group determines access to resources, information, and protection from the state.<sup>13</sup> In theory, *apaaan jaat* ought to benefit an individual whose race is well represented or is the majority in state bureaucracy. Likewise, for those who are not, they may find it advantageous to maintain relationships with the majority. Even so, a single experience of racialized resentment or indifference can breed contempt for *apaaan jaat*, to the point where one would rather turn to nonstate institutions—from NGOs to gangs—for care. Within this tenuous field of address and response, *apaaan jaat* can easily exceed boundaries of the state and creep into daily life, shaping how an individual pursues work, intimacy,

worship, commerce, and the like. Race, as David T. Goldberg (2001) argues, is integral to standardizing state arrangements, reminding us that forms of political influence are marked symbolically and affectively as well as physically. And yet *apaan jaat* does not unfold in ways that simply replicate existing state institutional norms and values. *Apaan jaat* takes on a new sense of import, and perhaps urgency, every time Guyanese engage state bureaucracy. Climate adaptation is one such instance.

Past political events, alliances, and forces inform assumptions about the role *apaan jaat* will play in climate adaptation. But the various ways in which Guyanese articulate these pasts, while subject to emphasizing flooding as a common threat, reveal that *apaan jaat*'s powers of incitement and intensity of variation are not equally distributed. A gap opens between their efforts to let go of *apaan jaat* and their struggles to identify how it might linger and accumulate over time as a source of vulnerability. This dynamic of embodiment, *apaan jaat*, and distribution reinforces a subtle process in climate adaptation activities. People make decisions about when to pay attention to or even ignore race in their assessments about how they want to live moving forward. To be sure, race does not determine the scope of climate adaptation, but it does serve as an important, and at times fleeting, point of reference.

Taking into account this dynamic, I draw on the philosopher of science Karen Barad (2007), especially her work on measurement. She argues that measurement is not an individual act but a process of cutting together/apart the agentic qualities of a phenomenon. In particular, measuring apparatuses such as a kitchen scale, which people use to identify and make sense of, say, a piece of fruit, illustrate how agency emerges from being in *intra-action* rather than an individual property. To quote Barad, measuring apparatuses are not "static arrangements"; they produce boundaries or "agential cuts," which allow people to observe certain things in the world and not others (816).<sup>14</sup> Measuring apparatuses have a dual nature: the act of observation makes cuts in what is included or excluded while creating new understandings about the way responsibility, or ethical relations, might be maintained.

By far, the most repeated comment about ethics posed to me by my informants, especially engineers, when I described my research was that I ought to find a social solution for flooding. For some, this suggestion was a judgment about my status as an anthropologist without a background in hydraulic or geotechnical engineering. Others gestured to frustrations with *apaan jaat* as a strategy of flood management and life on the coast more generally. In both cases, they assumed that flooding was reducible not to racial