Following Water in the Wake of Cholera:
Relation, Coloniality, and the Poetics of Osmosis in Haiti's Artibonite Valley

by

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Dedication

For my parents, Ana Rosa and Daniel Koski-Karell

Acknowledgements

Before, within, and above all, I thank water. From the waters that have and continue to sustain me, to the waters with which this project communes. The Potomac River (Patawomeck) for helping to raise me, the Charles River (Quinobequin) for nurturing me, the Huron River (Giwitatigweiasibi) for cultivating me, the Latibonit River for guiding me, and the great waters of Lake Superior (Anishinaabewi-gichigami) and the Caribbean Sea (lanmè karayib) for humbling me by their potential for sublimity as much as for chaos. I'm grateful to the lands through which these bodies of water flow, whose shorelines and banks they contour, whose aquifers supply and replenish them. I was born, brought up, and educated on lands that were stolen from the Nacotchtanck, Pawtucket, Massa-adchu-es-et, Anishinabewaki, Bodéwadmiakiwen (Potawatomi), and Odawa; lands upon which were built cities, industries, and institutions financed in part by capital plundered from the labor of enslaved Africans and their descendants; lands—and the lives they hold—facing futures made precarious by the accrued damages of anthropogenic climate change and ecological harm. I acknowledge the ghosts that I hope will never stop haunting the so-called modern world.

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In the midst of the SARS-CoV-2 pandemic, that this dissertation came together at all is in many ways thanks to the unfaltering support and generous engagement of my incredible committee members: Scott Stonington, Liz Roberts, Ruth Behar, Erica James, and Paul Johnson. Learning from you all has been the biggest privilege. Thank you for believing not just in me but also in my work.

I've been blessed in this journey to be bolstered throughout it by the love of my family. As with my parents, I'm also so grateful to my siblings, Arthur, Danny, Willie, Annie, and Natalie, to their partners, Erika, Heather, Mercedes, and David, to my nieces and nephews, and

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Abstract

Throughout the Haiti cholera epidemic, the Artibonite Valley region, which stretches across the middle of the country, saw some of the highest caseloads. In October 2010, toxigenic *Vibrio cholerae*, the bacteria that causes the deadly diarrheal disease, had breached a United Nations military base in central Haiti and entered a tributary of the nation's most prominent waterway, the Latibonit (Artibonite) River. A confluence of structural factors and social forces linked to an enduring "colonial matrix of power" not only mediated these troops' presence in Haiti, but also allowed for the pathogen-laden effluent to seep beyond the camp and for the exposure of millions of Haitians to contaminated water, sparking the nation's first cholera epidemic and the deadliest in recent world history. Iterations of coloniality saturate people's lived experiences of the outbreak as well as the social, religious, ecological, and visceral relations gathering in its wake. In this dissertation, these experiences and entanglements in several communities along the Latibonit serve as a point of departure for theorizing human-water relationality within Haiti.

Using an interdisciplinary, multi-method approach that draws from my training as an MD/PhD student in medicine and sociocultural anthropology, I conducted more than 12 months of ethnographic fieldwork over the course of 2015-2019, accompanied by archival research in several digital collections. I based my studies in Mibalè, a central Haiti town downstream of the UN base; Sen Mak, a coastal secondary city near the mouth of the Latibonit River; and the Fifth Communal Section of Sen Mak, a predominantly rice-growing region bordered by the river. My findings locate cholera as not simply an acute, severe disease, but rather an enduring rupture that, like all ruptures, demands adjustments from those affected—the most salient concerning the waters people drink. How and why, with the occurrence of this epidemic, did relations between humans and drinking-water shift or persist?

In *Following Water*, I attempt to situate when, where, and how these human-water disruptions occur and the ways in which Haitians are navigating their repair. Though the

outbreak began with the leaking of toxigenic *V. cholerae* into the Latibonit River, the origins of the epidemic multiply within the context of colonial repetitions in Haiti and globally. Waters likewise multiply in their webs of connection, circulation, and flux. An orientation toward the waters both mediating the epidemic and linking pathogen and host is thus a future orientation toward the waters with which people become, and not just suffer from. Embedded in the unfolding of Haiti's novel cholera epidemic—and the bodies of people it affected—are the recurrences of coloniality as well as creative ways for collectively surviving them. To trace these processes, I begin from the site where vibrios, water, and humans meet: the semipermeable membranes of cells lining the intestinal wall. Amid the cholera epidemic in Haiti, the confluence of vibrios, water, and humans happens not only at the cellular membrane, but also at the semipermeable membranes of reverse osmosis systems increasingly used throughout the country in the wake of the outbreak. By following drinking-water, river water, diarrhea, rice-water, and reverse osmosis water, my thesis explores how membranes—and the osmotic processes they mediate—trouble such alleged binaries as the natural and cultural, human and nonhuman, past and future, ordinary and exceptional, bodies and technology, death and (forms of) life.

Chapter 1 Introduction

Something like Water

> Science describes accurately from outside; poetry describes accurately from inside. Science explicates; poetry implicates. Both celebrate what they describe. We need the languages of both science and poetry to save us from merely stockpiling endless "information" that fails to inform our ignorance or our irresponsibility.
>
> Ursula K. Le Guin, "Deep in Admiration" (2017, M16)

> It's important to drink a lot of water. When you drink a lot of water your spirit [nanm] consumes water, too, because water draws salt in.
>
> Ti Marie, Fifth Communal Section of Sen Mak, September 2019

Despite being surrounded by water in the rice fields, there was none to drink. Emmanuel,[1] his mom, Ti Marie, and I had been clearing and replanting two of their plots for four hours, while their friend, Stanley, joined partway through, having spotted us on his way home. Cool dawn breezes had given way to the heat of a mid-July sun in a relentlessly clear sky, warming both the air and the muddy water in which we worked. Sweat dripped, and thirst began to set in. Chiding myself for forgetting to bring along a bottle of water, I dizzily peeled away to crouch on the raised path bordering the plot before dehydration got the best of me. The others continued, undoubtedly thirsty themselves but finishing quickly. "You know, we used to just find a corner where the water was slightly clearer, cup our hands, and drink," commented Stanley, standing next to me after completing his portion of the rice paddy. "But ever since cholera, we can't do that anymore."

[1] I use pseudonyms throughout the dissertation when referring to research participants in order to respect and protect their privacy. I use the real names of public figures and businesses in cases when these have already been made readily public.

When an outbreak of cholera struck Haiti in October 2010, this area of the country saw one of the highest caseloads. That month, toxigenic *Vibrio cholerae*, the bacteria that causes the deadly diarrheal disease, had breached a United Nations military base in central Haiti and entered a tributary of the country's most prominent waterway, the Latibonit (Artibonite) River, which irrigates the rice fields of the Lower Artibonite Valley. UN peacekeepers deployed to that base from Nepal, where cholera is endemic, became unwitting vectors of a particularly virulent strain of *V. cholerae*.[2] A confluence of structural factors and social forces linked to an enduring "colonial matrix of power" (Quijano & Ennis 2000)[3] not only mediated these troops' presence in Haiti (cf. Pierre 2020), but also allowed the pathogen-laden effluent to seep beyond the camp and the exposure of millions of Haitians to contaminated water, sparking the first cholera epidemic in the nation's history (Jenson et al. 2011). Iterations of coloniality saturate people's lived experiences of the outbreak as well as the social, religious, ecological, and visceral entanglements gathering in its wake. In this dissertation, these experiences and entanglements in several communities along the Latibonit serve as a point of departure for theorizing human-water relationality within Haiti.

The introduction of a novel, hypervirulent waterborne pathogen into a setting where many people live in close relation with rivers, streams, and wells spelled disaster for those most vulnerable to its transmission and to the swiftness of its sequela: in some cases, cholera resulted in such rapid dehydration that people died within hours of their first symptoms, especially if they weren't able to reach adequate medical care in time.[4] In the low-lying countryside of Haiti's Lower Artibonite Valley, river water not only irrigates thousands of acres of farmland dedicated predominantly to rice cultivation, but also permeates everyday life as a source for bathing, washing, cooking, drinking, relaxation, supplication, enjoyment, and play. As we stood on the narrow, raised path of mud and grass, looking out over a sea of bright green blades, Stanley

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[2] Because there were no recorded cases of severe diarrhea in the infirmary logs of this UN base in September and October 2010, many experts concluded that the soldiers were probably asymptomatic carriers of cholera. Renaud Piarroux, et al. (2011), however, refute this claim, as asymptomatic cases of cholera could not shed enough bacteria to account for such a sudden, marked contamination of the Latibonit River tributary. "We therefore believe that symptomatic cases occurred inside the MINUSTAH camp," they write (Piarroux, et al. 2011).

[3] Walter D. Mignolo (2007, 156) writes how Anibal Quijano describes the concept of 'the colonial matrix of power' in "four interrelated domains: control of economy (land appropriation, exploitation of labor, control of natural resources); control of authority (institution, army); control of gender and sexuality (family, education) and control of subjectivity and knowledge (epistemology, education and formation of subjectivity)."

[4] Curing cholera involves effective rehydration therapy (either by mouth or IV) with fluids that replenish both the water and electrolytes lost in diarrhea and vomitus.

described how cholera tore through their community for months during the initial peak of the epidemic. By the time the outbreak really began subsiding a few years in, he recalled how every household appeared to have had at least one infected if not killed family member.

Cholera's toll of human loss and suffering scarred this and other communities throughout Haiti. Within the first three years alone, 690,000 cholera cases and 8,500 deaths were recorded (PAHO 2013), but these figures may have really been three to ten times as many, especially in rural areas (Jackson et al. 2013; Luquero et al. 2016; Gladstone 2016). The epidemic would eventually become the deadliest in recent history, resulting in more than 820,000 reported cases and nearly 10,000 fatalities as of January 2020 (Lee et al. 2020_a). When I began traveling to Haiti to research the implications of the outbreak in 2011, the sorrow, fear, and outrage triggered by the epidemic were palpable. During the first year, cholera treatment centers (CTCs) stayed poised at many hospitals and clinics; banners bearing public health messages remained draped over popular intersections; people I interviewed in North Haiti grieved the fresh pain of familial and collective loss into my voice recorder. As I returned yearly after that, however, I witnessed the contours of the epidemic shift. By 2015, when I commenced the studies underpinning this dissertation, the scar was no less real, but the potent emergency of cholera had changed. Though far from "over," the rate of cholera transmission had abated such that most CTCs had been decommissioned and policy debates wrestled not over the outbreak's origins but the epidemic's endemicity.

The temporality of cholera as an acute infectious disease makes it difficult to follow individual illness narratives over the long term. Typically, a person falls suddenly ill with enteric (intestinal) symptoms, they recover over the course of several days to a few weeks, and they return to their normal state of health with some immunity and without any chronic physical consequences—although this may be changing as *V. cholerae* strains mutate worldwide into variants with new capacities to induce inflammation (Ma & Mekalanos 2010; Caro et al. 2020). Over the years spanning my research, illness experiences became less and less tangible in my conversations with people, including survivors. Our discussions almost invariably turned instead to what individuals described as factors conditioning not just their sickness but their overall

misery—chronic ensekirite,[5] government corruption, foreign meddling, resource scarcity, an influx of guns, high cost of living, limited access to clean water, sanitation, health care, education, paved roads, and jobs—and their attempts to navigate them, including spiritually. Attempts, as Édouard Glissant might describe them, to live as though life goes on not in spite of it all, but rather *in* the perplexing flux and folds of life's sadness and pleasures.

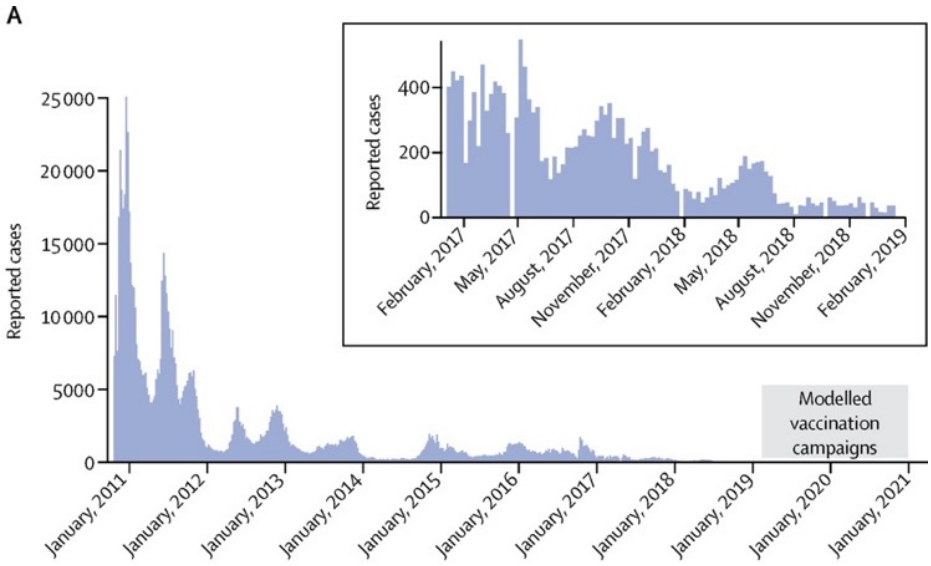

Figure 1-1: A graph of cholera incidence in Haiti, charting the weekly reports of cholera by the Ministère de la Santé Publique et de la Population from October 2010 to January 2019, with an inset of the period after January 2017 (Lee et al. 2020$_a$).

I had anticipated embarking on a project focused only on parsing those structural factors contributing to cholera's albeit dwindling persistence in Haiti, but soon found myself grappling with an increasingly obvious tension in my research: is Haiti's cholera disaster really the narrative asking to be told? What would it mean—not just practically but also ethically—to attempt to study only the contours of a waning epidemic, the specter of a catastrophe? For decades, scholars from Michel-Rolph Trouillot (1990) to Gina Athena Ulysse (2015) have critiqued the distorted representations of Haiti and Haitians—especially at the hands of white, non-Haitian, blan like me[6]—as stereotyped by exceptional poverty, disaster, and dysfunction.

[5] Erica James (2010, 107) defines ensekirite as "an ontological, pernicious, and powerful state of 'routinized ruptures' that plagues Haiti's efforts to consolidate its democracy and create a climate of peace and security."
[6] "Blan" is a Kreyòl word meaning "white person" and/or "foreign person."

The marking with such tags, argues Ulysse, "reinforce[s] antiquated ideas in popular imagination that ultimately serve particular racialized and geopolitical purposes" (Johnson 2016).[7] Instead, she makes the case for new narratives that not only restore to Haiti its historical, intellectual, and revolutionary significance, but also abolish its reductive, romanticized, and racist renderings (Ulysse 2015). Parallel to this call stands the enduring challenge developed by James Baldwin, Sylvia Wynter, Saidiya Hartman, and others to critically consider how fixations with Black pain and suffering appeal to Whiteness and perpetuate long histories of coloniality. Centering the brutalization of Black bodies dehumanizes Blackness by obscuring everything but the sadistic harm inflicted through mechanisms, ideologies, forces, and articulations of White supremacy. Anthropology, like all fields of empirical study, is fabricated by the questions its disciples ask, the categories they create, and the stories they tell. And the roots of Anthropology run deep in the White project of 'Othering'.[8] As scholars across the sciences have demonstrated, acts of measuring influence that which is being evaluated. But these interventions also shape those performing the measurements, the knowledge they generate, and the social constructions of their disciplines. The questions posed through anthropological inquiry become, therefore, a question of complicity in buttressing Whiteness.

While these calls for new, alternative narratives figured into both the framing of my investigation as well as its multi-method approach, the data I collected was far from

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[7] See also Eve Tuck's (2009) "Suspending Damage: A Letter to Communities," which calls upon educational researchers and practitioners to disinvest from and abolish 'damage-centered' research.

[8] As a research endeavor and academic discipline strongly rooted in European and U.S. traditions of knowledge production, including theories of social Darwinism, biological racism, and eugenics, Anthropology has played a central role in the racist project of developing and reinforcing racial differences and hierarchies. Practically by design, Anthropology has served in the construction of the 'Other' relative to Western thought, actions, and whiteness. Leading up to and during its institutional beginnings as a discipline in the late nineteenth and early twentieth centuries, Anthropology involved Western researchers studying human beings—typically people living in European, U.S., and Canadian colonies and occupied territories. These accounts not only erased the perspectives of non-Western people, but also exploited them for information, sometimes for the express purpose of advancing Western projects of colonial and imperial control and subjugation. At other times and to this day, the exploitation of anthropological research subjects, especially those who are Black, indigenous, and people of color, has been more implicit, but sometimes just as harmful.

As much as anthropology shaped the development of racial constructs, the development of racial constructs in Western society has also been instrumental in shaping anthropology. The same can be said of medicine, the science and practice of which also directly influenced the theoretical and methodological approaches of anthropology. Enlightenment-era medical physicians were among the pioneers of scientific racism which classified humans into categories that upheld the superiority of some groups of people, specifically White Europeans, over others. These racist beliefs, stemming from but also helping to rationalize the enslavement of Africans since the early 1500s, provided perceived ethical justifications for conducting repeated invasive medical experiments on Black bodies over centuries. Prominent U.S. physicians in the nineteenth-century, for example, believed that Black people possessed thicker skulls and less sensitive nervous systems. Such racist beliefs about pain tolerance permeated U.S. society and persisted well beyond the institution of slavery. Legacies of racism in medical experimentation, practice, and access to care continue to contribute to racial disparities in health around the world.

predetermined. On the contrary, critically attending to easily accessible if compelling tropes of scarcity, lack, and structural causality of suffering in Haiti allowed me to notice also possibility, change, and the creativity of survival in the wake of the epidemic. There is no denying that historical and ongoing trauma, misery, and catastrophes fragment subjects and communities in the world's first Black republic: indeed, the cholera epidemic is just one layered instance. But reducing Haitians to their suffering would erroneously forge their identity *as* abjection. It is not pain itself that makes collective meaning. Rather, as Glissant might argue, "trauma and its painful wake condition fragmentation without determining the kind of meanings that come out of fragment work" (Drabinski 2019, 98). It was this work engaged on the basis of and with fragmentation, this invention of "life at every bend of the road" (Glissant 1999, vii), that became most evident to me throughout my ethnographic research.

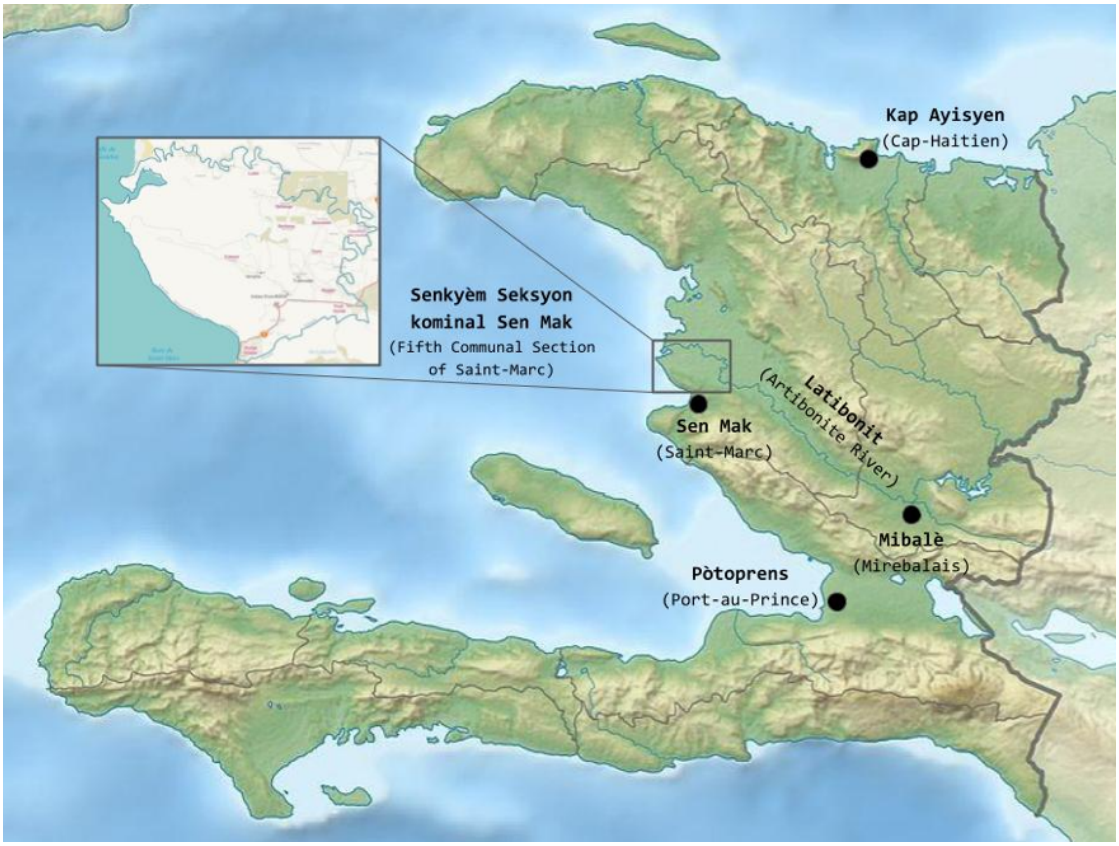

Figure 1-2: A map of Haiti, showing the primary sites of my fieldwork—Sen Mak (Saint-Marc) and Mibalè (Mirebalais)—as well as the locations of Pòtoprens (Port-au-Prince) and Kap Ayisyen (Cap-Haitien). The Latibonit (Artibonite River) flows from along the Haiti-Dominican border and empties into the Caribbean Sea north of Sen Mak. The insert highlights the Fifth Communal Section of Saint-Marc, bordered to its north and east by the Latibonit.

Between 2015-2019, my interviews, observations, and immersive experiences in Haiti's Artibonite and Center departments (administrative districts) located cholera as not simply an acute, severe disease, but rather an enduring rupture that, like all ruptures, requests adjustment from those affected—the most salient concerning the water people drink. What might a narrative reveal that follows not only the pain of the epidemic, but also the waters it has complicated? That asks why, when such a rupture occurs, do relations between humans and drinking-water shift or persist? Over the following chapters, I attempt to situate when, where, how these human-water disruptions occur, but also the ways in which people navigate their repair. Though the outbreak began with the leaking of pathogenic *V. cholerae* from a UN base and into the Latibonit River, the epidemic itself has no single origin from within the context of colonial repetitions in Haiti and globally. Water's origins likewise multiply in its hydrological webs of connection, circulation, and flux. An orientation toward the waters both mediating the epidemic and linking pathogen and host is thus a future orientation toward the waters with which people become, and not just suffer from. Embedded in the unfolding of Haiti's novel cholera epidemic—and the bodies of people it affected—are recurrences of coloniality as well as creative ways for collectively surviving them. To trace these processes, I begin from the site where vibrios, water, and humans meet: the semipermeable membranes of cells lining the intestinal wall.[9] In the context of cholera in Haiti, however, the confluence of vibrios, water, and humans occurs not only at the cellular membrane, but also at the semipermeable membranes of reverse osmosis systems increasingly used throughout the country in the wake of the outbreak. By following drinking-water, river water, diarrhea, rice-water, and reverse osmosis water, this dissertation explores how membranes—and the osmotic processes they mediate—trouble such alleged binaries as the natural and cultural, human and nonhuman, past and future, ordinary and exceptional, bodies and technology, death and (forms of) life.

[9] The single cell layer lining the intestinal wall is called the intestinal epithelium.

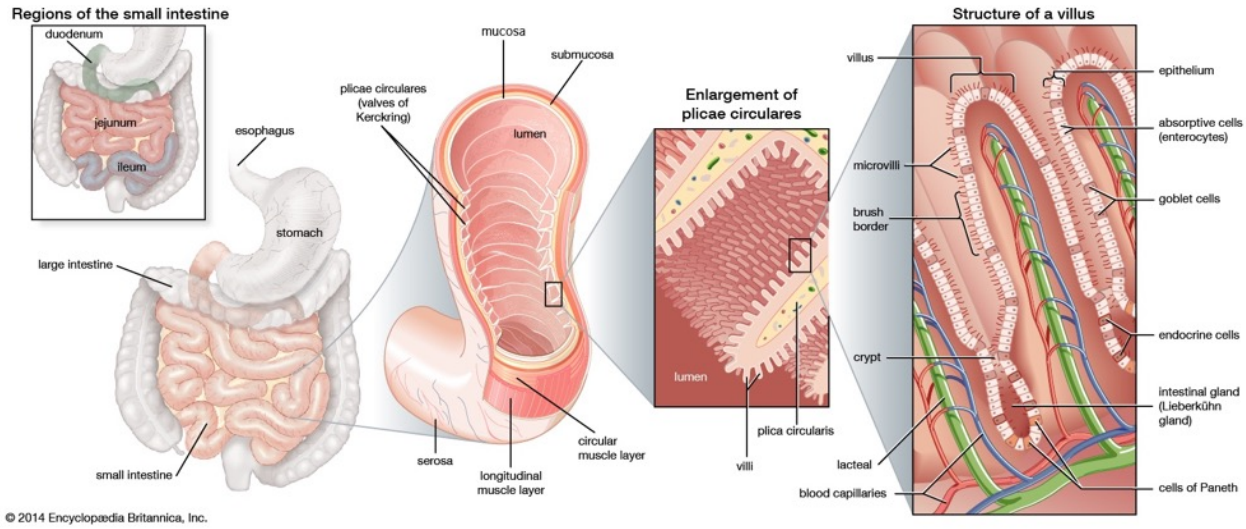

Figure 1-3: A diagram detailing the anatomical structures of the small bowel (Britannica 2014). The lining of this organ consists of a single cell layer called the intestinal epithelium.

1.1 - The Vitality of Water

Emmanuel and Ti Marie share a two-room home on the banks of the Latibonit River. "Ti" in Haitian Kreyòl means "little," but Emmanuel's mom—standing a lanky six feet tall—is anything but. Ti Marie inherited this land from her father, who died in the early 1990s when Emmanuel, now 37 years old, was a young boy. This same house where he grew up, made of wood, mud, plastered with mortar and painted blue, green, and yellow, is not the only house in the yard anymore: just parallel to it stands a simple, windowless concrete structure of about the same size, but its two doors remain locked. I watched Emmanuel enter only sporadically to gently capture a couple of the pigeons I could see (and hear) roosting on its rafters. He or his mom would then stew them with tomatoes or lalo (callaloo) and koupye (purslane) in the adjacent pantry made of imbricated scraps of corrugated iron. But the concrete house was not built for the pigeons. Years after Ti Marie's father, an oungan (Vodou priest), died, his descendants constructed this home for his spirit on the site where his tonèl, or open-air gathering space, once stood. Though destroyed by a hurricane shortly after his death, traces of the tonèl remained: a small pile of long wood beams stacked beside the blue-green house, a piece of rebar

sticking a foot out of the ground paces from the gated entrance to the lakou (a Kreyòl word that signifies the yard space of a group of dwellings and the kinship structures that order access to this space). Each morning, Emmanuel would pour onto the steel rod a small amount of black coffee—his grandfather's favorite drink.

Figure 1-4: A view of Emmanuel and Ti Marie's home and lakou. Photo by author, 2019.

While such acts of ancestral veneration form critical components of the Haitian Vodou religion, neither Emmanuel nor Ti Marie consider themselves religious adherents in the sense that entails regular worship gatherings and rituals in service of the lwa (the major divine beings of Vodou).[10] Indeed, Vodou involves much more than these practices alone, relating also to complex systems of medicinal and healing knowledge; spiritually significant art, dance, music, materials, and places; and (yes, at times violent) tactics for mediating inter-personal dynamics. Like the waters that permeate daily life, Vodou saturates Haiti's past, present, and future.

[10] Ti Marie intermittently attended a non-Catholic Christian service at a small rural church, but besides occasionally singing a hymn, rarely engaged in Christian activities at home, such as prayer, displaying crosses or images of Jesus Christ, evangelizing, etc.

"Vodou accompanies us. It makes us the people we are," said Emmanuel during one of our many interviews. "Vodou is our identity, and it's received a lot of blows as a result." In his seminal work, *Haiti: The Breached Citadel*, Patrick Bellegarde-Smith (1990, 11) writes that "[Vodou] represents the collective psyche of a nation it helped to create," referring to the ways Vodou ceremonies helped to organize the rebelling enslaved peoples of eighteenth-century Saint-Domingue and also equip them with a common faith and identity. A popular counter-narrative with origins among Whites and Christian fundamentalists, on the other hand, credits the success of Haiti's liberation from French colonial rule to "a pact to the devil" (Pat Robertson in CNN 2010).

Over the years of my research, I've spoken with numerous religious leaders and practitioners of Vodou about the significance of water to its pantheon, ritual practices, and philosophy. One prominent oungan in a rural area of the town of Mibalè, not far from the UN base where cholera started in central Haiti, described water as both elemental to and essential for Vodou: "Because water is the source of life, it becomes the source of Vodou. Nothing can happen in Vodou without water. It is the first drink for the lwa before anything else. Whatever spirit you want to invoke, you need water. Many of the lwa live in the water or come from the water. Without water, they cannot do their work. And if there is no water, they will cease to exist." Beyond figuring centrally in Vodou cosmology and creation narratives,[11] water is home to, sustenance for, and vital force of the gods.

The longest and most powerful waterway in Haiti (not only irrigating thousands of acres but also supplying the current for the country's hydroelectric plant), the Latibonit River is inhabited in countless places by lwa and water spirits (mèt dlo, Kreyòl for 'water master'). Unlike the lwa often associated with entire bodies of water and invocable throughout them, mèt dlo spirits are highly localized to a single watery place. "Although there's no mèt dlo around here," Emmanuel explained as the Latibonit flowed beyond the yard, "there's a place further upstream that has one. Sometimes many people gather, coming from Sen Mak and Pòtoprens, to hold huge ceremonies for the lwa or the mèt in the river, like one that recently happened next door."[12] The flow of Vodou adherents between cities and countryside is just one of many

[11] See Blier in Cosentino (1995, 80).
[12] Emmanuel and Ti Marie's yard is flanked on either side by the homes of an oungan (Vodou priest) and a manbo (Vodou priestess), both of whom live nearly fulltime in the nearby city of Sen Mak.

examples of how people constantly move—every day or over a lifetime—between allegedly fixed boundaries of 'urban' and 'rural'. Emmanuel himself moved as a young man first to Sen Mak and then to Pòtoprens to pursue his education. At a university in the capital, he studied human rights but earned his degree in accounting. But every two or three weeks, he'd return to the lakou, "feeling such nostalgia for this place" and loading up on fresh foods. Then, after the January 2010 earthquake that devastated much of Pòtoprens, he came back to the countryside for good. "People come from all over to make a request, or they come with a problem or conflict, and they believe that if they can address these with the mèt dlo then these problems can be resolved," continued Emmanuel. "There are some among them who say that their problems do indeed get resolved. And so, people come back to have a ceremony to thank the mèt because that which they asked for they received. Some groups gather only at certain times, other groups gather weekly. There are groups that didn't exist but come together because a mèt allowed them to exist."

I encountered one such group in the neighboring village. Almost an hour's walk to the nearest bend in the river, though, this mèt dlo does not inhabit the Latibonit but a certain location in a certain irrigation drainage canal—indeed, mèt dlo can be associated with any number of water sources, including springs. "Kristid is her name," explained Adeline, the manbo (Vodou priestess) to whom the mèt dlo appeared in a dream in 2014. "She lives in a pooling part of the canal and helps to heal people who come to her. She loves the people I bring to her, and in return she gives more people to the group. We built a peristyle where she resides and gather there each Monday—her day. We use filtered canal water to serve her. The drinking-water for those gathered, however, is separate. People dance and dance and become thirsty from sweating. Most people buy sachet water to drink," Manbo Adeline said, referring to the palm-sized plastic pouches of water purified by reverse osmosis. In her home, within sight of Kristid's peristyle, the manbo and her family also buy their drinking-water. "Life is health, and water keeps the body healthy," she added. "If you don't drink water, you won't have blood." Blood in Haiti refers not simply to the red-colored liquid coursing through bodily vessels, but also to a vital life force that affords strength, energy, and recovery, hence the many plant-based medicines that "give blood" ("bay san," in Kreyòl). In a materially poetic parallel, the deadliness of cholera, which entails significant amounts of fluid loss (hypovolemia), arises from its capacity to deplete the body's blood of its water.

Throughout the following chapters, I take these kinds of poetics seriously. In the epigraph, I shared a quote from a chapter that Ursula K. Le Guin penned shortly before her death, in which she underscores the moral stakes at hand, "We need the languages of both science and poetry to save us from merely stockpiling endless 'information' that fails to inform our ignorance or our irresponsibility" (2017, M16). Although Le Guin (2017) distinguishes between "poetry" and "science," I don't believe her intention is to endorse their separation or reify poetry as immaterial and science as a purely objective tradition. Indeed, she writes how "Descartes and the behavioralists *willfully* saw dogs as machines, without feeling" (Le Guin 2017, M16, emphasis added). Rather, she approaches both science and poetry in terms of the interpretive and pragmatic tools they offer; and singles out science in particular for the harms it has the capacity to perpetuate—but also its radical potential. "By replacing unfounded, willful opinion, science can increase moral sensitivity; by demonstrating and performing aesthetic order or beauty, poetry can move minds to the sense of fellowship that prevents careless usage and exploitation of our fellow beings, waste and cruelty" (Le Guin 2017, M16). Adjacently, numerous scholars have worked from another end to limn the poetry that suffuses scientific writing and practice by unpacking the (local, political, cultural) implications of metaphorical usage—from immunity (Martin 1994) to colonial obsessions with hygiene (Anderson 1995). Science, they argue, is full of poetics, and I don't think that Le Guin would disagree. Her project, on the other hand, is not quite so deconstructive; nor is mine. Instead, it involves "a great reach outward of the mind and imagination" (Le Guin 2017, M16) to see and convey the both/and rather than just an either/or.

I take Le Guin's charge to imply poetic "languages" in the broadest sense: languages of both seeing and interpreting. Poetry becomes a task as author and observer, as practice and process. "Poetry is the human language that can try to say what a tree or a rock or a river *is*, that is, to speak humbly *for it*, in both senses of the word 'for'. A poem can do so by relating the quality of an individual human relation to a thing, a rock or river or tree, or simply by describing the thing as truthfully as possible" (Le Guin 2017, M16, emphasis in original). In the example above, the vitality of water—for both humans and the spiritual forces that mediate their lives—unsettles biocentric logics that would otherwise reduce water to only the formulaic utility of a universal molecule. Instead, water is not simply an inert substance, but an element that activates, sustains, and connects. Importantly, not all waters are the same. Water relates to humans and

spirits as an essential source of vitalization—when that water is recognized as such. For Kristid, it's her canal water. For Manbo Adeline and an increasing number of Haitians since cholera began in 2010, it's reverse osmosis drinking-water.

There are degrees of specificity and relationality here that often go elided in dominant narratives about water set in or seen from places where the majority of people get their drinking-water from a household tap, such as the United States. Do you, tap-drinker, know the actual source of your water? While these narratives widely promote the idea that it shouldn't matter, the consequences of that assumption can be devastating: from deadly outbreaks of Legionnaire's disease (see Flint, MI 2014-2015) to PFAS pollution contaminating water systems in 49 U.S. states (EWG 2021).[13] Dominant conceptions of universal equivalence, whether regarding U.S.-based tap water or classifications of water consumption globally (tap water = modern ideal, bottled water = luxury, surface water = primitive, etc.), obfuscate not only historical and social constructions of those assumptions, but also dense networks of connection that source different waters (in both senses of the word "source"). Rather than reduce difference to sameness (which is in many ways a mechanism of domination), I strive to understand the relation among differences, or what Édouard Glissant (1997 [1990]) calls a "poetics of relation."

Glissant situates his theory of relation in and from a specifically Antillean context. Thinking and practicing relation constitute a necessary response to life after the abyssal experiences wrought by colonialism: enslavement, the Middle Passage, and the plantation. Responding to life after uprooting and surviving within the ongoing violence of coloniality involves continuously creative amalgamations and unfoldings, a flux of possibility open to new beginnings and to otherness that is more true to the world as process than linearity, fixed identities, or universality. In a filmed interview, Glissant elaborates on how, "in relation, elements don't blend just like that, don't lose themselves just like that. Each element can keep not just its autonomy but also its essential quality even as it accustoms itself to the essential qualities and differences of others" (K'a Yelema Productions 2010). Beyond perpetuating the same reductionism Glissant critiques, attempts to objectively explain the processes and practices of relationality emerge utterly distorted—and too often end up deploring the (Black) context for

[13] PFAS stands for "per- and polyfluoroalkyl substances," and are often called "forever chemicals" due to their potential to accumulate in the environment and in bodies (see Brackett 2020).

its mournful illegibility. Glissant insists that there exists the "right to opacity," the right to difference, a right held by Black Antilleans to withdraw from economies of visibility. It is precisely this irreducible opaqueness that keeps relation in motion, in an infinite and thus enduring process of becoming. Black life that goes on. We cannot rely on scientific explication alone (see Le Guin 2017). A poetic approach offers what is required to plumb the implications of relation, challenging us to "think outside the binary of the legible and illegible—to think, perhaps, of meaning as simultaneously declarative and precarious" (Drabinski 2019, 20).

1.2 - The Poetics of Osmosis

Water is elemental to life on Earth and to the planet itself, found not just flowing in oceans, glaciers, rivers, and aquifers but suspended in air, soil, rock, and organisms. Liquid freshwater, the nonsubstitutable substance that humans and other lifeforms need for hydrating their basic physiological processes, accounts for only 1% of the water covering about 70% of the Earth's surface. To absorb this water, however, poses yet another challenge. Have you ever wondered how fish drink? Or how plants like the rice in Emmanuel and Ti Marie's paddies soak in water from the ground? As humans, the mechanism of water absorption in animals may seem more intuitive: simply swallowing, right? But if that were the case, waterborne contaminants and excess minerals would also unselectively enter the bloodstream and trigger any number of problems in our bodies. In all of these cases, organisms absorb water through osmosis: the process by which water molecules move across a semipermeable membrane—an assemblage of lipid molecules and proteins—from an area of relatively low particle concentration to an area of higher particle concentration. Freshwater fish maintain saltier blood and body fluids than the water in which they swim (the opposite being true of saltwater fish), yielding an inward flow of water through their skin and gills. Plants draw water in from the soil by increasing the cell sap concentration in their roots. In humans, most water absorption happens in the small bowel. Cells lining the hollow intestinal space regulate their internal concentration of mineral ions in order to create suitable osmotic gradients across their membranes that promote the influx of water from the lumen—and the subsequent movement of water from the cell and into the bloodstream. It is

this very process that toxigenic *V. cholerae* disrupts. And in so doing radically disrupts the once life-sustaining relation between humans and the water they drink.

After a human host ingests enough of them, *V. cholerae* bacteria equipped with critical virulence factors attach to the cells lining the small bowel and secrete a molecule known as cholera toxin. As I describe in more detail in Chapter 5, this toxin gets taken into the cell and activates signaling pathways that effectively reverse the body's physiological osmotic process: infected cells suddenly begin pumping chloride ions into the intestinal lumen, which causes a passive efflux of sodium ions to balance the electrochemical gradient. With the concentration of elements rising on the outside of the cells' membranes, water follows. Morbid quantities of water get drawn from the body, spilling out as cholera's telltale symptom: profuse diarrhea that resembles rice-water.

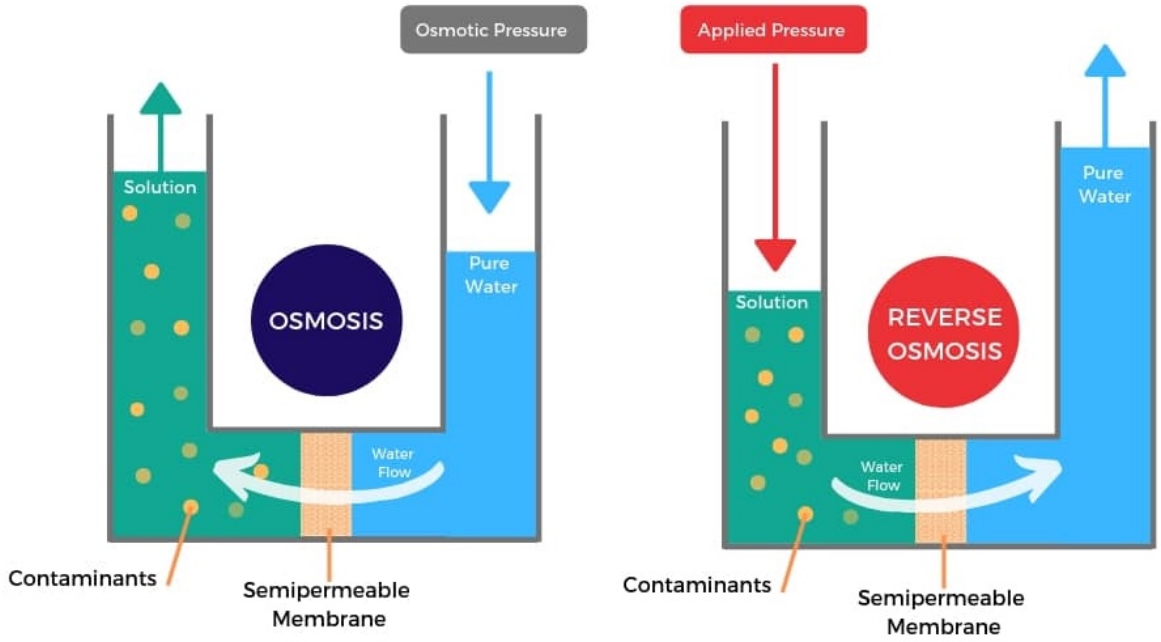

Figure 1-5: A diagram demonstrating how water flows across a semipermeable membrane in osmosis and reverse osmosis (Membracon, 2019).

As noted already, the treatment for cholera consists of rehydration therapy to replace both the water and electrolytes (effectively, salts) lost from diarrhea and vomiting. Preventing infection in the first place entails avoiding the ingestion of toxigenic *V. cholerae*, such as drinking purified or otherwise treated water. Different water treatment methods include

chlorination, filtration, UV radiation, ozonation (which infuses ozone into water), and reverse osmosis. Systems that purify water by reverse osmosis (RO) typically include several steps to filter out large particles and sediments before forcing the water across a manufactured semipermeable membrane to remove 90-99% of remaining contaminants. In other words, water molecules (and anything smaller than a water molecule) are forced against their osmotic gradient—from a more concentrated area to the less concentrated side. These molecules pass through the membrane, while larger particles such as bacteria, viruses, and common chemical contaminants get rejected (Glater 1998). Currently, RO technology stands as one of the most effective ways to purify water, both for drinking and industry. Interestingly, its application is rapidly expanding worldwide, especially in low and middle income countries, with the global market for RO membranes estimated to grow at a compounded annual growth rate of 15.7% between 2019 and 2024 (Lucintel 2021). Even amid the COVID-19 pandemic, analysts forecast that the market for residential RO systems will record a 6.3% compounded annual growth rate between 2020-2027 (Global Industry Analysts, Inc. 2021).

Over the past decade, one of the world's fastest-growing markets of reverse osmosis (RO) water has emerged in Haiti and continues to expand (Patrick et al. 2017). Since the cholera outbreak in 2010, RO water consumption has more than doubled in many parts of the country (World Bank 2018)—and in ways no longer exclusive to Haiti's major cities—as its production and sale proliferate across a multitude of small- and medium-sized enterprises. These businesses sell water treated by RO (often along with UV radiation and ozonation) by the refillable gallon, packaged in palm-sized sachets, or in water bottles. Throughout my fieldwork, vendors and consumers would describe profound transformations in Haiti's landscape of drinking-water consumption. Inherent in the expansion of RO water manufacturing and distribution are motivations for capital gain amid high demand, but, equivalently if not principally, also intentions of caring for communities' wellbeing. While a deeper dive into the fraught ethics of drinking-water commodification is beyond the scope of this dissertation, dismissing RO water production and sale for seeming contrary to the right to safe drinking-water ignores the increasingly significant—and generative—role it plays not only in Haiti but globally.[14] Instead, I

[14] The consumption of packaged water products, many of which contain water treated by RO, has particularly increased across low and middle income countries "where piped water availability is at best, unreliable and at worst, non-existent. Packaged water, but more so, sachet water, has filled the unmet need for an easy and accessible water source" (Vedachalam et al. 2017).

ask, how in the context of cholera are people enacting and embodying relationality with and through RO water's interdependence with the environment, technology, microbes, and membranes?

1.3 - Membrane Thinking

Following Water examines the ways in which the relationality of people and the water they drink shifts (though not evenly nor universally) in the wake of radical osmotic disruptions, by which I specifically mean cholera epidemics and reverse osmosis water technology—osmotic processes that can tear apart or drive together, sometimes simultaneously. What might a poetic approach tell us about the stakes of these mechanisms of osmosis, and the stake of their relation? While my interlocutors did not usually frame cholera or the expanding RO market in terms of their implicated "membranes," exploring this question calls for a heuristic and an appreciation of what I refer to as 'membrane thinking'. With membrane thinking I echo Glissant's (1997) theorization of shoreline thinking: that which became necessary for the enslaved and their descendants in the Caribbean. Those for whom, upon their arrival, there was no possibility of return. Catastrophic loss and unspeakable trauma drowned the past, leaving only fragments. Here, 'thinking' is not reduced to a mental action, but rather an embodied imaginative process of 'I can, therefore I am'. According to Glissant, thinking from the shoreline, creating relation from pain and fragments, became essential for making a world possible. For the scholar, thinking (here, contemplating) from the shoreline, therefore, is essential to and a starting point for understanding the Caribbean.

Haiti's first outbreak of cholera in 2010 marked its own kind of shoreline—or, rather, a repeated shoreline. Again, and in relation to the past, there is no possibility of return. The epidemic comprised a novel encounter between pathogenic *V. cholerae* and humans' intestines that tore people and families apart. The visceral trauma of cholera, whether experienced, witnessed, or both, has had people more than ever before 'thinking from membranes'—by which

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While this trend had already taken hold in various parts of the world well before 2010, including in West Africa (Stoler, Weeks, & Fink 2012), the 2018 World Bank report makes it very clear that the RO water market did not take off in Haiti until after 2010.

I mean not only how their guts respond to drinking-water but, for both entrepreneurs and consumers, also how membranes work in RO purification. Understanding these embodied experiences and practices of membrane thinking calls for a thinking from material and metaphorical membranes.

Water moves in the world flowing back and forth across membranes which act as semipermeable boundaries that mediate contact and condition the rate of water's fluid motion and flux. Osmosis, therefore, is always already a process and a practice of continuous change through commonality, relation, and the intermingling of elements—organismic, technological, moral, and otherwise. "Through interpermeation," Astrida Neimanis (2019, 95) reminds us, "all bodies are changed." Instead of focusing on the implications of porosity in interpermeation,[15] however, my project probes the *semi*-ness of the membrane permeability itself. Fundamental to a semipermeable membrane is its capacity for differentiation, or, more poetically, for discerning what should or should not pass. But it's a property of modulation that can be manipulated: turned inside-out, as in the case of cholera, or forced under pressure to purify water. Thinking with membranes doesn't end with interpermeation. Rather, it fosters critical questions about relations that condition the selective and temporal flow of interpermeating elements. Forces become palpable in water's flux across membranes. In this way, we can consider the ways osmosis serves as a moral register of permeability—the property by which certain things (molecules, ideas, people, etc.) are allowed in or kept out.

"I had a small business of selling RO water before the cholera epidemic started," recounted a prominent businessman in Sen Mak. "It was located in the next town, across the road from the market and very popular. When cholera happened, the demand for RO water skyrocketed because people didn't want to get sick [with cholera]. In response, I lowered my prices so that more people could afford safe water. But some vendors increased their prices, trying to take advantage of the high demand and make more money for themselves. Sure, that's business, but not during a cholera epidemic! They had no konsayns." 'Konsyans', as I explore more in the next chapter, carries dual, interrelated, and sometime simultaneous definitions, connoting awareness (in the intellectual or psychological sense) or a moral sense of right and

[15] For more on the permeability of bodies and their entanglements with environmental elements—and contaminants in particular—see Vanessa Agard-Jones's (2014) "Spray" in *Somatosphere*, and Liz Roberts's (2017) "What Gets Inside: Violent Entanglements and Toxic Boundaries in Mexico City" in *Cultural Anthropology*.

wrong (i.e., conscience, as might be understood in English). For RO water businesses, thinking from the membrane involves logics of both exclusion (of contaminants) and extraction (of capital). But without konsyans, these material membranes, operating both physically and figuratively, were made to also exclude people in need. Amid the cholera outbreak, the semipermeable flux of water through RO membranes became more morally contested than ever.

Membrane-thinking also allows us to take seriously claims of osmosis that don't necessarily square with Enlightenment rubrics of empirical truth. During an interview with Ti Marie, she explained the importance of drinking copious amounts of water with a logic I had heard from others as well. "When you consume a lot of water your spirit [nanm] also drinks, because water draws salt in. If a person doesn't drink enough water, their urine becomes concentrated with the salt they weren't able to absorb, which weakens the spirit." In Haiti, nanm refers to the "spirit of the flesh that allows each cell to function" (Davis 1986, 185) or "the animating force of the body" (Brown 2006, 8). Based on the empirical biophysics of osmosis discussed earlier, however, it is a relatively higher concentration of salt that pulls water in, not the other way around.

Instead of dismissing Ti Marie's osmotic reasoning as scientifically backwards, thinking from the membrane helps us to recognize the relational poetics of this reversed osmosis—and why it matters. Salt carries its own embodied poetics in Haiti (and throughout the Black Caribbean), precipitating from material and metaphorical relations that entangle the brutality of enslavement, the forced migration from Africa, the healing effects of seawater, the spark of imagination and political consciousness, the revitalization of spiritual energies, and other ways. The taste of salt, for example, liberates the body of a 'cadaver zonbi' ('zonbi kò kadav') by reawakening them from their living death (Depestre 1971). In an essay presaging her forthcoming book, Edwidge Danticat (2019) shares, "salt is for me the source of all forceful beginnings and the source of all freedom." What Ti Marie's reversed osmosis emphasizes is that water consumption, therefore, is not simply a matter of hydrating the corporeal body. Rather, drinking water simultaneously fuels the influx of the indispensable ingredient for the activation and potency of the human soul-spirit: salt. In between is the visceral membrane mediating their flows, responsive to the needs of both body and spirit. Its actions demonstrate a radical embodiment, whereby the konsyans (conscious awareness and sense of right and wrong) traditionally attributed to the mind is (also) grounded in the body.

In these examples are three ways in which people in Haiti are 'thinking' from membranes: 1) in relation to the situated, visceral trauma of the cholera epidemic; 2) in the production and consumption of RO water; and 3) in navigating their corporeal and spiritual needs. As with shoreline thinking, this membrane 'thinking' suggests embodied imaginative processes that, here, begin at osmotic disturbances—cholera diarrhea, pressurized RO purification, and the internal balance of salt and water—to make worlds possible. In studying these worlds, thinking from membranes helps us to 1) recognize their relation, 2) identify social, political, and ecological forces conditioning the flux of elements across physical and figurative membranes, and 3) understand the interdependent moral and material enactments that body forth a relational poetics of osmosis, such as konsyans.

1.4 - Practice and Process

Informing this thesis are data from four IRB-approved fieldwork studies I conducted to better understand Haiti's burgeoning water market in the wake of the cholera epidemic.[16] For over 12 months between 2015-2019, I lived primarily in the coastal city of Sen Mak and its rural rice-farming districts located along the banks of the Latibonit, and also spent several months in Mibalè, a prominent crossroads town in Haiti's central region. As a student of medicine and anthropology, I studied water consumption and contamination, bought water and planted rice, conducted quantitative household surveys and individual Photovoice projects, interviewed clinicians and entrepreneurs, and observed water businesses and cholera treatment centers.

Traveling to and from Sen Mak, Mibalè, and elsewhere over the course of five years—and longer, since I began visiting Haiti in 2008—afforded a gradually expanding awareness, if a fragmented experience. Like osmotic processes, my engagement and presence in Haiti is always already an interpermeation: a fraught, generative, vulnerable unfolding of multidirectional change. No one's 'best efforts' can prevent the disruptive effects and liabilities of encounter. As Ruth Behar (1996, 25) reminds us anthropologists, "We…leave behind our own trail of longings,

[16] IRB approval was obtained for each study from the University of Michigan (Ann Arbor, MI, USA), Zanmi Lasante (Mirebalais, Haiti), and twice (2015 and 2017) also from the Brigham and Women's Hospital (Boston, MA, USA).

desires, and unfulfilled expectations in those upon whom we descend." Even though I pursued research approved by a Haitian institution or engaged with communities to which I had been invited, neither that institution nor my individual contacts can speak for everyone. It was always my choice to travel to Haiti, and my ability to leave. Interpersonal relationships are complicated and not infrequently hazardous for everyone involved, given the imbrications of power, privilege, and personality. Each time I'm in Haiti, my positionality as a white, Mexican-American, female-bodied, queer graduate student with a U.S. passport, an able body, and more financial income and stability than most of my interlocutors ripples from and reflects back toward me in a local moral world I can appreciate but will never fully grasp or embody. I invariably made and make mistakes, some of which are readily pointed out to me. The work of repairing transgressions—by the forces and entities that implicate me, and my own—entails the lifelong work of care and konsyans. And it is to this work I'm dedicated, reluctant as an 'authority' as I might be.

Since the Haiti cholera epidemic began in October 2010, I've attempted to center care and konsyans (conscious awareness and sense of right and wrong) in my research methodology, practice, and praxis—perhaps that's why I've returned to Haiti nearly 20 times since then. Fieldwork studies, however, inevitably get derailed, take longer than anticipated, and rarely align with expected goals. At best, they surprise and humble you. My 2019 National Science Foundation-funded doctoral dissertation project,[17] which built on three pre-candidate qualitative studies between 2015-2018, integrated ethnographic interviews and participant-observation with archival research,[18] water quality analysis, and two participant-based studies: a household "water diary" survey and a photovoice project, which I describe in more detail below. I refer to these studies as "participant-based" so as to distinguish them from participatory action research, which involves an approach to which I could only aspire at this time.

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[17] National Science Foundation Cultural Anthropology Doctoral Dissertation Improvement Grant (Award Number: 1851418). *Following Water* was supported by several other grants and fellowships. Funding for pre-candidate dissertation research between 2015-2018 was provided by the University of Michigan Medical Scientist Training Program, Department of Anthropology, Center for Latin American and Caribbean Studies, and Rackham Graduate School. Between 2019-2021, doctoral dissertation research and writing was also supported by a Phi Kappa Phi Dissertation Fellowship and the University of Michigan Medical Scientist Training Program, Rackham Graduate School, Citizen Science Fellows Program, Dow Sustainability Fellows Program, Institute for the Humanities Fellowship Program, and an Mcubed-funded project led by Jackie Goodrich, Natalie Sampson, and Justin Schell.

[18] Because it was impossible for me to visit Pòtoprens-based archival institutions in 2019, my archival research largely drew from the digital collections of the John Carter Brown Library and the Duke University Radio Haiti Archive as well as primary sources accessed via Google Scholar.

Over the course of 2019, I conducted semi-structured interviews in Sen Mak and the Fifth Section with 90 adult participants of varying ages, genders, socioeconomic statuses, occupations, and faiths, both in the general public and the professional sector. These interviews focused on questions spanning their personal narratives, their experiences of cholera in Sen Mak, the history of water infrastructure in the area, the water security of urban and rural households, the everyday ways that individuals access clean water, the burgeoning water market, and how cholera has impacted on water access and water quality. Many more informal conversations enriched these data with details of people's lived experiences, especially as the months unfolded, which I documented in my fieldnotes with their permission.

Mardochée Noël, a recently graduated nursing student, assisted me with the household "water diary" study and water quality testing. We randomly selected 25 zones (neighborhoods) in the rural Fifth Section and 25 zones in the city of Sen Mak. In each zone, we randomly selected one household. Once demographic data was collected at each participating household, an adult resident was instructed on how to complete a water diary. After seven days, we returned to collect the diaries and conducted brief interviews about household water use and participants' experience of keeping a water diary. During this research arm, we also began testing ten urban and ten rural drinking-water sources for the presence of coliform bacteria.

Near the end of my 2019 fieldwork, I recruited 20 adults (ten city-based and ten in the countryside) to participate in a week-long photovoice study—a participant-based research method through which individuals use photography and stories about their photos to identify and represent issues of importance to them in their everyday lives (Wang & Burris 1997). I asked each photovoice participant to visually document their responses to several questions related to water using a digital camera: 1) Why is water important to you? 2) How do you access the water you drink? and 3) Why do people get sick from cholera? After collecting and reviewing their images, I then conducted semi-structured interviews with each participant using the photographs as prompts for discussion. Throughout the following chapters, I include some of these images to accompany the narratives of cholera and water my participants shared.

Unfortunately, due to intensifying social and political unrest compounded by widespread gasoline shortages that paralyzed the nation and my fieldwork, I left Haiti at the end of September 2019 after seventh months of variably interrupted research. My plans to live and research in Haiti throughout 2019 were upended by a number roadblocks, some figurative but

physical ones abounded as well. Following steep fuel tax hikes in July 2018, Haitian filmmaker and writer Gilbert Mirambeau Jr. posted a hashtagged tweet in August 2018 asking what happened to the PetroCaribe money that Haiti received from Venezuela's discounted oil program (Charles 2018). His question soon sparked a popular movement against government corruption and embezzlement, with "#KotKòbPetwoKaribea" ("#WheresthePetroCaribeMoney") demonstrations sweeping the nation and social media. The rapidly burgeoning movement, however, became quickly enmeshed with broader calls and arguably nefarious attempts for some kind of justice.

Amid waves of demonstrations against President Jovenel Moïse, intensifying politician-sponsored gang and police violence, and increased costs of living, a scathing report from the court investigating the PetroCaribe scandal ignited the first of several major country-wide protest lockdowns in February 2019—the month I was intending to begin my fieldwork. I arrived the following month, but the heightened tensions in Haiti continued. "I feel like it hasn't been this bad since the time of Aristide [in the 1990s]," a friend later commented in June while she, her family, and I were stuck for several days at their home in Kap Ayisyen as tires burned in the streets in this city and many others.[19] She was referring to the post-1994 period of nationwide ensekirite that followed the reinstatement of President Aristide, who had been ousted and forced into exile after a military coup d'état in 1991.[20] Ensekirite, as Erica James (2008, 135-137) writes, describes the social vulnerability and embodied experiences of "routinized ruptures" that accompany the crisis of the Haitian state, organized violence, and economic uncertainty both acute and chronic. Though it made for a fragmented fieldwork year, that I could depart from the fluctuating unrest, political turbulence, massive fuel shortages, and highway roadblocks multiple times drove home my many privileges, at the same time as it exposed the staggering inequities millions of Haitians are forced to endure.

Throughout *Following Water*, I draw on the narratives of several individuals in particular. The next chapter takes us to the central Haiti town of Mibalè, where I juxtapose my encounters

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[19] Many people in Haiti felt similarly. As Jacqueline Charles (2019) quotes a 47 year-old man named Dennis, "'I went through the ouster of [Jean-Bertrand] Aristide in 2004 and the earthquake in 2010. […] I've never seen Haiti in the condition that it's currently in.'"

[20] "In the post-1994 era of 'democracy'," writes James 2008, 136), "ensekirite refers to the proliferation of political, criminal, and gang violence—and more recently, kidnappings—that has taken on the egregious style of the coup years. No one is immune. The Haitian elite, the middle-class intellectuals, the clergy, the poor, and their expatriate counterparts are all possible targets in both urban and rural areas.

and interviews with two oungan (Vodou priests) between 2017-2018 to expand upon the radical embodiment of konsyans in relation to the waters people drink. I also introduce Sonson, a mototaxi driver in Mibalè whose story forms a through line of this project, even when he's absent. The narratives and Photovoice data of Ti Marie and, especially, Emmanuel return throughout the dissertation to situate the cholera epidemic and burgeoning RO water consumption in the historical, ecological, social, and religious context of Haiti's rural Lower Artibonite Valley. Though I spoke with and learned from numerous health professionals over the years, the accounts of Nurse Etienne, who was on the front line of the first wave of cholera patients in Sen Mak, feature most prominently. Also living in Sen Mak is Dianne, a student in her 20s whom I've known since 2015. In the following chapters, data from conversations and Photovoice interviews with Dianne form launching points for exploring human-water relationality. Up the road from Dianne's home are two large RO water companies: Eau Immaculée (French for "Pristine Water") and Les Industries Kayimit, S.A. (IKSA), the maker of the popular packaged water and ice brand, Blue Heaven. While I interviewed people at 22 RO water enterprises (of various scales) in the Center, North, and Artibonite departments of Haiti between 2015-2019, my interviews with managers at Eau Immaculée and IKSA—along with extensive observational data from the Blue Heaven factory in particular—ground much of my discussion of RO water products, production, and political ecology in the wake of the cholera epidemic. As I follow water through these central narratives, I also highlight the voices, practices, and stories of various other participants in my household water consumption and Photovoice studies, in addition to the results of my water quality tests of drinking-water sources in Sen Mak and the Fifth Section. Supplying critical historical context throughout this project are documents and recordings from digital archives, including the Radio Haiti Archive at Duke University. That I was able to gather and make anything of the fragments of my fieldwork is thanks to the generosity of my participants and the steadfastness of my friends and colleagues in Haiti.

Lastly, a note on the ways names and words in Haitian Kreyòl appear in this dissertation. In order to respect and protect the privacy of those whose lived experiences are shared within these pages, I've changed their names to pseudonyms. I do use people's real names, though, when quoting or referring to individuals whose identities are known across wide publics, such as presidents, politicians, and prominent American businessmen. I also use the real names of the

main water corporations and brands in Haiti discussed in these chapters: Eau Immaculée, IKSA, Blue Heaven, Culligan, and the Caribbean Bottling Company. Not only have these entities and products been made readily public themselves, but their names (and the languages used for them) hold a great deal of symbolic significance as well. As is already clear, I have not obscured the names or locations of the primary locations of my research during 2015-2019: Mibalè (Mirebalais), Sen Mak (Saint-Marc), and the Fifth Communal Section (Senkyèm Seksyon kominal) of Sen Mak. The geographic specificity of these places, particularly as they relate to the course of the Latibonit (Artibonite) River figure critically in my project. I use the Kreyòl spelling of these place names—besides when referring to the Fifth Section—because this is how most people I met spoke and wrote them. As is also already clear, I have chosen not to italicize words written in Kreyòl.[21] Following a growing movement largely led by scholars from the Global South and its diasporas, I recognize that highlighting certain non-English words as different participates in the colonial project of 'othering'. Italicized words are made to appear foreign and exotic relative to those that have a rightful place in the text, bolstering the English language as superior while ignoring the violent histories whereby English has been (en)forced onto colonized peoples.[22]

1.5 - Following Water

Permeating my dissertation—from its theoretical underpinnings to its methodological approach to its composition—is a profound indebtedness to Black Caribbean philosophers, including Michel-Rolph Trouillot, Édouard Glissant, Sylvia Wynter, Frantz Fanon, and others. The remaining chapters are meant to proceed in a way something like water, in undulations of ethnographic description, currents of historical context, and swells of critical analysis. Each builds on the other, coalescing as though tributaries into a fuller river. These interdependent flows carry us through examinations of the ways in which relations between humans and the waters they drink shift or persist amid the rupture of the Haiti cholera epidemic. I organize the

[21] Unless otherwise stated, all translations from Haitian Kreyòl to English are my own.
[22] For more, see Khairani Barokka's (2020) "The Case Against Italicizing 'Foreign' Words" in *Catapult*, and Jumoke Verissimo's (2019) "On the Politics of Italics" in *Literary Hub*.

subsequent chapters by the waters they follow: drinking-water, river, rice-water, diarrhea, and reverse osmosis water. But rather than remain on their surfaces, I dive into the connections among them and their human and nonhuman entanglements to plumb the social, historical, political, ecological, and non-secular implications of their osmotic poetics. In effect, *Following Water* channels a decolonial,[23] phenomenological, new materialist, political-ecological, empirical, post-structural approach to nuance interpretations of the structural violence of epidemic cholera in Haiti. Doing so helps us to understand the cholera outbreak and the RO water market burgeoning in its wake as occurrences rather than just outcomes: as lived experiences that certain conditions afforded; as lived experiences bearing repetitions which continue to condition bodies and bacteria, morality and membranes. Following water draws out the relations among these conditions/conditionings while drawing readers into awareness of their/our mutual stakes.

DRINKING-WATER. In the next chapter, the narratives of two oungan (Vodou priests) in Mibalè and Nurse Etienne in Sen Mak form a membrane-thinking substrate for situating the osmotic disruptions of cholera in Haiti. In late 2010, the disease—novel in this setting—was also accompanied by a new sickness: 'bad' cholera, or that which was sent by sorcery. Whether bad or 'natural', numerous participants emphasized, though, cholera is always caused by a mikwòb (microbe) and therefore demands that patients seek clinical treatment. But if that infection coincides with a sent sickness, the individual will surely perish if not also treated by an oungan or manbo (Vodou priestess). These biologies of cholera, in other words, are not just situated in social and material entanglements, but in religious ones as well. People navigate them, I propose, through enactments of collective visceral konsyans. In this chapter, I theorize visceral konsyans as a duality of awareness—external and internal, collective and individual—that bodies forth from the gut. Individual visceral konsyans manifests in the ways people become used to, "abitye," consuming particular waters, such that drinking anything but makes them feel ill. How is the situated viscerality of abitye mapping onto but also challenging categories of 'good' and 'raw'/'untreated' drinking-water? The lived experience of visceral encounters—with cholera microbes or zonbi, with RO water or otherwise—suggest a blended more-than-human embodiment by which people become with the waters they drink.

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[23] See Mignolo & Walsh (2018).

RIVER. Chapter 3 turns its focus to the RO water market burgeoning throughout Haiti in cholera's wake. In order to understand how this rapidly expanding market is occurring, we must also trace when and where the epidemic unfolded. And so, I follow the waterways that became complicated by the introduction of pathogenic *V. cholerae*, leaking from United Nations military base in central Haiti and spreading downstream toward Sen Mak and the Fifth Section. However, in tracing the river and the outbreak, physically and narratively, origins multiply, temporality collapses, and events repeat. With water serving as a repository for lives, loss, and desire, RO drinking-water in particular becomes filled with a want to safeguard health. Received justifications for the rapid shift toward RO water consumption simplify increased demand to lack (of infrastructure, of government response capacity), while notions about what water technology is 'appropriate' in Haiti make invisible the actual ways that people are navigating their drinking-water needs. Both work to shield Haiti from its integration into a world of membrane technology many Haitians are actively using, mask historical repetitions of coloniality, and disavow Haitians' agentive capacity to (re)create their waterworlds through forces of desire.

RICE-WATER. The question of *why* the osmotic disruptions of epidemic cholera and the proliferation of RO water commodities came about in Haiti is the focus of Chapter 4. But rather than reduce these remarkable events to Haiti's 'exceptionalism', I take its exceptionalism as an object of study, situated in the context of one of the regions hardest hit by the outbreak: the Lower Artibonite Valley, where the relational poetics of cholera's telltale rice-water diarrhea involve the material, political, and economic entanglements of rice, water, and humans. By tracing their historically contingent relationality, this chapter reveals the mechanisms by which Haiti was rendered a transnational 'state of exception' during the U.S. Occupation, 1915-1934 (with control of Haiti eventually outsourced to the UN). As floods of neoliberal encroachment ensued over later decades, Haiti's environment grew increasingly hostile to life. Following rice and water shows how the making of Haiti's perpetual colonial state of exception(alism) makes ordinary a disaster like the 2010 cholera outbreak and made available the commodification of drinking-water.

DIARRHEA. Cholera complicates not only waterways, but embodied waters as well. To investigate how, and why over time some bodies became complicated and not others, the fifth chapter turns to the microbe itself, pathogenic *V. cholerae*. In the biomedical model of cholera, toxigenic vibrios induce an efflux of ions kept concentrated within the cells lining the gut,

causing the normal physiological flow of water to reverse—by osmosis—and leave the body as profuse amounts of diarrhea. A hypervirulent strain of *V. cholerae* behind the 2010 epidemic in Haiti is part of the third wave of an ongoing seventh pandemic of cholera, which started in 1961 (Hu et al. 2016). This chapter explores not just how these bacteria developed the capacity to provoke such deadly pathology, but also how the material and social environment conditions the activation of their pathogenic properties. To what extent are the situated biologies of cholera, including biomedical ways of knowing them, re-crafted by local and global (necro)political interests? I argue that 'atmospheric' forces of anti-Black racism suffuse the inseparably entangled environments and epistemologies of coloniality, languaging biological phenomena into existence and structuring inequities in vulnerability and death.

REVERSE OSMOSIS WATER. The cholera epidemic ruptured bodies, communities, temporality, and human-water relation in Haiti. Yet, the long repeated disaster(s) of coloniality have made the 'fragment work' of creativity and survival central to Antillanité ways of becoming (Glissant 1996). The burgeoning production of RO water in the wake of cholera does not just offer an example of this kind of 'fragment work'. It also is also working in Haiti in part because it, too, involves fragmented processes. Though membrane technology was developed in the United States, we cannot rely on Western narratives of (water) purity to understand how this same technology is being used elsewhere in the world. In Chapter Six, I investigate the extent to which the context of Haiti changes RO technology, and the extent to which it is changing people, practices, and processes in Haiti (specifically, in Sen Mak). By following the fragmented and contingent streams of water produced by reverse osmosis, this chapter considers the ways in which both Haiti's waterworld and membrane technology are allowing an RO water market to thrive in the wake of the cholera epidemic.

1.6 - Fragment: Planting Rice

Though I had known Emmanuel since 2015, this was the first time that I would be staying with him and his mom at their home beside the Latibonit River. Tall cinderblock walls surrounding the neighboring yards on both sides appear to run together along the curved road's edge, making it easy to miss the front gate when approaching their habitation on the road running

parallel the drainage canal. Whether on foot, riding a moto taxi, driving a car, or pedaling a bicycle, I must do it by feel, gauging the distance I've traveled from the bridge by the Catholic primary school. Shortly after I've passed the two concrete Vodou crosses opposite one another on the banks of the canal, a gate made of bright metal sheets will flash in the sunlight and a "living fence" of rakèt, a succulent-like cactus growing almost five feet high (also called kâdélab in Mintz 1962), will become visible under the shade of an enormous mango tree. I look into the yard before I enter. Eventually, the family of yellow-colored dogs sharing the habitation recognizes me enough so that Emmanuel, Ti Marie, and I only have to ask them to shush once.

Emmanuel rejects the notion of building a wall made of cinderblocks around his home. Such barriers have no place among the peyizan (rural planters), he argues.[24] "People think that concrete walls offer security, but this is a blòf [bluff]. Really, they're just status symbols. Cinderblocks are expensive and building an entire wall takes a lot of money. Not everyone can afford to have one. But now most people desire one because they want to show that they're rich. They want to show that they're modern. Walls disconnect them from the community. No one can see inside your yard, and you can't watch people pass by. What do people do inside their walls? Just sit there alone and bored. Disconnected."

The kind of farmer who approaches with both pleasure and politics the conservation of ancestral knowledge of and relationships with the land and its native cultivars, Emmanuel remains unconvinced by the trappings of modernity. Upon returning to his maternal home after the January 2010 earthquake in Pòtoprens (Port-au-Prince), he began mobilizing his fellow peyizan into a small autonomous collective where people could engage in consciousness-raising and collaborative efforts. "We don't believe in leaders here," he once said. "But I help to coordinate the group."

Knowing that I already had some experience doing so and that I was eager to 'participate' in their daily lives, Emmanuel invited me to assist him and Ti Marie with planting rice in their paddies shortly after I arrived. I had first learned how to plant rice in 2015 at the invitation of friends in the neighboring village and would accompany them into the fields each subsequent visit. The sight of a blan, back bent to press small bunches of young rice plants into the shin-deep

[24] 'Peyizan' in Haitian Kreyòl translates literally to 'peasant' in English, but a more accurate interpretation might be 'rural planter' or 'small-scale farmer'. The peyizan in Haiti form collective identity and have a long history of class solidarity.

mud was always startling to passers-by—besides those who knew me. Some reacted in amusement and wonder. Others in consternation. By participating, I only ever hoped to gain a better sense of the lived experiences of Haiti's farmers, lend a hand with the grueling task of planting rice, and demonstrate solidarity with the too often undervalued and stigmatized labor of the peyizan. But it was impossible to do so without summoning unwanted and sometimes critical attention on whomever I was 'helping'. Fortunately, I was quite decent at the job.

Emmanuel and I left the gate by 7am; Ti Marie had already gone ahead. Just down the road, we crossed the bridge over the canal and passed through someone's yard that borders the rice fields. Emmanuel softly let me know it was time to remove our sandals. In we waded through the watery ooze of a not-yet-planted paddy to reach the raised narrow paths made of dried mud, roots, and weeds. Along the way to our work, Emmanuel pointed out another one of his plots, thriving thickly with dark green rice plants aligned in perfect rows. "Which rice is this?" I asked.

"Lakret (La Crête)," he replied.

"Why lakret and not another variety?"

"Two reasons," said Emmanuel. "Not only is it a good-tasting rice, but it is also a part of our identity. Lakret is a Haitian rice that is cultivated and reproduced here. The seeds are not imported. I get mine from a supplier outside of Sen Mak. This is not the original lakret that we once grew, however, because they had to make a new variety after the old one was destroyed by pests. But it's similar."

Figure 1-6: One of the two paddies Emmanuel, Ti Marie, Stanley, and I planted with rice. Photo by author, 2019.

By the time we arrived at the other paddies, Ti Marie had already half-cleared one of them, raking up weeds and sticks from the muddy water with her hands. Several piles of young rice plants lay in the rectangular plot, ready to be replanted. The cultivation method used by most Haitian rice farmers entails first sowing seed in a small area during a certain time of the year; letting these grow for about four weeks; and then replanting small bundles of sprouted rice bulbs about one to two feet apart in a larger paddy. The quantity and timing of irrigation inflow and drainage involves just as much precision to ensure a successful crop. Peyizan may invest significant amounts of their scarce finances into agricultural inputs (seeds, fertilizer, tiller rental, transportation, etc.) only to find them evaporate from water shortages or drown in puddles of stagnant flow. Palpable is the neglect of the government agency tasked with the 'development' of the Artibonite Valley and the management of this irrigation infrastructure.

Emmanuel pointed me to an area in the plot where a few rice plants were already scattered, some blown loose from the mud and floating on the water. This was not Emmanuel's handiwork; I could tell that much. I stepped into the ooze, picked up a fist full of plants, and began confidently sticking them past the water layer and just deep enough into the mud, trying to adhere to a pattern of rows other friends had taught me when I helped in their paddies during previous years. A few minutes in, Emmanuel waded over from his section, and I paused. "Each rice variety is different," he said gently. "Some like to be planted closer together, and others need more space for their roots. This rice, lakret, likes more space between them. We must respect what they demand of us so that they can grow well. Try planting in straight lines, like this," swiftly starting a few rows for me to follow.

Central to Emmanuel's agricultural practice is a konsyans responsive and responsible to the ecology of rice—and the many other crops he cultivates and animals he raises. Reflecting back at me in my cramped patch of lakret was none other than my internalized coloniality: yet another blan in Haiti assuming competence after little actual experience in a subject about which they do not know what they don't know. I approached the paddy with a story I was telling myself about rice-planting, just as I had been inclined to do about the Haiti cholera epidemic. Not all rice varieties grow the same way; their cultivation depends on an awareness to their different (osmotic) needs. Limiting the unfolding of cholera in Haiti to tropes of violence, violation, and despair—critical as they are to the story—similarly skews toward assumptions of sameness and

passivity. Assumptions often wielded by those safely enough distanced from the violence, violation, and despair about which they/we write. This dissertation attempts and calls for something more, because the story asking to be told is something more: one also of growth, change, and agency; of the contingencies of watery entanglements; of the forces mediating relation in the poetics of osmosis.

On his way home from finishing his own paddies, Stanley joined Ti Marie, Emmanuel, and me to help lighten the load. Once the work was completed several hours later, we all trekked back to Emmanuel and Ti Marie's habitation where, after rinsing our feet and hands of mud, we ate breakfast and gulped down copious amounts of RO water to rehydrate our bodies and replenish our souls.

1.7 - Before the End

Little did we know, as we shared fresh bread, avocado, and peanut butter across the table, that we had been planting rice in the midst of what in months would be declared Haiti's first cholera-free year since 2010. On January 23, 2020, the Pan American Health Organization (PAHO) announced that "the cholera outbreak in Haiti that began in October 2010, affecting over 800,000 people and killing 9,792, has been stopped in its tracks, with the country reaching 1-year free of confirmed cases this week." According to this report, the last laboratory-confirmed case of cholera occurred in a town 20 miles north of Sen Mak: a young boy of less than five-years-old had fallen ill on January 24, 2019 and recovered shortly thereafter at the hospital. By the World Health Organization's guidelines, Haiti must remain cholera-free for three consecutive years in order for the outbreak to be declared officially over. Not just "stopped in its tracks," but eliminated.

Many experts rightfully credit this milestone to the concerted efforts led by the Haitian Ministry of Health, PAHO, and other partner agencies and the tireless work of Haitian clinicians and community health workers in both treating cholera and preventing its transmission. Over nine years, approaches to mitigating cholera's spread focused on hygiene promotion, vaccination campaigns, epidemiological surveillance, distributing water treatment products, and—perhaps most challenging of all—improving long-term water and sanitation infrastructure (Francois

2020). These combined efforts, it seems, have paid off. And yet, a number of those long-engaged in these endeavors are not entirely convinced of the validity of PAHO's claim, citing critical weaknesses in Haiti's cholera surveillance system made critically weaker during a time of deep sociopolitical unrest coupled with the global SARS-CoV-2 pandemic (Lee et al. 2020_b). During the first eight months of 2020, for example, the laboratory in Sen Mak's main hospital "did only 183 stool sample cultures for a geographical region with a population of 3.8 million people" (Lee et al. 2020_b). Clearly, declarations of cholera elimination—by international organizations largely swayed by the United States—are dubious at best when cholera cases aren't being counted.

Still, cholera transmission has undeniably diminished since the early years of the epidemic. In spite of the implementation of elimination strategies to the tune of tens of millions of dollars, however, durable and accessible water, sanitation, and hygiene infrastructure remains sparse (Francois 2020); surveillance systems deficient (Lee et al. 2020_b); vaccination campaigns using orally administered killed *V. cholerae* strains, though successful, have been geographically limited (Lee et al. 2020_a); and the regular use of household water treatment products rare (Ritter et al. 2020). Some experts postulate that the substantial decrease in cholera incidence may indicate widespread immunity to the pathogen (Lee et al. 2020_a) or natural changes in *V. cholerae* environmental reservoirs (Rebaudet et al. 2020). Very few among these dominant narratives, however, investigate or even consider the actions that Haitians have been and continue to take on behalf of themselves to prevent catching cholera. Rare if not completely absent is mention of the RO drinking-water market. Instead, researchers often assume that "changes to risk factors like improved access to water…remained constant" (Lee et al. 2020_a). Static, if not worsening—much like dominant narratives about Haiti as a whole. Blending the empirical with the poetic, *Following Water* attempts to recuperate the agency, creativity, fragment work, and processes of change too often disavowed of Haitians. And, in doing so, offers an alternative responsive and responsible to the everyday lived experiences of people in Haiti, particularly those of the peasant, poor, and middle classes whose stories unfold in this and the chapters to come.

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Chapter 2 Drinking-Water

Becoming with Water: Situating Embodied Awareness of More-than-human Entanglements

Prelude: The Mattering of Awareness

It was Sonson's second night in prison. I was at Stéphanie's house, one of Sonson's best friends, for a previously scheduled interview with Ricardo, a prominent oungan (Vodou priest) in the Mibalè area and Stéphanie's boyfriend, but we spent the first part of the evening grieving Sonson's unjustified arrest. The day before, a fight had erupted in the outdoor market near where Sonson would wait on his motorcycle to drive customers. As he approached to help calm the situation, one man stabbed another and fled, knocking over a market woman's charcoal stove as he darted past Sonson. Both the woman and Sonson ran to the police station a few blocks away, but she got there first—and accused him of the whole thing. The police arrested Sonson at once and held him despite the testimony of the stabbed man, who had been transported to the hospital and survived. Sonson—whose poverty, tattoos, dreadlocks, and dark skin all too readily and superficially had him figured for vagabondage, or criminality—happened to be the nearest to a culprit that the police could or would try to find. With his body behind bars, justice had been served, even if by proxy.

On Stéphanie's porch, we shook our heads in somber disbelief while listening to Bob Marley, Sonson's favorite music. The absence of his raspy voice singing along, face breaking into a wide smile as though the weight of his troubles momentarily evaporated, had us in tears. "Ziggy," said Stéphanie, using Sonson's nickname for me, "when someone is in prison, it's like they're already dead. They get put away, and you don't know if you'll ever see them again. The [formal] justice system doesn't work in this country. The people in charge pa gen konsyans, have no conscience."

Derived from the French word *conscience*, 'konsyans' has its origins in the Latin *conscire*: "to be mutually aware, to be conscious of wrong, to know well" (Online Etymology Dictionary 2020). While one of the definitions of *conscience* carries similar moral connotations to its English derivative (conscience), konsyans retains its etymological relation to sensorial, intellectual, and psychological consciousness.[1] In contrast to French, however, the Kreyòl word for the physical state of being awake and aware of one's surroundings is konesans, not konsyans.[2] Rather, konsyans offers a set of two meanings: "with-knowledge" (i.e., being or becoming aware) and "of-knowledge" (i.e., awareness of one's moral principles). As such, konsyans conveys an interrelated duality that fluctuates between the external and internal, between situational conditions and inward conviction, between the collective and the individual. Sometimes konsyans refers to both at the same time—both "with-knowledge" (i.e., being or becoming aware) and "of-knowledge" (i.e., awareness of one's moral principles)—such that having/lacking konsyans might mean having/lacking both mindful awareness and an inner morality. In other words, a selfish, cruel, gut-wrenching corruption. One locally elected official in Mibalè, for instance, once described to me with disgust how Haiti's major politicians don't have konsyans: "There are so many Haitians living in misery and the state doesn't care. Instead, those in power just extract wealth from the masses so that they can get U.S. visas, send their kids to school in the United States, and buy houses in Miami." This sentiment is also echoed in the popular Roody Roodboy 2019 Kanaval (Haitian Carnival) song, "San Konsyans," and many others.[3] The persistence of the United States in not only Haitian politics but also subjectivity reflects perpetuations of the colonial matrix of power that dominates much of life in Haiti.

That night in early June 2018, we mourned not just the callousness of Sonson's incarceration but the historically given conditions issuing from coloniality and transnational racial capitalism that erode responsive and responsible social relations in Haiti. Put simply, a kind of structural violence of "san konsyans" (un-consciousness/conscientiousness) that leaves certain people condemned to a living death along hierarchies of class and color. In this case, in

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[1] According to Alberto Giubilini (2021) in *The Stanford Encyclopedia of Philosophy*, "Only after the 17th Century did 'consciousness' start to be used with a distinct meaning referring to the psychological and phenomenal dimension of the mind, rather than to its moral dimension."

[2] In addition to sensorial consciousness, konesans also translates to understanding (i.e., knowledge or know-how) and acquaintance.

[3] For example, see Manno Charlemagne's "Konsyans Nou Nan Twou" (2006), Zizou Guitare's "Pran Konsyans" (2018), Nouvo Lib's "Konsyans popile" (2020), and Master Bend's "Konsyans" (2020).

prison, plucked out of the world and cruelly subjected to institutionalized mistreatment for who knows how long—as discussed further in Chapter 5. A reading of such a 'living death' might conjure metaphors to the lurching, cannibalistic zombie character of twentieth- and twenty-first-century popular imagination (made popular by U.S. film, television, and literature) to dwell on various ethical questions about incarceration in Haiti—prisoners as walking corpses, deprived of their humanity. The zombie trope as an attempt to respond to modern mechanisms of dehumanization, though, stands in sharp contrast to the zonbi of Haitian Vodou religious ritual from which they derive. Through complex spiritual formulae, a zonbi is a bodyless spirit or soulless body of a once fully alive human who is compelled to work for the person who owns them (McAlister 2012, 459). Western zombie mythmaking took off during the U.S. Occupation of Haiti (1915-1934). White Americans not only became fascinated with zombie mythology but imputed many of their unhuman attributes to Haitians in ways that authorized military intervention and championed White domination (Hurbon 1987; Wilentz 2013; McAlister 2012). If the "philosophical zombie" of popular U.S. culture serves to describe "a human body without consciousness that behaves like a human with consciousness" (McAlister 2012, 460, citing David Chalmers (1996)), however, the more apt analogy would correspond not to prisoners but—ala George Romero (1968-2009)—to those affording their inhumane detention, those mindlessly working in collusion with the nightmarish aspects of modern capitalism and coloniality.

Rather, to be incarcerated, as Joshua Price (2015, 5) writes, drawing on the work of Orlando Patterson (1982), "is to be sentenced to social death." Segregated from the general population and subjected to systemic violence and humiliating treatment, prisoners (not just in Haiti) are stripped of their rights as citizens and rendered social nonentities. "People are mistreated in prison," said Jean-Claude, the manager of a reverse osmosis water company in Sen Mak. "Because it's the poor behind bars, the prisons aren't maintained. People have to pee and poop right there, the water isn't good, and there's no doctor or treatment if someone gets sick, for example with cholera. W oblije abitye tèt w (you have to get used to it)." The mundane structural violence of Haiti's prison system makes unexceptional the social and at times physical deaths of its detained, the overwhelming majority of whom are among the country's poorest.[4]

[4] See the U.S. Department of State's *2020 Country Reports on Human Rights Practices: Haiti* (2021).

In the face of so much suffering, Jean-Claude's advice rings indifferent, if not nihilistic. How can one be expected to just "get used to" unjust systems that spell social and physical death, particularly for those already made vulnerable? A closer reading of his words, though, offers a more nuanced take. We must first ask, which "you" is Jean-Claude addressing? Me, the listener, or the person in prison? In either case, he's offering a tool for enduring the relentless and disempowering assault of 'san konsyans' (un-consciousness/conscientiousness). If violence is structural and the forces fueling it are not only geographically broad but capillary, atmospheric, and historically contingent, to confront it everywhere and all the time with opposition bears its own consequences and risks of futility. Importantly, the Kreyòl of Jean-Claude's remark does not preclude agency. The word 'abitye', deriving from the French *habitué*, is used as verb and adjective to describe dynamic states of habituality (McGraff 2007, 105-106). "W oblije abitye tèt w" literally translates to, "you have to habituate your head." With the means of change within the subject's command, to familiarize oneself, to shift perspective, to adapt becomes a tactic for survival and, thereby, for resistance. The object of this re-habituation—one's mindset, in this case—makes for a reorientation that is embodied rather than abstract.

As an adjective, abitye registers familiarity: what one—or one's body—is used to. In the process of regularly coming into contact or experiencing something, one does not simply grow accustomed to it, but integrates it into their self not as a habit, but as an embodied relation (for the time being). A lack of familiarity, on the other hand, becomes a source of disruption and discomfort, often experienced viscerally. It was this descriptive version of abitye that I encountered most frequently during my research on drinking-water in Haiti. In the wake of the novel cholera epidemic unfolded what is very likely the most widespread and rapid shift in drinking-water practices in the country's history toward the consumption of water treated—with variable effectiveness—by reverse osmosis (RO) and packaged in palm-sized sachets, sealed bottles, or wholesale tanks from which customers refill their jugs. "Bon dlo" ("good water"), as many people describe the contents of these containers, in contrast to the "dlo bwit" ("raw water") or "vye dlo" ("untreated water," though "vye" literally means "old") sourced from municipal pipes, public pumps, wells, streams, or rivers.[5] Later in this dissertation, I examine the ways in

[5] Throughout the rest of this chapter, I primarily use the term "raw water" for simplicity, but also because I would hear it used relatively more often to describe non-RO drinking-water.

which RO works to (re)craft categories of drinking-water that index their (assumed) purity. Here, I begin with the bodies doing the drinking. How is water (re)crafting *them*?

"There are people who say that they're abitye with drinking raw water. They're used to it because raw water is part of their organism," explained Nurse Etienne, the head of nursing at the main public hospital in Sen Mak. "Their organism accepts that water, and they say it doesn't do anything to them. But don't forget that if another person who's not used to it drinks raw water, it will make them sick. You can also find people who say that they can't drink treated water because it makes them sick. It makes them ill because it's a change. They became used to the water they've been drinking—their organism became used to it—so it doesn't cause them any damage. But when they come across treated water, their organism isn't yet used to it and it can make them sick. If they continue to drink the treated water, though, it'll become normal for them."

One question that plagues public health workers—especially during outbreaks of waterborne disease—and sparks curiosity among medical anthropologists is why some individuals seem to resist drinking "good" water. What might me learn by reorienting the question, asking instead: why do some individuals continue to drink "raw/untreated" water while others exclusively drink "good" water? While a political economy of RO water in Haiti helps to situate its burgeoning market in relation to state governance (and its marked absences) as well as the distribution of wealth and power, so much about patterns of "good" and "raw/untreated" water consumption spills beyond this one analytical framework. Elsewhere, I discuss how income levels do not necessarily dictate whether or not Haitians consume RO water—Sonson, for example, pretty much only drank sachet water. Historical perspectives and attention to embodiment, desire, ecology, and cultural context are necessary for understanding the relationality between humans and their drinking-water.

Introduction: Visceral Konsyans — Situating Gut Experiences of 'Bad' Cholera and 'Good' Water

This chapter considers how people's familiarity with the water they drink bodies forth regimes of value that, in turn, bear on those bodies. This isn't to say that people who drink good

water are in some way 'good', or that people who drink raw water are in some way 'raw', etc. At least, a fuller discussion of stigmatization is beyond the scope of this chapter. Rather, I seek to understand how the significances of these and other categories related to drinking-water and cholera end up having physical effects on the bodies experiencing them—from indigestion, as Nurse Etienne described, to the outcomes of different treatments for cholera. As the epidemic became integrated into Haiti's local moral and material worlds, not only did new patterns of drinking-water consumption emerge but also two new diseases. The introduction of pathogenic *Vibrio cholerae* into Haiti spread as a 'natural' form of cholera, as well as a 'bad' one sent by sorcery.

During a two-day workshop at Duke University's Franklin Humanities Institute in 2016, Achille Mbembe presented the keynote, "Frantz Fanon and the Politics of Viscerality." Although Fanon does not systematically theorize viscerality in his work, Mbembe claims that he uses the term throughout his texts to "describe that which touches [the vital] organs of the body, and in touching them elicits…a bodily as well as an emotional response…that seems to suggest that vital processes themselves are at stake." While Fanon conceptualizes viscerality in the relationship between power and psychiatric illness, such as manifestations of madness in response to Black people's experiences of racist and colonial violence, Mbembe critiques the emphasis on the body in certain forms (or performances) of political resistance. Broadly, viscerality serves as a phenomenological index for how the role of internal organismic processes such as abitye is implicit, and becomes implicated, in social and political life. My ethnographic data bring into relief the viscerality of cholera and drinking-water categories in Haiti: the social construction of these classifications as well as the ways they affect individual bodies. "That which touches the vital organs of the body," in this case, includes structural forces and water itself. What results is a 'gut reaction' in both the figurative and physical sense. What, then, are the foundations of these visceral encounters and the gut reactions they induce?

Exploring this question, I suggest, requires membrane-thinking: an approach that starts from the assumption of continuous change, placing ourselves not only at the semipermeable interface of humans and drinking-water, but also at boundaries of interpermeation between the individual and the collective—a collective comprising more than just humans. Lived bodies, as many scholars have argued (cf. Lock 1993; Ingold 2010; Krieger 2005), co-constitute themselves and their environments in ways that challenge the biomedical assumption of a universal body.

Through ongoing practices (e.g., eating, walking, breathing, drinking, governing, polluting, etc.), human organisms and environments develop in relation to each other, continuously disintegrating and recomposing boundaries. Biologies, in other words, are "situated" in social and material entanglements (Niewöhner & Lock 2018). Based on my ethnographic data, I offer that situating biologies must also take into consideration the ways structural forces as well as religious traditions shape bodies-in-action, including after death.

In the following pages I discuss two examples of how people's guts mediate processes of becoming with water in Haiti, both biophysically and symbolically (as these are interrelated). I argue that people develop what I call visceral konsyans: an embodied consciousness/conscientiousness situated in entangled social, material, and religious milieus. First, I recall my interview with Ricardo to present the distinction between 'bad' ('move' (pronounced MO-veh), in Kreyòl) cholera and 'natural' cholera. While both produce similar enteric symptoms, 'bad cholera' refers to that sent by sorcery, while 'natural cholera' is that biomedically recognized disease caused by a waterborne microbial agent. While differentiating between bad and natural cholera gets negotiated collectively, embodied awareness of 'good' and 'raw/untreated' water involves individual negotiations of familiarity, as emerged during a conversation with a different Mibalè oungan named Michel. The extent to which one is abitye to a particular drinking-water emerges in relation to claims people make about water quality, convenience, risk, and trust. My intention here is not to romanticize water sources that carry real dangers to people's health. Rather, in my attempt to understand patterns of drinking-water consumption in Haiti, I recognize that some individuals drink untreated water—or miss drinking untreated water—not (only) because they can't afford not to, but because it matters to them.

2.1 - Serving the Lwa, Sending Sickness

Let's return to Stéphanie's porch. After discussing our plans to support Sonson as best we could, I began my interview with Ricardo. The three of us squeezed into Stéphanie's bedroom for a private and relatively quieter place to talk, as an action film was now playing on a TV outside. I had met Ricardo for the first time a few nights before, when I attended a Vodou ceremony at his ounfò, or temple, with Stéphanie and Sonson. Ricardo's ounfò is located across

from his home, where he lives with his wife and two kids in a rural area just outside of Mibalè. When we arrived, a huge bonfire was burning in the yard, attended by two of Ricardo's assistants. Several animals—a cow, a pregnant mare, and a surprisingly large goat—stood nearby as well, calm as could be in spite of the flames. They're probably used to this, I thought to myself. The three of us were given chairs to sit as Ricardo performed several rituals into the fire before inviting us to enter the peristil: a sizable room with an earthen floor and large circular column in its center, called the poto mitan, or center post, which serves as a pivot for ritual dances and a conduit by which the lwa, the spirits of Haitian Vodou, enter during ceremonies. We brought our chairs in and sat along one wall of the room. On the opposite side was another row of attendants, who filtered in over the duration of the ceremony. Between us were five men each seated with a sacred drum, within which certain spirits dwell. Across the room from them, a wall that included two doors—the entrances to Ricardo's badji, or special rooms dedicated to particular lwa.

Figure 2-1: A poto mitan (center post) within the peristil (peristyle) of an ounfò (Vodou temple). Photo by Frédéric Gircour, 2008.

"The first thing you do to invoke the lwa if you're serving them is to draw a vèvè on the ground [with white flour or powder]," he later narrated during our interview. "Each lwa has their

vèvè [symbolic design]. After you finish drawing it, you write the spirit [by tracing the vèvè] with a candle. Where you finish writing this spirit, you go to get some water to cast [as a libation] to ask thanks and to salute the spirit."[6] As Manbo Evelyne does to serve Kristid, the mèt dlo (water spirit) in the irrigation canal from the previous chapter, Ricardo uses water from the local environment for his libations, citing rainwater and spring water as being the most potent. Both of these waters derive their effectiveness from how the uncanniness of their sources—falling from the sky and bubbling up from the earth, respectively—evokes linkages between realms. In her personal narrative of Vodou initiation, for example, Mimerose Beaubrun recounts her first spiritual mentor, Aunt Tansia, explaining, "All springs are places of passage to go beneath the surface of the earth; in the grottoes there are passages to go into the depths of the water, to the center of the earth" (2013 [2010], 129). Water not only serves as the source and sustainer of life, but as a powerful medium by which to serve and receive the gods and ancestors. Interestingly, I have yet to encounter an oungan or manbo who uses water purified by reverse osmosis to do so—a point I'll return to later on in this chapter.

Ricardo, as he tells me, was destined to become an oungan. As a young boy, he had several close encounters with the mèt dlo of a deep pond in a stream by his home. At one point, while he was catching crayfish along the shore, his mother washing laundry nearby, he spotted the mèt dlo, swimming in the water, leave her ring on a large, flat rock. Ricardo quietly snatched it and brought it home. The next morning, Ricardo and his mom went to the market, leaving his little sister asleep in the house. The mèt dlo appeared and knocked on the door, demanding the ring back but promising something in return. Instead of telling him this, Ricardo's sister tricked him into showing her the rock so that she could do the exchange herself. She brought the ring back and found a large pile of corn straw that she was convinced was money. "To this day, I still mourn all the riches I lost," Ricardo said. Still, his path was only beginning.

As he got a little older, Ricardo's neighbors recognized him as someone who could swim and dive into the middle of the mèt dlo's pond without dying. So, whenever someone drowned, which seemed to happen with some frequency, they would ask Ricardo to help retrieve the body.

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[6] In his canonical text on Haitian Vodou, Alfred Métraux (1972 [1959], 162) explains how "libations of water performed in front of the sacred objects [such as drums or the poto mitan] amount to 'salutations'."

The person's soul, on the other hand, would remain under the water.[7] "Mèt dlo and some lwa live deep under the water," Ricardo explained. "Under the water, it's like a world very similar to ours, because the mèt dlo have taken people. There, they retrain people who were carpenters, masons, and such how to live and work in the underwater realm. For someone who is born to be an oungan, the mèt dlo holds him under the water for seven years to teach him the profession."

Ricardo identifies as an oungan who both was chosen and chose—mostly for economic reasons—to pursue this vocation. "Before I became an oungan, I would go three days without eating," he said. "The spirits I serve love to work. They bring me a lot of business and enough income to support fifteen people, including Stéphanie." His business, as he describes it, involves ridding clients of malevolent illness, protecting them from sorcerous attacks, imbuing them with good fortune, or, at times, sending sickness against their foes. Generally, sending sickness is a practice associated with bòkò, or Vodou sorcerers who "[work] with both hands or the left hand" (Brown 1991, 403)—a "hand" associated with 'bad magic', as opposed to the 'good magic' of the 'right hand'. Unlike oungan and manbo, bòkò not only buy and sell mercenary spirits but are also known to manipulate their clients so as to drum up business, lacking, in effect, any kind of loyalty (Métraux 1972 [1959], 267). 'Right-handed' practitioners, instead, maintain long-term relationships with their patron spirits. But all oungan and manbo possess the knowledge to use the techniques of sorcery, given that they constantly have to counter them. An oungan "worthy of the name," however, will only employ these techniques in cases when it is necessary to protect their clients or when dealing with criminals (Métraux 1972, 267). Ricardo explained how, for example, he could take the zonbi (or part of dead person's spirit) of a person killed by cholera and 'send' that zonbi to infect someone else, but only if it were absolutely essential to do so. In the following section, I discuss what this particular 'sent sickness' entails. More specifically, I examine not just the ontological categories of 'bad' and 'natural' cholera, but what makes it possible to distinguish between them.

[7] "In the Haitian Vodou tradition," wrote Edwidge Danticat (2011) near the eve of the first anniversary of Haiti's 2010 earthquake, "it is believed by some that the souls of the newly dead slip into rivers and streams and remain there, under the water, for a year and a day. Then, lured by ritual prayer and song, the souls emerge from the water and the spirits are reborn. These reincarnated spirits go on to occupy trees, and, if you listen closely, you may hear their hushed whispers in the wind. The spirits can also hover over mountain ranges, or in grottoes, or caves, where familiar voices echo our own when we call out their names."

2.2 - Dying Unnatural Death

"Often, when people got sick with cholera, they wouldn't accept that it was cholera, and they would say that it was something mystical," said Nurse Etienne, whom I'll be introducing in more detail in the next chapter. In Haiti, "something mystical" ("bagay mistik") refers to an idea, object, or practice affiliated with the broader category of 'maji' (magic). To Vodouists, maji, which includes "any rite accomplished with evil intent" (Métraux 1972, 266), describes what would correspond to the etic term 'sorcery'. Coming from a Christian (i.e., non-Catholic) devotee like Nurse Etienne, however, the phrase "something mystical" ("bagay mistik") often conflates maji and Vodou and is almost always used disparagingly.

"They would say that someone who didn't like them had sent 'bad cholera' ['move kolera'] or 'cholera death' ['mò kolera'] to them," Nurse Etienne continued. "Especially when someone died of cholera, the family would say that they hadn't died of 'natural' cholera, but that it was bad cholera. People believe in such mystical things. Myself, as a professional, I don't have the same notions as them. But it's the culture of the people. When those people say that someone has cholera, they don't bring the patient to the hospital. They go to have them treated by the oungan. And often, they arrive to the hospital dead." Natural cholera, on the other hand, popularly describes a disease treatable by biomedical rehydration and antibiotics alone because its etiological agent is not one sent by sorcery. In fact, all of the participants in my study, including Vodouists, specified that all cholera is caused by a "mikwòb" and, as such, requires rehydration therapy at minimum. But the source of (or intention behind) that microbial infection and, it follows, its cure was up for debate.

Nurse Etienne was one of a number of clinicians I encountered in Haiti who recognized 'bad cholera' as first and foremost a hindrance to proper medical care. Many—though not all—medical professionals, especially those trained in a Euroamerican tradition, approach the practice of biomedicine as one charged above all with preserving life: a task that flows directly from the Christian concepts that inform it, despite medicine's stance of secularism (Langford 2016). Alternative explanatory models of disease or techniques of healing that might contradict or delay biomedical intervention, therefore, are not only considered threatening but stigmatized as Other. Arriving at the hospital too late, it follows, would constitute the opposite of a 'good death'. But a medicalized death is not necessarily considered a 'good death' to everyone (cf. Meier et al.

2016). For the patients Nurse Etienne references, for instance, clearly something remained unresolved at the time of their deaths—not just for the deceased, but for their relatives, who came to the conclusion that maji and malicious intent rather than a natural pathology had killed their loved one.

Whether natural or sent by maji, cholera results in a rather distinct constellation of symptoms: acute abdominal cramps soon followed by profuse amounts of watery diarrhea and vomiting, which can quickly lead to signs of severe dehydration, such as weakness, loss of skin elasticity, and sunken eyes. Both disease etiologies share similar effects on an individual's intestines. But distinguishing between bad and natural cholera has less to do with the individual's internal awareness than with a collective awareness of their visceral condition—a visceral konsyans of the situational circumstances that have made someone sick and what it takes to cure them.

Before October 2010, cases of cholera had been nonexistent in Haiti—in large part thanks to the protectionist measures instituted by Haiti's leaders during the nineteenth century (Jenson et al. 2011). It wasn't until several days into the outbreak when biomedical authorities declared the growing epidemic to be one of cholera, caused by a waterborne pathogenic microbe. Though promoted as a universal truth, this pathophysiological explanatory model of infectious microbes and the antimicrobial treatments they demand is situated in a particular social, material, and political history, as I touch upon in Chapter 5. The biomedical paradigm, as many scholars have argued, is one emerging from and supported by particular systems of power that not only assume an individual, solitary, universal (male, heterosexual, cis, White) subject and combative, technological interventions as care, but also foreclose the possibility of models of sickness and healing that assume otherwise. Following years of intensive public health campaigns during the epidemic, it came as little surprise to me to hear everyone with whom I spoke link cholera to a microbe. But how a "tiny creature that you can't see," as some described it, could cause such abrupt, devastating, and seemingly simultaneous disease often raises more questions—and conspiracy theories related to U.S. intervention, an intentionally introduced contagion, airborne spread, etc.—than it offered answers. As Paul Farmer (1992, 247) writes in the wake of the first HIV/AIDS epidemic in Haiti, conspiracy theories "are revealed as the rhetorical defense of the powerless victims. Yet, conspiracy theories contain considerable amounts of truth when

examined not as isolated anecdotes, but as lessons drawn from the last five hundred years of Caribbean history."

2.3 - Collective Visceral Konsyans: Recognizing the Viscerality of Bad Cholera

"Cholera killed a lot of people," Ricardo said as our conversation continued. "But at the same time, there were people who died who, in the end, it wasn't [natural] cholera that killed them." As I learned, Ricardo has a great deal of experience in treating people made ill by a sent sickness, which he refers to as a zonbi. In some parts of Haiti, namely Pòtoprens, zonbi are classified in two groups: 'zonbi astral', or invisible entities that constitute the captured spirits of the recently deceased which are then harnessed for various purposes;[8] and 'zonbi kò kadav' (cadaver zonbi), a form of punishment whereby a targeted individual's spirit is extracted from their body using certain toxins and the body is sold into modern-day slavery (McAlister 2012). As discussed above, bòkò (Vodou sorcerers) are typically at the center of making and dealing in zonbi, but some oungan like Ricardo carry this knowledge as well. In Mibalè, I did not encounter the specific use of the term 'zonbi astral', but the sent sicknesses that Ricardo was describing would be considered as much.

During our interview, Ricardo explained how he helps people who come to him for treatment after biomedical exams find them to be normal. "This person will realize that they need to find someone who can explain what is making them ill. When they come to me, I do everything in my ability for them. During the treatment, I find that they have a bad spirit over them. I get the bad spirit to talk through the person and explain why it's come to make them sick. And then I return it to the people who sent it." The treatment process for zonbi sickness usually entails multiple rituals that might take place over several days. As Métraux writes (1972, 276), "The dead embed themselves in the organism into which they are inserted and it is very difficult to make them let go." In the case of cholera, however, patients do not have any luxury of time.

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[8] As Elizabeth McAlister (2012) points out, it is important to recognize that zonbi astral should not be conflated with souls of the dead, but rather as a fragment of that soul or spirit. She writes: "In AfroHaitian religious thought, part of the spirit goes immediately to God after death, while another part lingers near the grave for a time. It is this portion of the spirit that can be captured and made to work" (McAlister 2012, 462).

Whether caused naturally or by maji, Ricardo explained, the person needs to be stabilized with rehydration therapy first, which can sometimes be attempted at the homes of oungan/manbo, but generally requires that the patient go to the nearest clinic.[9]

"One time, a group of people brought a young man to me," Ricardo said. "But when he arrived, I found that he couldn't hold anything down. And he was so weak that he had to be supported between his mother and father. When I looked at him, I noticed that his pants were wet. 'What's wrong with him?' I asked them. 'He's got diarrhea,' they told me. I said, 'Ah, no! It's not diarrhea he has.' I could tell that there was actually a mò [death curse] sent over him. It was a zonbi cholera. I called a mototaxi and told them to quickly take him to the hospital *before* I work on him. By 2pm the next day, he was starting to recover from cholera. His mom took him from the hospital and brought him to me. I put a protection over him so that nothing bad could happen to him, and I sent the zonbi away. But if he had stayed at my house he would've died, because he had already started to have cholera. Once cholera takes you, it searches for every ounce of water in your body. If you don't replace that water, you can't live."[10]

Just as Nurse Etienne's assessment of and plan for a cholera patient would entail an evaluation of their symptoms interpreted through a biomedical paradigm, Ricardo assesses those who come to him not only with awareness of the biomedical definition of cholera but also through his embodied knowledge of Vodou. Both involve a form of collective visceral konsyans, whereby clinicians and oungan/manbo, respectively, glean from the bodily condition of their patients the etiological stakes of their sickness. Unlike medical professionals, however, Vodou professionals are able to recognize a case of bad cholera behind what might otherwise appear simply like natural cholera. While in both cases *what* is at stake is an individual's guts, categories of bad and natural disease are constructed through historically rooted social processes. These categories differ in explaining how cholera comes to be embodied in the afflicted as well as in their moral readings of the sources of suffering. The therapeutic response, in turn, bears on

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[9] There is a risk, however, that biomedical intervention—with IV fluids in particular—would only aggravate the sent sickness. A number of people I interviewed described how, rather than recovering, the patient develops a fever and gets gradually sicker because, as one person said, "unnatural cholera cannot be treated at the hospital."

[10] Various community members I interviewed in Mibalè and elsewhere shared similar understandings of the implications of bad cholera. "When someone cursed with bad cholera is taken to an oungan," one person said, "he can tell that it's not normal diarrhea. The oungan would know what to do to treat the disease that was sent to the person. But I don't believe that an oungan would be able to treat natural cholera caused by a microbe." Natural cholera needs to be evaluated and managed by medical professionals.

patients' biological outcomes: mismatching etiology and treatment has the potential to prolong suffering or, at worst, cause loss of life. Still, in biomedical settings, as Nurse Etienne points out, many family members would ultimately reject the notion that natural cholera killed their relative. It's often said by Haitians that no one in Haiti dies a 'natural' death. But in both cases, Ricardo emphasized, "Haitians die more swiftly because they endure more misery."

"Because of the way the country is going," Ricardo went on, "there are a lot of poor people who are suffering. Lately, for example, there hasn't been much rain, and us farmers are losing all of our crop because there's no water. We keep asking the government to install an irrigation pump, but they don't do anything. They just let the poor suffer. During cholera, there were a lot of people around my home who got sick. Some people would stay put and drink water, but eventually they had to go to the hospital. For a long time, we didn't have that small road that you took to get to my house. There was just a footpath. If you couldn't find a mototaxi, four people would have to carry the sick person on a mattress to the main road, but by the time they reached the crossroads the person would already be dead. By vehicle, it only takes about 10-15 minutes to arrive at the hospital." Climate change, poverty, insufficient infrastructure, and ineffectual government are just some of the myriad structural factors that made Ricardo's community vulnerable to not just the transmission of cholera but the loss of life due to natural sickness and otherwise. Farmer (1992, 163) writes, "Seen in its full symbolic register, 'sent sickness' is about historically given conditions that put people at risk for AIDS and the other afflictions that beleaguer them." Considering 'natural death' in its full symbolic register compels us to ask, what is natural about dying in the wake of settler colonialism, plantation economy, and chattel slavery when the colonial matrix of power endures? What is natural about dying from structural violence? In Chapter 4, I do more to trace how Haiti's present forms of extreme vulnerability are far from given, but rather largely furnished by a state of perpetual (neo)colonial intervention established during the U.S. Marine Occupation, 1915-1934.

2.4 - Individual Visceral Konsyans: Getting Used to the Viscerality of Water

In the previous section, I examined how the embodied dimensions of distinguishing between bad and natural cholera entail a form of collective visceral konsyans: that part of the

duality of external-internal awareness conveyed in being/becoming 'with-knowledge' of biologies situated in social and material entanglements. The konsyans of Vodou and medical professionals reflected in the practice of recognizing disease etiologies involves knowledge of how invisible, if no less material, entities—a zonbi and/or microbe—manifest in visceral ways. Structural forces make certain people in Haiti, particularly the poor, more vulnerable not only to *V. cholerae* infection, but also sent sickness.

This section continues to follow drinking-water in the context of cholera but shifts perspective to the viscera themselves. How do encounters at the intestinal membrane become translated into self-knowledge, moral sense, and regimes of value?[11] Why might some individuals continue exposing their viscera to potential cholera infection through the waters they drink, despite having the financial capacity to buy purified water? Why might some individuals who drink purified water not be able to drink anything but? Much of the literature on practices of drinking-water consumption has centered issues of trust and mistrust of sources, which ultimately reduces matters of perception and choice to the mind alone. Here, I suggest that we must also attend to the role of the body—and the intestines in particular—in order to more fully appreciate how and why people drink the waters they drink. To demonstrate how 'gut reactions' speak to the relationship between bodily feelings and internal moral awareness, I begin with a conversation I had with another oungan in Mibalè, named Michel.

The year before I met Ricardo, I was introduced to Michel through my friend Flora, a young woman who was working at the location of my accommodations—and Michel's cousin. Several weeks into my research and our friendship, Flora invited me to meet her relative, an oungan living near the center of Mibalè. We made our way to one end of the town's open-air street market, brimming as it was twice a week with vendors. A half-block in, Flora veered us down a narrow alley. After we passed several homes, I suddenly found myself atop a small hill in the middle of town overlooking a hollow, on the opposite side of which I could see the stalls where people sell wood boards and butchered meats. Here, the density of the city felt within reach, but distant; its muffled sounds carried softly by passing breezes. As we waited for Michel under a humble peristyle, two little children filed into the yard, still in uniform from school. The

[11] Instead of parsing the ways that value can derive from regular interaction with or consumption of an object, which has been well studied (Myers 2001; Keane 2003; Reno 2009), I seek to understand how people embody a capacity to viscerally discern what is "good" for them, particularly in the context of cholera.

young boy went to his pregnant mother. “They gave me a vaccination at school,” he told her, extending his right arm. “They did what??” I could hear the frustration in his mom’s voice. But rather than continue with the “how dare they” I imagined coming, she just sighed. What’s done is done, it seemed. As the boy went into the house—still with his arm outstretched—a man in a feathered fedora stepped out to greet us, telling a few men nearby to bring chairs for us all to sit.

Figure 2-2: The view adjacent to Richard’s ounfò (temple grounds) atop a hill in the middle of Mibalè. Photo by author, 2017.

We shared introductions and some casual conversation until Michel caught me eying the heavy red curtain leading to the badji, or altar room. “Is there something you’d like to know?” he asked, smiling. “Which lwa is that one?” I replied, motioning to the murals on the wall. Paintings of Saint Peter and Saint Martha, holding a thick snake around her shoulders, surrounded the doorway. He patiently explained their significance and respective hybridity with Papa Legba and Ayida Wedo.[12] And then added, “Well, why don’t you come inside, and I’ll show you the others.”

Behind the red curtain was a very small room, its walls painted with various lwa and several bundles of bones, bandanas, and rope hanging from the ceiling. A row of flags draped

[12] Ayida Wedo / Saint Martha is known and venerated elsewhere in the African continent and African diaspora as Mami Wata.

from above over a tall altar. By our feet were two cement crosses painted black with bottles and piles of rock salt at their bases. One, on which hung a rusty chain, dedicated to Baron Samdi: the guardian of the crossroads and of cemeteries, the lwa who works at the border of death and life. Michel got to talking, taking off at incredible speed, explaining everything in sight. "You understand?" he asked frequently, eager to make sure I was keeping up. After some time, Michel paused and said, "Ask me anything. You may talk." I stammered, then decided to start by asking about how he became an oungan. He had always been drawn to Vodou, Michel explained, but it's a role he was not born into—unlike Ricardo. Michel came from an Evangelical family, but despised church and would get punished for rebelling. Eventually, he started pursuing his interest in Vodou and became initiated. The lwa who have taken to him—whom he serves and whom he can call upon for ritual practice—inhabit the hill below his home as well as the cemetery and the water. "Vodou is a large poto mitan [central pilar] of the country," said Michel. "It's like tomato paste: it's in every sauce."

Our conversation meandered from the religious to the socioeconomic to the political. I asked Michel about water's significance in Vodou. "Water?" he replied before I could expand upon my question. "You want to talk about the water we have here? Come look at where we get our water from."

Michel ushered Flora and me out of the dimly lit badji and into the bright sunshine. "Watch your step," Michel cautioned as we snaked down a tight alley between cement homes on the hillside. Suddenly, we entered a verdant scene. A creek babbled not far from where we stood and on the opposite bank stood several tall trees. Michel paused so that I might observe more closely. As I looked, I saw how the creek was saturated with bits of trash, its water discolored with a hazy grayish blue in some places, likely from soap used for laundry further upstream. The hill across from us was more barren dirt than vegetation, its eroding bank buttressed with a wall of tires. A few young people sat on the opposite slope, filling their buckets with fresh water from a spring.

Figure 2-3: The stream and spring located below the Mibalè prison. Photo by author, 2017.

"Do you see?" Michel asked. He pointed to the back walls of the Mibalè prison located atop the hill—the same prison that would hold Sonson the following year—and specifically to the latrines situated just meters from where the children were collecting water. "This water makes people sick. But what choice do we have?" he said as he filled his nose with dried tobacco grounds. Kids play in and drink from the polluted stream. Pathogens from the prison latrines seep into the spring water. But many people take their chances, Michel explained. It's better than paying the government agency for unreliable municipal water. And when you're really thirsty, he said, you drink what you can find.

Cases of cholera were still occurring in this neighborhood, but no one in his household had yet fallen ill. "Since cholera started, we began buying water from a kiosk nearby," Michel said, referencing one of the proliferating water businesses in the city. This type of vendor purchases reverse osmosis water by the tank-full from a larger company and resells it to customers. "Before cholera, I would drink from that spring," Michel continued. "But I've

become abitye, used to drinking good water, treated water. If I try to drink the spring water now, it upsets my guts."

What Michel was describing—and what I increasingly heard as I spoke with more and more people in Haiti about the waters they drink—is a kind of viscerality of familiarity. When I started conducting research on drinking-water practices in the wake of the cholera epidemic, I was expecting to encounter overwhelming evidence demonstrating a clear link between consumption patterns and structural factors, such as poverty and access. Based on the conclusions I gleaned from the available literature, I would surely find that 1) only wealthy people purchase 'good' water treated by reverse osmosis, and 2) no one, including the poor, actually chooses to drink untreated 'raw' water; people only drink untreated water because they are limited by access or poverty. Through my fieldwork, however, I learned that these assumptions failed to square with my data. Instead, I encountered instance after instance of participants describing how some people—and in a few cases themselves—prefer drinking raw water, and even more examples of those considered poor or extremely poor consistently buying water treated by reverse osmosis. To be sure, many people who wanted to purchase RO water lacked the means to do so. That there are plenty of individuals who still do in spite of their limited resources was not only surprising, but also pointed to a phenomenon that parallels why some people shun it: an individually based visceral konsyans, emically expressed as 'abitye'.

2.5 - Theorizing Abitye

More than ever before in Haiti's history, the introduction of pathogenic *V. cholerae* into Haiti's waterways in October 2010 and the resulting outbreak threw into question the waters people were used to drinking. The categories of good and raw/untreated water long preceded the epidemic but took on far greater significance in the face of cholera. On the one hand, good water came to be almost synonymous with water treated by reverse osmosis—even if inconsistently. On the other, raw/untreated water now carried the capacity to transmit such a severe diarrheal disease that some people were dying within hours of first showing symptoms. The trauma of the outbreak, as I argue in the next chapter, has in no small way driven the rapid expansion of the RO water market, influencing both consumption and production.

In the wake of cholera, a growing number of people in Haiti are exclusively drinking 'good' RO water. Still, some individuals don't just persist in their drinking of raw/untreated water but insist on it. If economics cannot fully account for either case, as I explained at the end of the previous section, why is this happening? What role do the waters themselves play in shaping humans' drinking-water practices? How do humans, in turn, navigate the visceral relationship with the waters they drink? As described earlier, the viscerality of epidemic cholera in Haiti prompted a collective visceral konsyans (or awareness) of bad and natural manifestations of the disease. The lived, gut-based experience of abitye (or state of familiarity with) I discuss here supplies an example of the other and always interrelated side of the visceral konsyans duality: an awareness of one's inner convictions, a sense of what is right or wrong for one's body derived from—quite literally—gut reactions to, in this case, drinking-water. Drawing on several excerpts from interviews with people in Sen Mak, I demonstrate how the boundaries of abitye afford an embodied negotiation of water consumption.

a. Madam Luis: Abitye as Individual

Madam Luis, a 60 year-old rice farmer in Sen Mak's Fifth Communal Section, collects her drinking-water from a communal pump down the road from her home. For an able-bodied person, the walk there takes about ten minutes; but for Madam Luis, who lives with intense chronic knee pain, it takes at least twice as long. Carrying buckets of water back by arm or on her head takes even longer. "When I had a [biosand] water filter, I would filter the pump water before drinking it. But eventually the filter broke," Madam Luis told me. "Since then, I sometimes add Aquatab [water purification tablets] or a little bit of Clorox. But sometimes I just drink the pump water like that. You know, along the route as I'm carrying the water, I get thirsty. And drinking the water doesn't do anything to me, because I'm abitye [familiar] with it. My son, on the other hand, gets an upset stomach and diarrhea each time he drinks pump water, whether or not it's been treated with Aquatab. It doesn't bother me, but my son doesn't like to drink that water at all. He only drinks the treated [reverse osmosis] water he buys. When he can't find water at the vendor, he drinks the raw water and feels sick."

As I followed drinking-water in Haiti, I regularly encountered people, like Madam Luis, who articulated their lived experiences of hydration in terms of abitye. The kinds of water one's body could accept was often bounded by what it was used to drinking. Therefore, even within the

same family, individuals could have entirely different patterns of consumption—a nuance frequently elided in public health assessments that rely only on generalized household-level data. During our conversation, Madam Luis described how she started giving her son—the youngest of her children—only bottled water to drink as cholera swept through their community a decade ago. He was ten at the time. And now, after drinking RO water for half of his life, consuming anything but good water makes him physically ill. The ways that people register their familiarity with the waters they drink, I propose, also demonstrate how water viscerally effects the individual drinking it. In other words, a person becomes crafted by the water they regularly consume. What develops through this ongoing process is an embodied moral relation of visceral konsyans, whereby individuals are constantly confronted with the dilemma of finding water that won't upset their guts—and not just the dilemma of finding water that won't make them sick with a waterborne disease. In the Fifth Section, as in many rural areas of Haiti, becoming abitye to good water carries its own set of risks due to the structural precarity of access.

b. Gérald: Abitye as Changeable

People develop such strong visceral relations with or reactions to various drinking-waters because of their varied physical properties. "There's a difference between raw and treated water," explained Gérald, the floor manager at the Blue Heaven water bottling factory in Sen Mak. "The raw water we get from our wells has a higher concentration of total dissolved solids, around 300-350 mg/L or more. In water treated by reverse osmosis you'll find a concentration of seven or so." Total dissolved solids (TDS) is a measure used to quantify the combined total of organic and inorganic substances present in a liquid. The World Health Organization (2003) offers guidelines for TDS levels in drinking-water but relates these concentrations only to how they might bear on taste, citing a 1969 U.S.-based study on the taste quality of mineralized water. According to these metrics of palatability, less than 300 mg/L TDS is rated as excellent, 300-600 mg/L is good, 600-900 mg/L is poor, 900-1200 mg/L is fair, and greater than 1200 mg/L is unacceptable (WHO 2003, 1). While the WHO guidelines (2003, 1) state that "no recent data on health effects associated with the ingestion of TDS in drinking-water appear to exist," a plethora

of investigations primarily based in South Asia and Nigeria suggest otherwise.[13] These studies maintain that levels of TDS above 500 mg/L—or, some propose, 300 mg/L—cause gastrointestinal irritation.[14] Varying concentrations of TDS in drinking-water not only alter taste, but also likely induce physiological changes in gut membranes that, eventually, become familiar. The water to which one is abitye, therefore, is itself changeable.

"Even to this day, there are people who drink pipe water without treating it," continued Gérald. "They're familiar with drinking it, and it doesn't harm them. But if you go drink a different water for a while, now you've become dezabitye [unaccustomed] to the raw water. As soon as you return to drinking pipe water, it makes your stomach hurt. So, you're obliged to keep drinking the new water." That the temporality of abitye affords a gradual visceral acclimation also invites the anxiety of losing one's visceral familiarity. Some people opt to continue drinking the raw/untreated water with which their bodies are familiar because they fear the consequences of becoming used to the alternative. The risks associated with drinking raw water do not necessarily outweigh the risk of losing one's ability to drink it: namely, the economic commitment that becoming abitye to RO water entails. As a rice farmer in the Fifth Section explained, "If I become used to drinking treated water, and then the day comes when I can no longer afford it, what do I do? I won't be able to drink raw water again because it will make me feel ill." It is not just that people cannot afford to buy 'good' water, but that they cannot afford to lose being abitye to raw water. For many, though, the cholera outbreak radically transformed these visceral negotiations of risk.

"For a long time, we were lucky that raw water didn't have much effect on people," Gérald went on, sharing that he himself drank untreated pipe water up until the epidemic. "Now imagine when the cholera outbreak started, how it contaminated the water and that contamination killed people. Before, people were used to drinking raw water without catching a disease. Sure, they might always feel ill from that water, but those kinds of sicknesses were never that serious. But now you'll see that it's the people who drink untreated water who get cholera." Before 2010, for example, 70% of the population of Pòtoprens relied on public kiosks, household taps, wells,

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[13] See, for instance: Udhayakumar, R., et al. (2016). "Assessment of physico-chemical characteristics of water in Tamilnadu." *Ecotoxicology and Environmental Safety* 134 (2): 474-477.

[14] It is important also to recognize that TDS is an aggregate measure of many substances which include varying levels of minerals and chemicals toxic even at low concentrations.

borehole pumps, or other raw sources for their drinking-water (World Bank 2018, 38). By 2012, this figure dramatically flipped, with nearly 70% in the capital using private sector RO-treated kiosk, bottled, or reservoir water instead, and in spite of its significantly higher cost (World Bank 2018, 38). And yet more than 30% continue drinking raw water. "There are people who *can* buy treated water but don't because they're not abitye [used to] drinking it," said a young woman who sells charcoal in Sen Mak. "When they do drink treated [reverse osmosis] water, it gives them a stomachache and they can sometimes have diarrhea." Attention to the embodied experience of abitye helps us to not only understand these trends and tensions when market logics fall short but also appreciate how they matter in people's lives. As Gérald described, unlike other waterborne diseases, the trauma and magnitude of the cholera epidemic now weighs on individuals' visceral konsyans in Haiti, intensifying the moral valence of drinking-water and attaching a stigma to those continuing to consume—or continuing to risk consuming—raw water.

c. Dianne & Nelson: Abitye as Affective

While structural limitations, convenience, affordability, and dependability contribute to why an individual might drink raw/untreated water, some participants in my study also used the language of preference, signaling a further dimension of the visceral, moral entanglements of humans and the waters they drink. Dianne, a 27-year-old hospitality student living in Sen Mak, has been exclusively drinking RO water since the cholera outbreak. "But you can find people who don't drink treated water," she remarked. "They say that they prefer to drink pipe water. They say that treated water doesn't quench their thirst."

While conducting household water consumption surveys in Sen Mak, I met Nelson, a 31-year-old man who picks up small jobs around the city as he can find them. He lives with his young daughter in a small two-room house built in front of his parents' home and just meters from the shared well on the property. "Well water is the best," Nelson commented. "Sometimes I treat my water with a little Clorox, but I don't really have a problem with it. I prefer drinking water from the well over the [treated] water that vendors sell. Well water is heavier and has a better taste. It makes me feel more comfortable and quenches my thirst better than anything else."

Having grown up drinking from the same source, Nelson embodies not simply a visceral familiarity with this particular well water but also an affective fondness for it, finding pleasure in both the familiar taste and the familiar way it makes his body feel. Not all water quenches thirst in the same way. Among those who have switched to drinking RO water, I sometimes encountered a corresponding sense of nostalgia for the refreshing satisfaction of raw water now proscribed in the wake of cholera. What one is or has become used to drinking involves navigating the question of what is right or wrong for one's body, physically and morally. An individual, inward facing visceral konsyans, referring to a constantly unfolding corporeal capacity to become affected, to adjust, and to respond—in this case, specifically responsive to the water one consumes, depends upon, and enjoys.

2.6 - A Blended More-than-human Embodiment

Taken together, the individuality, changeability, and affectivity of abitye facilitates a kind of visceral konsyans. Being or becoming abitye is always accompanied by an orientation toward some objects, people, actions, contexts more than others, as well as an orientation away from the viscerally disruptive experience of unfamiliarity. Out in the world, for instance, are numerous kinds of water, all of which can be consumed, but, of course, not all of them are—even among those comprising freshwater. Waters, unless distilled, constitute aggregates of minerals, electrolytes, microbes, sediments, toxins, and plastics in addition to molecules of H_2O. Categories distinguish waters by source, potability, palatability, and purity, and yet water only becomes drinking-water through the repeated act of drinking it. In other words, we perceive drinking-water as water-for-drinking only through its contact with visceral membranes, the outcomes of this encounter, and the regularity of its consumption, which, it follows, would require its availability—"'what' is near enough to be reached," writes Sara Ahmed (2006, 552). We perceive drinking-water as water-for-drinking by the way it moves osmotically into bodies and how bodies (and their gut microbiomes) respond to it.[15] In this queer phenomenology, bodies

[15] As Vanessa Agard-Jones (2013, 187) argues, humans are never-only-human, but "multiply constituted things." While it is beyond the scope of this dissertation, the gut microbiome undoubtedly plays a role in mediating visceral familiarity with drinking-water.

may "take shape through such contact or take the shape of that contact. What gets near is both shaped by what bodies do and in turn affects what bodies can do" (Ahmed 2006, 552). Because hydration is essential, people try to put certain drinking-waters with which they are viscerally familiar within reach. But when the physical and moral stakes of hydration suddenly shift—as in the case of a cholera epidemic or abrupt awareness of toxic contamination—so too might an individual intentionally adjust their drinking-water orientation. Then, gradually through regular consumption, they may develop a visceral familiarity (abitye) with that water.

As a matter of contact, awareness (konsyans), temporality, and repetition, abitye not only invites a phenomenological approach to its theorization, but also serves to extend theorizations of embodiment. A central argument in phenomenology is that "consciousness is always directed toward objects and hence is always worldly, situated, and embodied" (Ahmed 2006, 544). In *Phenomenology of Perception*, Maurice Merleau-Ponty (1962 [1945]) gives an account of the lived body as expressive, intentional, and perceptual in its existence as "being-toward-the-world" and relationship with space.[16] He describes how the constant exchange between embodied existence and lived space bodies forth a sense of the world, at the same time as histories sediment in the body and involve it in habits, meanings, and values that have their own inertia. Put simply, the dialectic between the body's acquired habits and the present body make its orientation toward the world essentially temporal.

Merleau-Ponty's model of embodied histories has been taken up by various social theorists and philosophers. It is important to recognize, however, that "the body" of his phenomenology represents an assumed universal which not only normalizes all bodies to a Eurocentric standard but also disavows those situated experiences of non-White bodies. If it is Merleau-Ponty's argument that individual existence is the embodiment of being-in-the-world, it is Frantz Fanon's argument that he failed to consider the Black experience. For Fanon (2008 [1952]), to live in a Black body means that there is no escape from the intersubjective,

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[16] Following Edmund Husserl, Merleau-Ponty characterizes the body's intentional relationship with space as an "I can" rather than an "I think." Future social theorists expanding upon the lived experience of embodied intention have also characterized this relationship as the 'body-we-do'. Annemarie Mol, for example, draws from carefully collected ethnographic data on the phenomenology of atherosclerosis (Mol 2003) and hypoglycemia (Mol & Law 2004) to critique assumptions both of the 'organic wholeness' of the body and of the body as fragmented. She argues that the body—leaking, unruly, and full of tensions of a "complex configuration" (Mol & Law 2004, 57)—must instead be actively held together so as not to disintegrate. "One does not hang together as a matter of course: keeping oneself together is something the embodied person needs to do" (Mol & Law 2004, abstract). Embodied intention, in this way, describes the relationship between living and doing—a relationship that forms the substrate for the multiple ontologies of diseases (Mol 2003).

intercorporeal ways in which embodied racialization frames and limits action, as well as renders one's orientation in the world questionable, problematic, and different. Constructed historically and continuously by the 'White gaze' of objectification, anti-Black racism is simultaneously internalized at each instance by the one receiving that gaze. Instead, Eurocentric phenomenology advances the notion of "a body that is in the world with-itself, a body that lives in a pre-reflexive balance with its surroundings, a body whose habitual performance knowledge is lived *unproblematically*" (Staudigl 2012, 32, emphasis in original).[17]

Drawing from his fieldwork in Algeria and Merleau-Ponty's model of history as bodily sedimentation, Pierre Bourdieu (1977) considers how and why certain bodily schemes are not just shared within groups of people of similar backgrounds but endure across generations. Bourdieu proposes that the structures of a particular social milieu body forth an individual and collective habitus. A concept also used by Husserl (1931 [1913]), Marcel Mauss (1973 [1934]), and others to explore how habits are acquired and become customary, Bourdieu (1977, 72) describes habitus as "systems of durable, transposable dispositions, structured structures predisposed to function as structuring structures." With past experiences integrated through this "matrix of perceptions, appreciations, and actions" (Bourdieu 1977, 82), habitus is characterized by durably installed patterns of practices which not only embody but also tend to reproduce "the hidden persuasion[s] of an implicit pedagogy" (1977, 94).[18] The social order inscribes itself into

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[17] Fanon's seminal contributions ground theorizations of bodies as different *and* in common reflected in Black, queer, and Third World feminist scholarship. Following Fanon, for example, Harvey Young (2010, 4-5) explains how "a remarkable similarity, a repetition with a difference, exists among embodied black experiences," including "the misrecognition of individual bodies as 'the black body'." In theorizing human-water relationality, Astrida Neimanis (2019, 29) draws from Gloria Anzaldua, bell hooks, and Audre Lorde to discuss how "bodies are different—in their physical properties and hybridizations, as well as in political, cultural, and historical terms—but their differing from one another, their differentiation, is a collective worlding." Attention to embodied difference and commonality is also rooted in and emerges from the works of Caribbean and Black feminists (see, for example, the texts of Patricia Mohammed and Deborah A. Thomas) who have remained staunch advocates for attention to individual bodies. Gendered and sexualized forms of exclusion, many have argued, operate in and through bodily difference such that individual lived experiences are commonly imbued with common "intersectionalities" of discrimination (Crenshaw 1989). In a further effort to critique the White gaze—and doubly so, on both lived bodies and as manifest in the canon—Saidiya Hartman makes the case for a radical refiguring of 'the black body' "in terms other than abjection" (1997, 58). Instead, she proposes an embodiment of Blackness not engaged solely with servitude or to violence, but with love, mutual cooperation, and solidarity with all of the differences and temporalities that constitute them. Hartman's contributions to the 'common embodiment of difference' have gone on to catalyze parallel embodied counter-narratives in such fields as disability studies, where scholars are rethinking bodily experience in ways that are not yoked to recovering the historical mistreatment of disabled people, but center pleasures, capabilities, and sensual entanglements with the world.

[18] A closely related concept to Bourdieu's habitus is Michel Foucault's notion of 'discipline' (1977 [1975]). Institutions, Foucault claims, exert pressures of normalization through the violent enforcement of structures and power on the body. Exemplifying this process are technologies present in modern regimes such prisons, schools, and mental hospitals. In contrast to Foucault's focus centers on the disciplinary mechanisms by which persons come to embody society, however, Bourdieu emphasizes the "inert violence" of the everyday, ordinary conditioning of bodies in ways that go "neither noticed or punished" but imposed by the material and social conditions of their existence (2000 [1997], 233). These theories of embodied society proceeded to have an

bodies starting in early childhood and, in this way, habitus makes it possible for people to live in social worlds filled with taken-for-granted meanings, tastes, and values. Living outside of one's world, on the other hand, is nothing short of disorienting.

We might understand abitye (visceral familiarity) as a register of the alignment of an individual's visceral konsyans and habitus. The embodied processes by which one becomes used to something is structured by and structures the social environment; acquired comportments and dispositions mediate the development of attachments, affinities, and inward convictions. In other words, abitye expresses a habituated—but changeable—psychosomatic orientation. While habitus considers why a person drinks *the way* that they drink, for instance, abitye helps us explore why a person *responds in certain ways toward* what they are drinking. 'Gut reactions', so to speak, at the body/mind interface. As such, abitye extends Merleau-Ponty's (1945) notion of "body schema"—the system of sensorimotor operations of "situational spatiality" carried out prior to or outside of intentional awareness—to the vital organs' sensory capacities underlying habitual bodily perceptions, expressions, and practices. In contrast to theorizations of embodiment that take as their starting point the ways in which human social order becomes inscribed corporeally, abitye locates us within the body, at the visceral membrane: the internal space where nonhuman others become incorporated into bodies and, in turn, shape social order. From "values given body" (Bourdieu 1977, 94), to the ways bodies give rise to values (and back again). What one's membranes come into contact with, of course, has everything to do with the human social environment—intersectionalities of racial discrimination, wealth disparities, ableism, sexism, homophobia, etc. structure exposure. The lived experience of visceral encounters, however, invites a departure from anthropocentric theorizations of embodiment and calls instead for a reimagining of bodies "as blendings of companion species and inorganic material, containing multiple forms of agency and bearing the traces of multiple forms of power" (Agard-Jones 2013, 187). Human bodies are always already more than human.

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enormous influence on emerging fields of study, including medical anthropology and disability studies. Starting in the late 1980s, investigations into the "social determinants of health" began constituting a significant area of research for medical anthropologists, sociologists, and public health scientists alike. Underpinning this concept is the idea that disease is the physical embodiment of daily social inequities and other ill effects of modernity (Krieger 2016). Scholars within disability studies and postcolonial studies as well as medical anthropology also bring attention to the violence of normalization and the punishing of deviance instrumental to such processes as medicalization, institutionalization, sterilization, rehabilitation, and segregation.

That humans are vitally entangled with and through earthly elements (e.g., minerals, air,[19] and water[20]), organisms (e.g., nonhuman animals, microbes, plants, fungi,[21] and microbiomes[22]), and substances (e.g., blood, soil, toxins,[23] technologies,[24] and ghosts, gods, and spiritual forces[25]) allows for their embodied experiences as living/dying/relational beings. Bodily sedimented histories and orientations, therefore, involve embodiments of more-than-human blendings. These relational contingencies—material, invisible, and often unruly—exceed if not outright refuse the allegedly impermeable boundaries advanced by dominant Euro-Christian teleology. Water, as we've seen, flows into and out of the body in ways that shape and are shaped by bodily being-toward-the-world and sedimented histories; in ways that shape and are shaped by bodies experienced as different *and* in common. Bodies exist not just in common, however, but in 'commons': contingent communities involving and implicating individuals, rather than existing outside of them. As Astrida Neimanis (2019, 99) writes, "*Water both connects us and makes us different. As water we are connected, we are different*" (emphasis in original). Through enteric entanglements with water, humans become variably interpermeated in a "hydrocommons" meshwork of free-flowing and contained bodies of water (Neimanis 2019). Social structures, systems, and forces mediate both that variability and interpermeation.

Conclusion: Remember that the Dead are also Thirsty

As the site of water absorption into the body, intestines figure as a fundamental node of entanglement in the meshwork of the hydrocommons—and its accompanying traces of power. In Haiti, as elsewhere, bodies blend differentially, relatedly, and repeatedly with and through the waters they drink because of the social environments that structure that drinking, and also because of what those waters materially, spiritually, and affectively convey. The permitted leakage of pathogenic *V. cholerae* into Haiti and the epidemic which ensued radically disrupted

[19] See Ingold 2010.
[20] See Sharpe 2016; Ingersoll 2016; Neimanis 2019.
[21] See Tsing 2015.
[22] See Pollan 2013.
[23] See Murphy 2006; Agard-Jones 2014; Roberts 2017.
[24] See Haraway 1985.
[25] See Tuck & Ree 2013; de la Cadena 2015; Tsing et al. 2017; Stonington 2020.

people's collective and individual gut reactions. Collective and individual awareness toward the moral stakes of drinking water and drinking-water. Attending to visceral orientation and reaction helps us understand what is mattering in people's lives, what is mattering people, and why. Though 'always caused by a microbe', enteric symptoms of cholera could signal a 'natural' disease, or a case of 'bad' cholera effected by a zonbi. Differentiating between the two requires the visceral konsyans (awareness in the sense of with-knowledge) of a professional, particularly a Vodou oungan or manbo. Categories of bad/natural illness index not only their social and material entanglements but also moral readings of the source of their suffering. In isolating the individual as the privileged focus for identifying and treating disease (Cohen 2009), biomedical logics, for one, prove quick to blame the victim and obscure approaches to healing situated within collectives or communities.

The dual significance of konsyans also helps us to understand the embodied ways that people relate to their drinking-water. Individual and collective konsyans implicate situated visceral processes and orientations; these orientations are shaped through sedimented histories and temporalities of familiarity. As such, this chapter challenges received notions present in global health paradigms. Narratives reflecting the viscerality of familiarity challenge dominant assumptions that use economic metrics to cast certain bodies as simply more or less likely to drink 'good' water or otherwise. In spite of living on a planet and among living things composed predominantly of water, water is too often taken for granted in the ways we think with and think about bodies. People negotiate the value of the water they drink along affective and not economic terms alone. Bodies *become* with the water they drink and the waters surrounding them in processes that unfold, endure, and shift over time. The concept of abitye allows for a nuancing of rigid, oversimplified tropes that shame raw water drinkers—for what is believed to be their 'negligence' or 'ignorance'—as much as they reduce them to structural claims of causality. By paying attention to the ways people express visceral familiarity with drinking raw water, we come to appreciate the important roles gut-based preference, relationality, and anxiety play in sustaining or changing consumption patterns.

Concern for the wellbeing of bodies must extend to the wellbeing of the hydrocommons. The blended more-than-human embodiment of visceral konsyans ask us to take seriously the waters people drink not just because these are vital relations worthy of understanding—rather than shame or blame—but also because of the ways they affect the entire organism.

Responsibility and responsiveness to the hydrocommons has long existed in Haiti through Vodou. While it might be tempting to project a Protestant ethic onto the emerging RO water market, it might be more accurate to consider the ways that capitalism strips away konsyans.

About a week after first meeting Michel, I returned with Flora to attend a small ceremony at his ounfò (temple grounds). A couple had arrived from Pòtoprens specifically seeking out his—and his lwas'—counsel and healing. The four of us squeezed onto a narrow bench along one wall of Michel's small altar room. Before us sat the oungan wearing a white agbada and perched atop a high wooden chair in front of his tall altar. After several introductory rites, a long silence followed. Suddenly, Michel began singing. He led the group in a series of songs accompanied by the ason (sacred gourd rattle) and bell he shook in his hands, invoking each lwa in turn with a different song, calling them into the badji. Second in order was Simbi Andezo (Simbi of Two Waters), whose invocation included the refrain:

Yo di pa gen Simbi ankò,	They say there is no Simbi anymore,
Fò jete dlo pou moun yo.	You must pour out water for the people.
Yo di pa gen janbe ankò,	They say there is no crossing anymore,
Fò jete dlo pou moun yo.	You must pour out water for the people.

In Haitian Vodou, Simbi is the collective name for a group of lwa associated with and inhabiting freshwater. Among the Kongo people of West Africa from which these spirits descend, "the simbi were thought to be humans who had drowned, taken their own lives by accident in water, or hung themselves" (Anderson 2015, 266). As lwa in Haitian Vodou, Simbi are represented by a serpent, with vèvès usually involving snakelike designs and a crossroads marking their center. The 'two waters' of Simbi Andezo span the hydrocommons of the living and the dead: the freshwater sources that give life—streams, rivers, ponds, and springs—and the depths of the afterlife under-the-water. Crossing between waters, Simbi Andezo traverses realms, accompanying souls from place to place (Sheller 2020, 60).

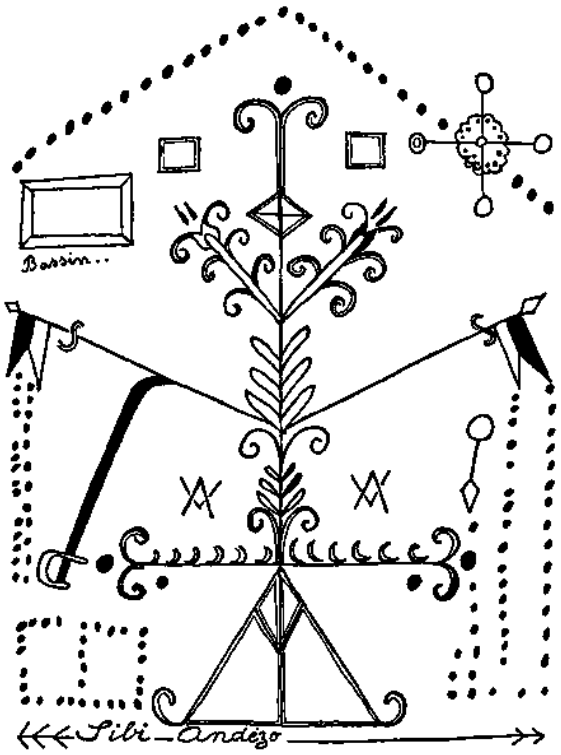

Figure 2-4: A vèvè for Simbi Andezo, drawn by an oungan named Abraham, from Métraux's Voodoo in Haiti (1972 [1959], 106).

The intonation for Simbi Andezo during the ceremony in Michel's badji reverberated with anxiety. Without Simbi, there would be no passage between the spirit and terrestrial world, making not only the forces required for ritual practice and healing inaccessible, but the souls of the living and dead confined in either realm, unable to communicate or find peace. "You must pour out water for the people," the song advises repeatedly. Before one drinks, one must remember that the dead are also thirsty (Roumain 1978 [1944], 43). Drops of water, the substance of life, get poured out in salutation and libation to the lwa and in memory of the dead. The affectively dense, lifelong—and even longer—interrelationality between humans and water in the symbology, cosmology, and practice of Vodou suffuses the waters people drink with a moral valence of value. To live well, both spiritually and viscerally, involves maintaining a relationship with water.

At Stéphanie's house a year later, we poured out water and beer for Sonson, alive but detained in the hellish prison above the spring. Indeed, those experiencing social death are also thirsty.

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Chapter 3 River

Cholera in Waterways: Water-oriented Desire and the Expansion of Haiti's Reverse Osmosis Water Market

Introduction: The Occurrences of Cholera

Nearly nine years after the novel onset of a cholera outbreak in Haiti, I met with the head nurse of Sen Mak's main hospital. Peering at me from across a thick wooden desk in her office, Nurse Etienne sat with her back to an enormous cabinet filled with pharmaceuticals and medical supplies. She let out a deep sigh at my first question asking her about her life. Much to my relief, the sigh signaled not annoyance but a moment of centering before allowing her story, shaped by chronic childhood illness, to unfold. At several points during our conversation, Nurse Etienne would seamlessly shift attention to respond to a request from a younger nurse asking for a drug or her advice. Then, pausing for a brief moment, she would return to our interview, finishing whatever answer she had been in the middle of sharing. Nurse Etienne was born in the Fifth Section, but after becoming sick at age eight moved between Sen Mak and Pòtoprens for her schooling and health care. Following her graduation from nursing school in 2007, she started working at the Sen Mak hospital in 2008. She was on the frontlines in October 2010 when the first cholera patients began arriving at the emergency department.

> When cholera started, I must say that I didn't know what it was, because it wasn't something that we had. *At all*. When I was in school, they did a quick pass about it but didn't really teach us about cholera because we never had anything like it in our country at all, at all, at all, at all. And so, we were not informed on how to identify it. During that time, I was working here at the hospital, and I remember how the head of my service came to tell me, "We have many cases in the emergency room, cases of diarrhea. They're coming from the Fifth Section. There are people who have already died. Let's go put IVs in them because they're having very watery-y-y diarrhea [dyare dlo-lo-lo]." But we had no idea what it was. Soon enough, the hospital was *full* of people. They were laying outside on the ground. There was so little room that we had to put people in the courtyard. We had no idea how to protect ourselves because we didn't know how it was transmitted. And so, we gave IV after IV after IV after IV. We saved a lot of people. At one point someone told us to collect the stool to analyze it. They sent the stool sample to a laboratory. Very quickly we got the results showing that it was cholera. It was then that someone came to tell us what to do, how to treat the patients, and how to protect ourselves and our families, because we had never considered cholera or learned about it in school.

Such marked the early days of the epidemic. This sudden encounter with an unknown and rapidly fatal disease sent shockwaves throughout communities and health care centers, first, along the Latibonit (Artibonite) River and then, within weeks, across all of Haiti, where in 2010 69% of the population had access to an improved drinking-water source,[1] according to WHO/UNICEF (2012, 45). It is intuitive, then, to understand the cholera epidemic as an event—a novel occasion. But how might we locate *when* and *where* this event occurred? In this chapter, I trace the origins of the outbreak, including but not limited to the introduction of pathogenic *Vibrio cholerae* into Haiti's waterways. As Nurse Etienne described, though, cholera also occurred in hospitals, in families, in the hundreds of thousands of bodies that fell ill. Traces of the outbreak have persisted in people's attempts to not just avoid getting sick, but to safeguard their health. Nurse Etienne, for instance, shared how she, like many other Haitians with access to tap water (which constituted less than 58% of the population in 2015 (World Bank 2018, 11)), switched from drinking the water of the municipal pipe at her home to buying treated drinking-water from a newly opened kiosk in her neighborhood. Several years later, after she realized that this water was causing the intermittent stomach pain and fatigue, she turned to Blue Heaven. "I went there to the factory and had them show me exactly how they treat their water," she recalled. "Because of cholera, I was compelled to do that." While the previous chapter discussed the embodied ways people become used to (abitye) the water they drink, these pages explore why people like Nurse Etienne are turning to reverse osmosis (RO) water—in contrast to the "appropriate technologies" often promoted in global health.[2] How are traces of cholera continuing to occur in the human-water relational 'water ways' the outbreak disrupted?

[1] UNICEF (2014) defines an "improved" drinking-water source as "one that by its construction is adequately protected from outside contamination, in particular from faecal matter." This includes but is not limited to piped water.
[2] "Appropriate technology" for water treatment in resource limited settings include "sustainable," "low-cost interventions" such as household water chlorination, solar pasteurization, and sand filtration. Reverse osmosis membrane technology, UV disinfection, and ozonation, on the other hand, are usually considered an "advanced water treatment processes" appropriate for use in developed countries (Schulz 2008).

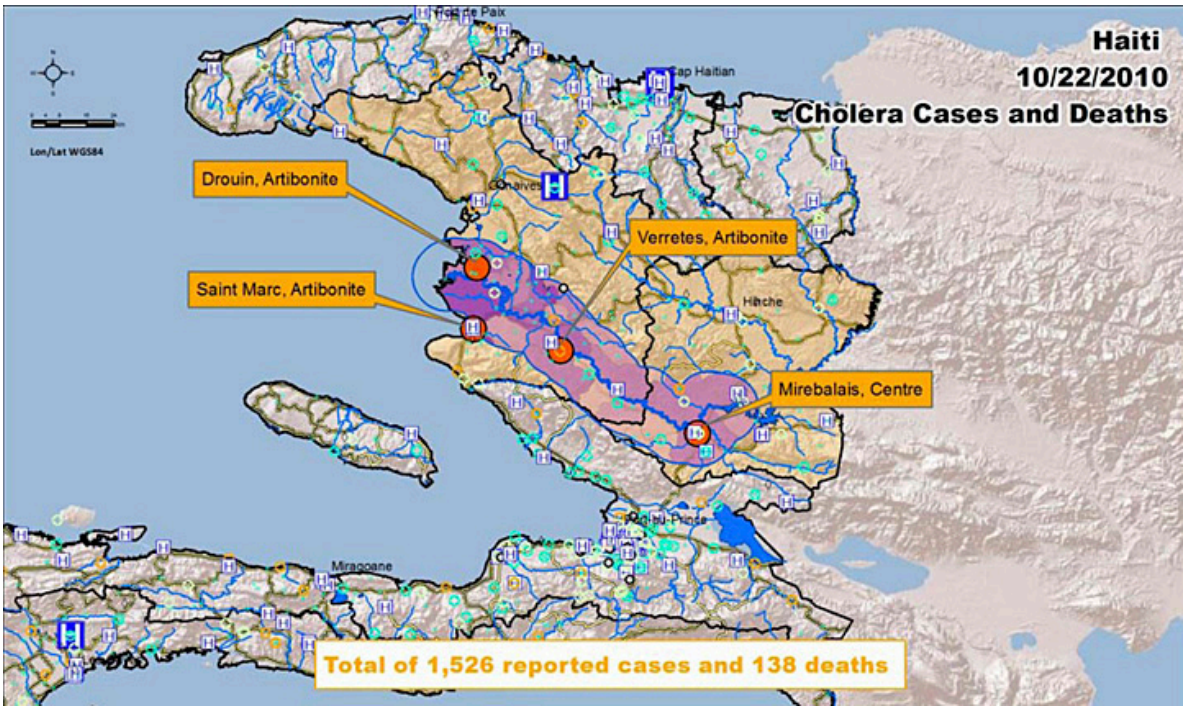

Figure 3-1: A map from the first situation report on the cholera outbreak in Haiti by the Pan American Health Organization's Emergency Operation Center (2010).

To begin exploring these questions, we might first consider what an "event" entails. Michel Foucault and many other scholars distinguish 'the event' by its beginning and end and analyze an event "according to the multiple processes that constitute it" (Foucault 1996, 277) and their effects (cf. Das 1995). Events layer into a history, and our task is to excavate the archaeology of its systems of knowledge. Instead of a bounded occurrence, Gilles Deleuze (2003), drawing from Nietzsche, approaches the event as part of contingent and ongoing processes of becoming that unfold in geographies of materials, possibility, and relationality. Orientations and relations are in motion cartographically, rather than unearthed archaeologically from static positionings. Leaks occur, lines of flight startle, and traces persist as events that exceed the presumptive logics of impermeable borders: "each is simultaneously the start, end, and midpoint of an ongoing cycle of production" (Biehl & Locke 2017, 8). Complication rather than implication.[3]

[3] Tim Ingold (2020, 29) differentiates the two as such: "Whereas implication connotes a folding inward, as if from side to side, complication carries the sense of folding forward—that is, of things convoluting longitudinally, braiding or plaiting along the lines of their own growth and movement."

As I demonstrate in this chapter, the beginning of the cholera outbreak is more difficult to pinpoint than might be assumed—so too its purported end, as I described in the Introduction. Toxigenic *V. cholerae* novelly emerged in Haiti not through an accretion of events in the world but through the potency of their 'concrescence' (Ingold 2020). In the eventful gathering of a world of materials—of organisms and substances ever in processes of flux and formation (Ingold 2007)—unfolded the acutely potent emergency of Haiti's cholera outbreak, a matter-full occurrence that continues to haunt future selves with its traces.[4] A haunting troubled not only by the ghosts of lives lost, but also by the stakes of the encounter between human life and *V. cholerae* bacteria, alive in every sense of the word. What might we learn by staying with that interconnected and watery more-than-human "trouble" (Haraway 2016)?

Amid the Haiti cholera epidemic, waterborne *V. cholerae* pathogens not only reversed osmotic homeostasis in human intestines but also catalyzed what has become one of the largest reverse osmosis drinking-water sectors documented to-date (Patrick et al. 2017). By following river water, this chapter examines how cholera emerged as part of and arising from shifting sets of relations that prompted complex effects both predictable and unexpected on RO water, particularly outside of Pòtoprens. The 2010 outbreak inscribes a marked temporality of a before and after onto RO water processes, which include both the production of RO water commodities and their consumption. As such, the rapid growth of the RO water sector in Haiti was not simply something that developed progressively over time. Rather, it was also the actualization of new and often surprising relations between and among *V. cholerae*, water, plastic bottles, and the drinking body, coordinated in a market system. While a market of RO water has to a certain degree existed in Haiti since the 1970s —and especially Pòtoprens, where Culligan had established the Caribbean Bottling Company in 1973—the introduction of pathogenic *V. cholerae* bacteria proved a critical moment in its trajectory.[5]

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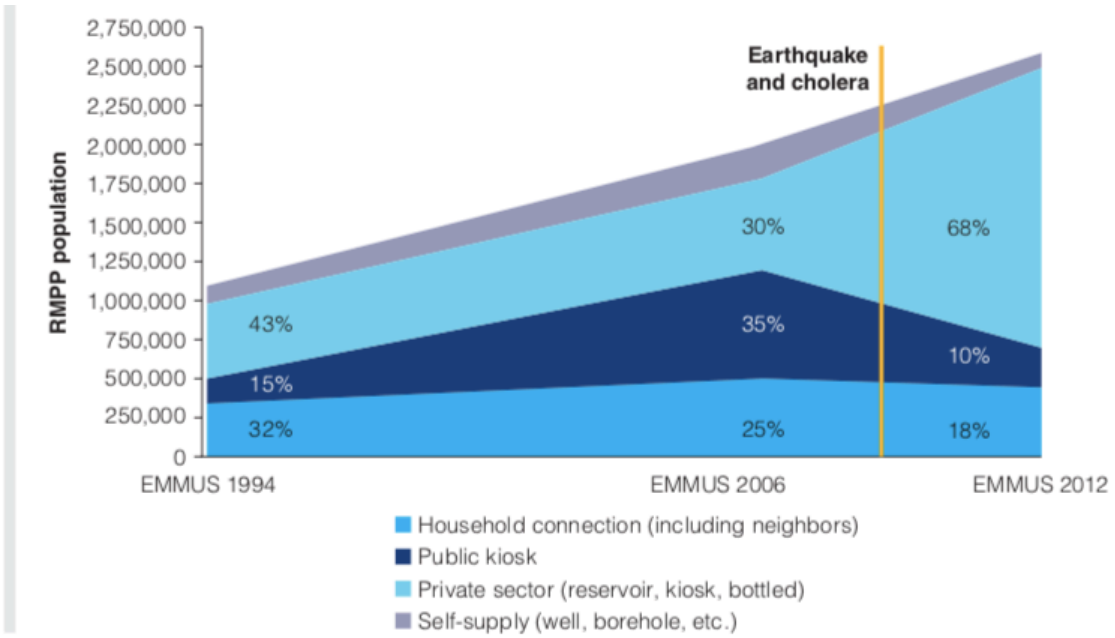
[4] Here, the cholera outbreak haunts much in the way Jacques Derrida (1993) describes the trace as an always-already absent present.

[5] As I discuss in Chapter 5, while more than 200 serogroups of *Vibrio cholerae* bacteria have been identified, only the strains of two serogroups (O1 and O139) produce the toxin necessary to cause the life-threatening disease known as cholera. The symptoms of cholera include acute watery diarrhea and vomiting and can lead to severe fluid loss and death unless promptly treated with rehydration therapy. Throughout this dissertation, I use the words 'pathogenic' and 'toxigenic' interchangeably to distinguish the *V. cholerae* strains involved in Haiti's epidemic.



Source: Calculations using EMMUS data and population estimates from the Haitian Institute of Statistics and Informatics.
Note: EMMUS = Mortality, Morbidity and Service Usage Survey; RMPP = Port-au-Prince metropolitan area.

Figure 3-2: This graph shows the share of the population in Pòtoprens based on the source of drinking-water used, and demonstrates the rapid expansion of the "private" drinking-water sector in Pòtoprens between 2006-2012 (World Bank 2018, 38). A yellow line marks the year 2010, when an earthquake struck Pòtoprens in January and the cholera epidemic started in October, quickly spreading throughout the country.

If we continue the kind of "event-thinking" from above (Hawkins et al. 2015), the phenomenal growth of Haiti's RO water market over the past decade can also be considered an event. Inexorably linked to the ruptures accompanying the outbreak, the rapid expansion of drinking and making RO water signal a proliferation of new relations, creative processes, daily practices, and aggregates of desire and power in a world perpetually in creation. My approach to RO water as an occurrence in Haiti—a central project of this dissertation—begins by examining the ways in which people engage in its consumption. The krik to its krak,[6] this chapter forms the call to the sixth chapter's response, which explores how RO water works in Haiti. Here, I argue that the potent emergency of cholera complicated—in Tim Ingold's "forward folding" sense (2020, 29)—drinking bodies' spatial orientations of desire: a water-oriented rather than water-

[6] In Haiti, "krik?" is asked as a request to recount a story, tell a parable, or—at least in the Artibonite region—share a riddle, to which listeners answer, "krak!" For example: "Krik?" (narrator) / "Krak!" (audience) / [narrator recites a tale or asks a riddle]. In other parts of Haiti, "Tim tim" / "Bwa chèch" form a more popular call and response for riddle telling.

based desire; a being-toward rather than a being-because; one that is enriched by, or perhaps soaked with, both past and future hydrational contingencies. As Biehl and Locke (2018, 6) write, "desire does not seek a singular decontextualized object, but a broader world or set of relations in which the object is embedded and becomes meaningful." Emerging scholarship on sachet RO water consumption in West Africa differentiates between the "need to quench thirst" and the "desire for cold water," arguing that this desire has been recently "created…through the marketing and commodification of water" (Keough & Youngstedt 2018, 45). Here, I suggest that there also exist situated desires for particular waters (regardless of temperature) that spill beyond the need for hydration. Water-oriented desire corresponds to a longing to safeguard one's health—however self-defined—through the water one drinks.

This chapter proceeds in three main parts. It begins in 2017 on a journey to and from the former base of the Mission des Nations Unies pour la Stabilisation en Haïti (MINUSTAH, United Nations Stabilization Mission in Haiti) located in the area of Meye—outside the town of Mibalè—and the place from which pathogenic *V. cholerae* entered Haiti's waterways. A journey that, while linear, also doubles back, leaking unexpectedly into the past and the future. The next section opens with several ethnographic anecdotes that demonstrate the potency of cholera's emergency. For my interlocutors and many others, the outbreak marked a beginning borne both of water and traumatic loss, a visceral experience of before and after. And yet Haiti's beginnings and those of Haitians' ancestors have always already been ones subject to epidemic diseases sparked by coloniality and carried by/over water. I draw on Édouard Glissant's notion of the 'abyssal beginnings' of the Caribbean (Drabinski 2019) to understand how cholera in Haiti carries these recurrences in spite of its seeming exceptionality. The third section discusses the implications of water as a repository of lives, loss, and desire, shifting from water more broadly to reverse osmosis drinking-water in particular. Lastly, in the conclusion I map a geography of water-based desire to safeguard health by using as an example the RO water ways of Emmanuel, whom I introduced in the introductory chapter.

3.1 - Following the River: When the Ruins Speak Back

Sonson accompanied me as I spent the first half of a day in early July 2017 visiting and interviewing people in several localities south of Mibalè, driving me around on his rickety but loyal motorcycle—the same one that stalls every time it would climb up to the holy waterfall mountain town of Sodo carrying him, Flora, and myself on its back. Each weekend ahead of the Sodo fèt champèt, or patron saint day for the Vyèj Mirak (Virgin Mary of Mount Carmel), on July 14-16, we had been riding up from Mibalè to enjoy festivities at pools and streams of crisp spring water that feed the sacred cascade. And each weekend, our collective desire was never quite enough to get us to the top of the mountain. But it always got us to where we needed to go. I wouldn't have it any other way.

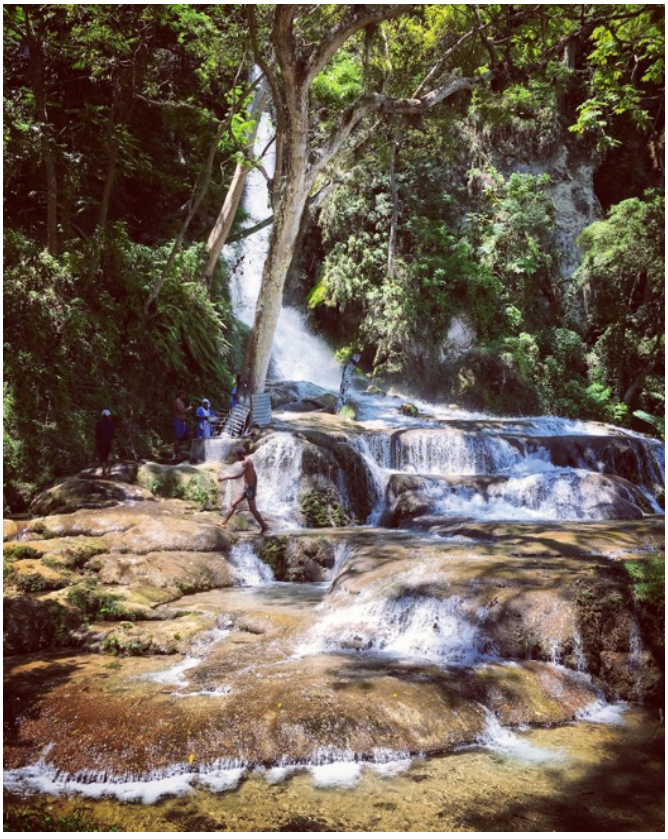


Figure 3-3: The holy waterfall at Sodo. Photo by author, 2017.

I met Sonson through Flora a couple weeks before, when I was in need of a dependable moto driver after arriving in Mibalè. They live in adjacent neighborhoods; Sonson's home is further down the main market road than Flora's. In fact, it's at the very end, in an area called Pas Kannòt (Boat Crossing), where a maze of humble dwellings nearly spills onto the banks of the

Latibonit River. Sonson and I connected instantly when Flora introduced us. In some ways, he seemed to mirror his motorcycle: his frame, thinner and smaller than it could have been, quickly proved a misrepresentation of not only the deftness of his driving but also the fortitude and generosity of his spirit.

During our rides since, we chat over the sound of the wind in our ears or a couple cold Coca Colas on the side of the road. Our speech is a mezcla of Kreyòl and Español—or, in Sonson's case, the Panyòl dialect of the Dominican Republic. Sonson had lived there for seven years, 2003-2010, eking out an income from making and selling bracelets on the beaches of Sosúa. He returned to Mibalè following the January 12, 2010 earthquake to help his sister care for their ailing mother. She died a month later on February 24. Exhausted by the anti-Black racism and discrimination against Haitians in the DR, Sonson decided to stay in Mibalè. "I carry Haiti with me, even in a different country," he told me proudly. "I carry it on my skin." In the months following, he ended up (unofficially) marrying his childhood sweetheart—"the only one for me," he said—and having a daughter. They named her Monica.

Sonson's first tattoo was a large cross on his left bicep. Below that, on his inner forearm, is the name of Jesus. The symbol of Sonson's favorite—though ill-fated—rap group, Barikad Crew, adorns his right shoulder, accompanied by his mom's name, Monique. Across his back reads "I DON'T NEED ANY OTHER" in English. He works as a moto driver for himself and for his family. People call him "rasta." But I learned that 'rasta' in Haiti interpellates Sonson—and anyone else with dreadlocks and/or tattoos (including myself on occasion!)—not as a Rastafari adherent, but as a member of the counterculture. For Sonson, rasta is his aesthetic. Often, though, people reduce rastas to their look, a look that associates them with thieves, murderers, and drug dealers. As such, rastas like Sonson are unfairly and unduly persecuted by the police.

On this day, I asked Sonson to help me visit the old MINUSTAH base in Meye and its surrounding localities. I had been in Mibalé for five weeks but had yet to visit ground zero of the cholera outbreak: the place where pathogenic *V. cholerae* seeped from the bodies and toilets of United Nations soldiers, entered a tributary flowing from the Sodo waterfall to the Latibonit River, and sparked the deadliest cholera epidemic in recent world history. As we drove to the base, I asked Sonson to pull over at a few homes along the way so that I could learn about the area from community members. In the front yard of one home, I spotted a public water kiosk

sponsored by DINEPA (the National Directorate of Potable Water and Sanitation), UNICEF, Japan, and Zanmi Lasante (a local health care NGO). Two metal pipes jutted out the side of a small cement block structure, but for the moment they stood dry. “We don’t have the key to unlock the door to get inside and turn on the water,” explained a woman next door. “This area still has cholera cases. My sister got sick in October 2010 and spent a week in the cholera treatment center. They built this pipe in 2015. Twice a week an agent turns the water on, and the entire neighborhood comes to fill their buckets. We use this water for washing, cooking, and sometimes for drinking, but mostly we take a moto taxi into Mibalè to buy our drinking-water.” The neighbor, in whose yard the water kiosk stands, reported the same thing.

Slightly further down the highway from Mibalè and closer to the Meye MINUSTAH base, I met Woodline. She lives in a wood-and-mud frame house that you have to climb a steep hill next to the road to reach. Six family members share the home, including her and her two kids, located on her family’s ancestral land. They carry water from the tributary to use in their household but travel by moto taxi every three days to purchase drinking-water in town. “We’ve been buying water since cholera started,” Woodline said. “My older brother died of cholera in 2010 at the age of 30. After that, we take more precaution with the water we drink.”

As Sonson and I continued toward the camp, we stopped to speak with another family living along the road. Their degree of poverty greatly surpassed those of our previous interlocutors. Of the ten people residing among several small wood or wood-and-mud structures on their land, one of which bore a sky blue door painted with the letters “UN” in white, we met Djonny, a nine-year-old boy living with spastic quadriplegia of unknown cause, and his two parents: Tony, a farmer, and Celia, who sells their produce along with handmade baskets from a small stand in front of their home. They lived and worked on a sugar cane plantation in the Dominican Republic for more than a decade but returned to Haiti shortly after Djonny was born in 2008. When cholera struck in 2010, both Tony and Djonny got sick. “Lavi a di pou nou,” said Celia. Life is hard for us. And still, when I asked about the water they drink, Tony explained that he pays a moto taxi to take him into Mibalè every three days to buy treated water.

Figure 3-4: A repurposed UN door at Djonny's home. Photo by author, 2017.

I had arrived in Mibalè at the beginning of June with the intention of learning about the use of liquid sodium hypochlorite (i.e., bleach) products for household water treatment (HWT), as foreign-funded efforts to eliminate cholera transmission had enlisted the "appropriate technology" of HWT as a key component of their design. In just a matter of weeks, though, my interviews and observations had clued me into a very different reality. "Why would we put klowox [bleach] in our drinking-water when we see what it does to our laundry?" several individuals insisted. Most people in town described how they rely instead on reverse osmosis water for their hydration. Suddenly, I started noticing the stalls of water vendors present in nearly every neighborhood around Mibalè: operations of scales ranging from a single person in a two-story structure refilling gallons from a huge tank above the spigot, to businesses of 10-20 employees producing multiple RO water products for sale and resale. A market, as became clear, burgeoning in the context of cholera.

In a field survey of Mibalè that summer, I found that the number of RO water enterprises more than doubled—from three to at least seven—after 2010. Pivoting from an investigation of household water chlorination, I embarked on an attempt to understand a practice that seemed to matter more in people's lives, if largely overlooked in global health discourse and approaches to cholera elimination in Haiti (cf. Ritter et al. 2020). My conversations with the families *outside* of

Mibalè as Sonson and I made our way to the MINUSTAH base suggested something even more surprising relative to received public health assumptions.[7] RO water consumption appeared to be expanding not only among urban dwellers living within walking distance to a vendor, but also among rural inhabitants, many of whom would be considered extremely poor by every economic measure.

Figure 3-5: A water vendor in Mibalè that resells water treated by reverse osmosis, UV light, and ozonation from Sweet Lokal, a Mibalè-based enterprise established after 2010. The second level of the kiosk holds a huge water tank from which containers are refilled at the window. (Telephone numbers have been obscured.) Photo by author, 2017.

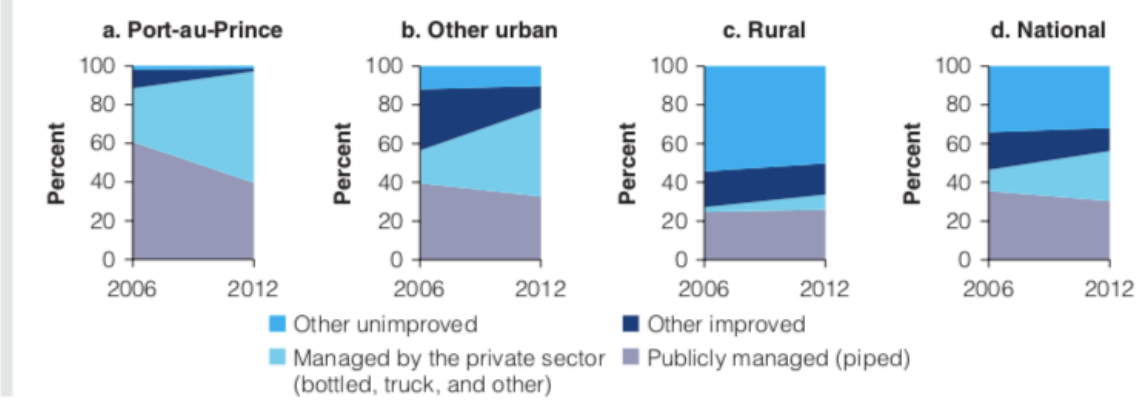
The following year, the World Bank (2018) published a report that both validated many of my preliminary observations and deepened my anthropological curiosity. In *Looking Beyond*

[7] In August 2020, I performed a literature search for studies on drinking-water in Haiti published after 2000. Using the search terms "Haiti," "drinking," and "water" in PubMed, I retrieved 51 articles. Of these, 26 met my criteria: published after 2000 and specific to Haiti. Of these 26 articles, 10 included mention of the terms "bottled," "reverse osmosis," and/or "private kiosk," but only six involved any kind of substantive investigation or discussion of these topics (beyond mere mention). The vast majority included drinking-water categories that conflated tanker truck, bladder, bottled, and sachet water. One study based on Port-au-Prince concluded, rather dismissively, that "many households reported purchasing bottled or treated water, which is expensive, and unlikely to serve as the main source of drinking water," despite the fact that 34% of the participants (N = 892) reported "bottled or treated water" as a drinking-water source (Tymejczyk et al. 2020, 243).

Government-Led Delivery of Water Supply and Sanitation Services: The Market Choices and Practices of Haiti's Most Vulnerable People, the authors explain how

> *The private sector has taken advantage of the lack of government response capacity and the increased demand for improved water services triggered by the cholera outbreak*. According to EMMUS [the Mortality, Morbidity and Service Usage Survey], the percentage of Haitians that resorted to the private sector to satisfy their drinking needs increased between 2006 and 2012 from 10.9 to 25.8 percent. In urban areas, this figure was even higher: 57.1 percent for the Port-au-Prince metropolitan area and 45.5 percent for the rest of the cities. This includes bottled and bagged water, trucked water, and treated water sold by private companies. (2018, 14, emphasis added)

Within six years, private sector drinking-water consumption had more than doubled nationally, with reverse osmosis drinking-water products constituting a significant proportion of the trend. While 2.1% of households in Pòtoprens used bottled water as their primary source of drinking water in 2000, this figure soared to 49.0% by 2012, according to Demographic and Health Survey results (Patrick et al. 2017, 84). My preliminary data from Mibalè signaled a burgeoning market and proliferation of RO water consumption not confined to the capital city. The explosive growth in the use of "decentralized, membrane-based, water refill stations" throughout Haiti has made the RO water sector there "one of the largest documented to-date," resembling to a certain extent a pattern rapidly emerging worldwide, particularly among low- and middle-income countries such as Indonesia, Nigeria, and the Philippines (Patrick et al. 2017, 88).



Source: Calculations using EMMUS 2012 data.
Note: EMMUS = Mortality, Morbidity and Service Usage Survey.

Figure 3-6: A series of graphs from the 2018 World Bank report, showing shifting trends in access to water in urban and rural areas as well as nationally between 2006-2012 (2018, 16).

In these reports, the World Bank (2018) and other investigators (Patrick et al. 2017) infer that driving the rapid expansion of Haiti's RO water sector—comprised entirely of private

enterprises—is increased demand, especially in the wake of cholera. I don't set out to refute this claim. Indeed, in other postcolonial settings where potable tap water, particularly potable tap water piped to households, is a privilege few enjoy, studies have demonstrated how packaged water often provides the only reliable source of safe drinking-water (Prasetiawan et al. 2017; Vedachalam et al. 2017). Rather than dwelling on questions of *why* RO water products are proliferating across Haiti, which prescribes aims to deduce the motives determining an outcome (see: "increased demand"), this chapter explores *how* this proliferation is unfolding.

Examining the ways in which people in Haiti are practicing RO water consumption fosters an attentiveness to processes of becoming, geographies of desire, and poetics of relationality (cf. Glissant 1997; Biehl & Locke 2017). In this way, the occurrence of Haiti's burgeoning RO water market is not reduced to causal claims but emerges as a historically and locally situated space filled with transformations, indeterminacies, and surprising new relations. Instead of framing 'increased demand' as motivated simply by lack of ready access to safe drinking-water, "how?" orients us toward not just directionalities but the fluctuating, interpermeating ontologies involved in the commodification of RO drinking-water. "How?" allows people, pathogens, histories, actions, technologies, statistical data, waters, and ruins to speak back. "How?" allows us to listen, witness, and care, knowing that not all can be known.

"Stay strong, rasta," Tony told Sonson, shaking his hand as we thanked him, Celia, and Djonny and bid them farewell. "They're good people," Sonson said once we were back on his motorcycle. I nodded in agreement as we continued on our way to the MINUSTAH base.

Just up the road, we reached a huge metal gate accompanied by an empty guard tower. Both were erected in 2004 during the installation of the UN's peacekeeping mission in Haiti. For many years the gate bore "UN NEPALESE BATTALION MINUSTAH HAITI" in large black letters over a white background. Following the cholera outbreak, the UN recalled the Nepalese battalion, and the words were covered with white paint. The day that Sonson and I arrived, the gate announced "DANNY'S CARWASH" in peeling red letters above an almost life-size rendition of a car, followed by two phone numbers emblazoned on its doors. Sonson snaked the motorcycle through the cracked open gate and drove us across a large field—now occupied in one corner by Danny's semi-operational carwash (not in operation that day). He parked the bike under some shade by what were probably once some of the main offices of the compound. The

only other human on the grounds that day was a tall farmer tending to his cow tied near the vacant flagpole. The camp stretched beyond, bordered on one side by a tributary, with ruined structures and guard towers punctuating a desolate landscape. At first, the utter emptiness of the abandoned base astounded me: hollowed out, shattered, and in many cases roofless and doorless. But quickly enough, the ruins began to "look back" (Caws 1997, 303, quoted in Tuck & Ree 2013, 653). Fragments that suggested the shattered and shattering project of coloniality; absences that hinted at what had been and at what had become. In the gaping entrances, for instance, I recalled the salvaged sky blue UN door at Djonny's house.

Sonson led me to a building that was once used for toilets. It was situated immediately adjacent to the Latem tributary, separated only by a few meters of earth and a chain-link fence. The waters were flowing in the very same way as when toxigenic *V. cholerae* leaked into them from the camp in October 2010. The pathogen did not breach the stream simply because it was present in Haiti. Rather, the human failure to secure the site facilitated its spread. Standing at the rusted fence, my eyes traced the path from the dusty tiles and shattered piping of the bare toilet stalls to the murmuring tributary. Staring back at me was the toll of the ensuing outbreak: 690,000 cholera cases and 8,500 deaths within the first three years alone, although many more likely went unreported. Among them, Woodline's brother. Our task, writes Avery Gordon (1997, 64), is to "look for lessons about haunting when there are thousands of ghosts; when entire societies become haunted by terrible deeds that are systematically occurring and are simultaneously denied by every public organ of governance and communication." The United Nations denied its role in Haiti's cholera epidemic for six years, and it continues to refuse any legal accountability to the victims and survivors—a move that many argue is motivated by systemic racism within the institution.[8]

[8] In November 2011, the Institute for Justice and Democracy in Haiti, a U.S.-based legal advocacy organization, and its Haitian partner organization, the Bureau des Avocats Internationaux, filed claims against the United Nations on behalf of 5,000 Haitian cholera victims. Together, they petitioned for 1) investments in water and sanitation infrastructure to combat the epidemic; 2) just compensation; and 3) a public acceptance of responsibility. In February 2013, the UN finally responded, dismissing the claims as "not receivable." Despite multiple attempts to advance the lawsuit, the UN continued to assert its immunity and refused to hold itself accountable to victims of cholera in Haiti. It wasn't until 2016—six years after the outbreak started and in spite of overwhelming evidence—that the UN finally acknowledged any kind of role it played in causing Haiti's cholera epidemic, issued a long overdue apology, and launched a $400m initiative to end the transmission of cholera. For comparison, $400m can buy one Boeing 777X airplane. In April 2020, a group of independent UN rights experts released a statement decrying the United Nation's "pitiful" and "deeply disappointing" follow through on its planned $400m initiative (OHCHR 2020).

Sonson shifted uncomfortably, breaking my gaze. “They say there used to be a baka here on the base,” he shared. Baka, according to my interlocutors in Mibalè, are small, shapeshifting, devilish fiends who wreak all kinds of teases and terrors on those they haunt. “It constantly played tricks on the soldiers,” he continued. Although Sonson didn’t know the details of the baka’s origins or intentions, these spirit demons are typically sent by sorcery to sow panic at a particular place. Lauren Derby and Marion Werner (2013, 316) interpret the presence of a baka at an export garment plant in the Dominican Republic that employed a number of Haitian migrant workers as an historically situated “metaphor of supernatural extraction” and a “weapon of the weak” (Scott 1985). At the factory, the violence handed down through capitalist exploitation and neoliberal geopolitics was met with popular rumors of baka sightings, unnatural deaths, and blood-stained products. Enough to slow down production. At the MINSTAH base, rumors of the baka were likely enough to provoke anxieties among soldiers, and certainly enough to communicate their unwelcome.

We returned to the motorcycle. As Sonson and I drove across the grounds toward the gate, I noticed words painted on a low wall of an elevated concrete platform. The large red lettering faced outward onto the open field, opposite the stream at the other end. “LEARN SAFETY TEACH SAFETY AND PRACTICE SAFETY,” the ruins said back to me (in English). In the “language of the landscape” (Glissant 1989, 145), the haunted camp seemed to let out an ironic sneer accompanying not only the content of its message, but also its illegibility to those most affected by its irony. We rode on.

Figure 3-7: Words painted on a low wall at the ruins of the MINUSTAH base in Meye. Photo by author, 2017.

Not far from the base, we stopped by an open-air roadside bar—Sonson needed a cigarette and I needed a cold beverage. As we sipped our chilled Coca Colas next to the loudspeakers, I caught the eyes of three women seated at the other end of the sheltered yard in front of a line of several doored rooms. One of them, hair wrapped in white cloth and smoking a cigarette, gave us a subtle signal to approach. We chatted and laughed, sharing stories about our tattoos; one woman told me about how she pierced her own nose. Sonson let me know that they're bouzen, sex workers. Beyond the closed-door rooms, which now made a lot more sense, I could see a steep staircase cut into the bank of the same tributary flowing by the Meye MINUSTAH camp upstream. I worried about their safety. "Where do you get your water?" I asked the women. "We buy sachets to drink," the woman in the white headwrap said. "We bathe in the stream, but we wash our genital area [fè twalet deba] with sachet water." Out of a desire to take care, and not just a lack of ready access to clean water, they were trying to be as safe as possible—as were Celia, Tony, Woodline, and the others we spoke with along the road to the old UN base.

Following the Meye stream a little farther to where it feeds into the Latem, you reach the place where the first person in Haiti contracted cholera: a 28-year-old man whose poverty and history of severe untreated psychiatric disease placed him at increased risk of waterborne infection (Ivers & Walton 2012). On October 12, 2010, he suddenly started having profuse watery diarrhea and died less than 24 hours after the onset of his symptoms. Within days, more people began falling ill. The first patient to be hospitalized for cholera occurred in Mibalè on October 17, 2010. While these dates mark the beginning of cholera transmission in Haiti, the narratives above reveal how the outbreak continues to recur, even in its absence. As an event (to be avoided, if possible), the epidemic persists in everyday practices of bathing and drinking, as it does in the burgeoning RO water market.

3.2 - MINUSTAH, the Potent Emergency of Cholera, the Social Trauma of Repetition

From its course around the MINUSTAH base in Meye, the stream runs behind the roadside bar and joins the Latem tributary flowing from the sacred mountain waterfall of Sodo.

At Mibalè, the Latem empties into the sediment rich Latibonit River, their confluence indexed by the striking juxtaposition of blue-green and brown waters. From here the Latibonit snakes westward across the Haitian countryside, in and out of sight of a roadway traveling relatively parallel along its valley. Mountain streams continue to feed its flow as river water gets periodically redirected into canals irrigating farmland near its banks. Towns seem to grow in size and concentration as the Latibonit meanders west, culminating in Sen Mak, a port city of 300,000 surrounded by foothills and nestled beside a bay several miles south of the mouth where the river feeds the ocean. Before the colonization of Kiskeya, the island later named Hispaniola, the indigenous Taíno population residing by this bay called their village Amani (Destin 2011). French settlers occupied Amani in 1695 and named it Sen Mak. As of 1915, Sen Mak denotes both the city and the arrondissement, subdivided into six communal sections. The Fifth Communal Section of Sen Mak comprises the huge swath of land extending north from the city to the banks of the Latibonit, lined with habitations. Here, river water saturates both land—cultivated, as much of it is, for rice—and the human lives subsisting on it. Beginning in October 2010, toxigenic *V. cholerae* complicated these watery entanglements for the first time in Haiti's history. The pathogens, proliferating in and through bodies and waters as they traveled downstream from Mibalè, would spread through the entire country in a matter of weeks.

During my interview with Nurse Etienne, she recalled the trauma of the outbreak:

> It was an extremely hard experience. There were people who couldn't accept it. And even to now, they've never accepted it, because they carry so much grief [regrèt]. People died psychologically. Across Sen Mak and the Fifth Section, people were affected psychologically, even up to now. They've never forgotten the children in their care who died of cholera or the close family members they lost. Of my family in the Fifth Section, I had a cousin who lost her husband very suddenly. He was having diarrhea and vomiting, but they didn't know that it was cholera. They didn't know what cholera was in the first place. By the time they arrived at the hospital, he had already died. He left behind maybe four or five kids. And it wasn't just him who died. His wife, my cousin, also died later on. In the same situation. You understand? Those children are still grieving. Even though the rate of cholera cases has diminished significantly since then, it has left a big impact on families in Haiti.

Cholera struck Haiti with unprecedented virulence: not only were the circulating vibrios of a particularly pathogenic strain, but insufficient access to health care, safe waste management, and clean drinking-water in the context of a previously unexposed population (including clinicians) fueled—and afforded—their spread. *V. cholerae*, among the smallest living organisms on this planet, tore through families across the country, unleashing severe enteric disease, sudden death, and indelible trauma. Some people died within as few as six hours of becoming symptomatic. Following its peak in the last quarter of 2010, the epidemic continued to seethe in Haiti—and especially the Artibonite region—for several years until cases fell to their now

relatively low level of incidence. The virulence of *V. cholerae*, its living biology, and the extent, speed, and traumatic effect of its human toll lend an acute potency to their emergenc(e)y, reflected in the graphic details and affective force of narratives like that of Nurse Etienne and many others.

A few weeks after interviewing Nurse Etienne, I went to stay on Emmanuel's farm in the Fifth Section and conduct a Photovoice project with peyizan (rural planters) in the area.[9] One of the participants was Wilmar, a 55-year-old rice farmer who lives in the next village up the road. After discussing the images he captured to demonstrate the importance of water, Wilmar abruptly seemed to brace himself for what he was about to share next.

> My older sister was among those who died of cholera. One afternoon after the rains passed, we went to work in the garden. And during that time, she caught cholera. That night she fell ill. My son-in-law came to find me and described what was happening, but I told him I didn't recognize that sickness [because I had never seen those kinds of symptoms]. I said to him, "We were just together that afternoon, and she was normal. She returned home to make a fire to start cooking. I don't understand what could have happened." But when I arrived at her home, I saw her. I was struck! She could end any minute. So, I went to find a doctor, but this area didn't have a health clinic nearby. One has to travel to Bocozel or Sen Mak to reach a health center. Very quickly we gathered enough money to pay a moto to take her to the clinic in Bocozel. But along the way, she died. We didn't have a chance to reach the hospital. She unfortunately died. That sister loved me a lot. It really affected me. But alas.
>
> Considering all of that, I'm a lucky person. I escaped, but *many* people died. In a single house, look at how many people died. One family could have one or two people who died. But things started to improve as we came to understand what cholera is. People came to pass out Aquatab; they installed some machines to disinfect the water. It's been a while since cholera was really bad, but it's still here. It's still here. For that reason, I don't drink just any water. Before cholera, people would drink any which water from around [such as pump, canal, and river water]. But even if water looks clean, it's not really clean. It needs to be treated. I'm obligated to make an effort to buy a biosand filter to put inside my house. From time to time, I get river water and filter it and then treat it with something else.

The story of Emmanuel's 63-year-old mother, Ti Marie, emerged in almost the same way. We had just finished our Photovoice interview. Ti Marie returned to the task in front of her—prepping lalo (amaranth) leaves for cooking—as I scribbled down some remaining notes from our conversation. Suddenly, without lifting her head at first, she said, "You know, I myself had cholera." I began a new page in my notebook. "Cholera kills people," Ti Marie started. "It tears your entire body apart. I got sick the same day that the neighbor's kid died. I had returned home from working in the rice garden, and I started feeling hot! I'm hottt [m chooo]!!! I was losing water, losing water, losing water, losing water [pedi dlo]." Ti Marie shook her hand, snapping her fingers together with each 'pedi dlo'. "Cholera is really harsh. I called everyone I

[9] 'Peyizan' in Haitian Kreyòl translates literally to 'peasant' in English, but a more accurate interpretation might be 'rural planter' or 'small-scale farmer'. The peyizan in Haiti form collective identity and have a long history of class solidarity.

could, trying to find someone to take me to the hospital. Finally, a cousin picked up his phone. At the clinic, it was completely full [moun sou moun; people on people]: the person above vomiting all over the person below. They gave me water to drink, and after a few days I recovered. We had a biosand filter,[10] but it broke a while ago. For the past several years we buy Blue Heaven water to drink." Blue Heaven is a brand of RO water produced in Sen Mak by Industries Kayimit S.A.—a water bottling company founded in 2015 that is featured centrally in Chapter 6. I wrote down her words as quickly as I could. What's missing in this partly paraphrased version, though, is the way Ti Marie recalled every excruciating detail of her harrowing experience, even nine years on. "Trauma is only trauma for those who *survive* and live from out of and within the disaster," writes John Drabinski (2019, 50), echoing the work of Édouard Glissant.

The potent emergency of cholera ruptured both bodies and time. We can hear the temporal fissures in Nurse Etienne, Wilmar, and Ti Marie's repeated expressions: "IV after IV," "losing water," "it's still here." While some scholars might draw on psychoanalysis to reduce these recurrences to evidence of traumatic experience not yet processed or fully buried (Caruth 1995), I follow Deborah Thomas (2016) in locating these narratives not as confined to—or necessarily indicative of—the individual, but as expressions both situated within a social, material, and historical context and also haunted by the conditions that mediated their becoming. Repetitions as past living in the present *and* as traces of interrelated forces. As Thomas suggests (2016, 188), "Framing these narratives socially would also lend insights into the process of mediation that 'links an institution and an individual, a social structure and a subject, and history and a biography' (Gordon 2008, 19), and therefore the kinds of "co-relation" that temporal simultaneities bring to light." Critical examinations of recurrence, simultaneity, and continuity are deeply rooted in the scholarship on Black Atlantic worlds. Antonio Benítez-Rojo (1992) and Michelle Wright (2015), for example, both draw on theoretical quantum mechanics to reimagine Eurocentric historical processes and epistemologies through nonlinear relationships among space, time, scales, and blackness. These framings have been critical for interpreting patterns

[10] Biosand filters are point-of-use water treatment systems which use the biological and physical processes of a sand column covered with a biofilm to remove pathogens and suspended solids from water. Typically constructed locally using materials on hand such as sand, gravel, concrete, and plastic, biosand filters are often promoted as an "appropriate technology" for treating water in resource limited settings. After being patented in 1993, they've been introduced into poor communities across the Global South.

underlying recurrences of the state and everyday violence that mediate lived experiences of suffering in the Caribbean context. How, though, might we approach narratives about a new event like the cholera outbreak as social? Thinking with the membrane helps us consider how repetitious narratives and expression about the epidemic index repetitions of colonial necropolitics through the subjugation of racialized bodies. While the introduction of toxigenic *V. cholerae* in 2010 amounted to a novel cholera epidemic in Haiti, it was not the first explosively traumatic encounter between pathogens and Haitians or their enslaved ancestors.[11] Traumatic loss yields a collapsing of time and a haunted present. Let us wade in it.

The 2010 cholera outbreak emerges along a trajectory shared with devastating epidemics that began decimating the Taíno population of Kiskeya in the late fifteenth century—as early as Christopher Columbus' second expedition in 1493-1496, which entailed the arrival of 1,500 soldiers and settlers on the island (Cook 2002). In the wake of this Spanish invasion, catastrophic outbreaks of malaria, syphilis, smallpox, and modorra (sleeping sickness) swept through aboriginal villages. Estimates of the number of Taíno living on Kiskeya at the time range from several hundred thousand to over a million (Keegan 1992). According to sixteenth-century Spanish chronicler Gonzalo Fernández de Oviedo (1959 [1535]), "more than two parts, or half of the Spaniards died, and of the Indians themselves so many died that they could not be counted" during those first three years alone. Made victims to enslavement, starvation, brutal treatment, and disease, only 32,000 Taíno survived in Hispaniola by 1514. The Caribbean, argues Michel-Rolph Trouillot (1992, 20), was the place where "Europe first achieved the systematic destruction of the Other, with the genocide of the [indigenous peoples] of the Antilles." This tortured geography portended the tortured "a-geography of the ocean" (Drabinski 2019, 51), the temporality of which is not simply repeating (Benítez-Rojo 1992) but the recurrence of beginning, beginning with the abyss (Glissant 1990).

For Glissant, the abyss describes a sense of loss so irretrievable that people are disconnected from disconnection. A radical disruption of all senses of relation to the past, and so too the future. Thwarting linear temporal scales, the abyssal beginning has two sites: the plantation and "the womb of the slave ship" (Drabinski 2019, 73). In her groundbreaking study

[11] I specifically use 'explosively' here to differentiate a potent emergency like that of cholera from slower-moving, less-abruptly-fatal infectious disease epidemics in Haiti such as HIV, tuberculosis, HPV, and leprosy.

of the social conditions of those traveling or being trafficked across the Atlantic, Sowande' Mustakeem (2016) provides evidence of the simultaneities, continuities, and recurrences of epidemic disease at sea. I quote her at length:

> Massive outbreaks of epidemics made the quarantine of individuals close to impossible through the enforced commingling of the living, dead, and ailing, transforming slave ships into floating hospitals. Tightened spaces of ships, the closeness of bodies, and lack of proper cleanliness imposed staggering effects on transported captives. Every person traveling the Atlantic through the Middle Passage—sailors, captives, and surgeons—confronted dire threats to their health through infectious diseases and the omnipresence of decomposing bodies. "Among the men, sometimes a dead and living negroe [are] fastened by their irons together. When this is the case, they are brought upon the deck, and being laid on the grating, the living negroe is disengaged; and the dead one thrown overboard." Lying next to and most often chained alongside sickly or dead shipmates produced traumatic tolls among boarded captives. (Mustakeem 2016, 149)

Mine is an effort to recuperate the historicity of deadly microbes in the dangerous, productive, 'archipelagic' (Glissant 1997), living co-relation of subjects and social structures, individuals and institutions in Haiti. Christina Sharpe (2016, 15) reminds us that Black descendants of enslaved Africans in the Americas are "living the historically and geographically dis/continuous but always present and endlessly reinvigorated brutality in, and on, our bodies while even as that terror is visited on our bodies the realities of that terror are erased." Potent emergencies of infectious disease outbreaks recurred over and over and over in the depths of each ship bearing African captives westward, across oceans whose perpetual movement "resists attempts to fix a locus of history" (DeLoughrey 2007, 21). Those who survived arrived at the shores of yet another abyssal place: landscapes tortured by genocide and the plantation economy.[12] On sea and on land, abyssal beginnings, a repetitive event unfolding as a 'now' always in process (Wright 2015), involved explosive encounters of humans and pathogens mediated by the "coloniality of power" (Quijano & Ennis 2000). This 'now', I suggest, is shared in the event of Haiti's cholera epidemic.

As the "darker side of Western modernity" (Mignolo 2011), the coloniality of power continuously operates through structures of control and hegemony, dispossession and extraction, classification and racialization to advance the consolidation of capital, the supremacy of Whiteness, and the project of the Euro-modeled nation-state (Quijano & Ennis 2000). In other words, there is no modernity without coloniality; and amidst its beginnings was Ayiti (Haiti). "The fact is that the Caribbean region, as the first overseas outpost of European imperialism and

[12] For theorizations on the permeating logics, geographic languages, spatial politics, and temporalities of the plantation, see McKittrick 2013, Mintz 1985, and Wolf & Mintz 1957.

capitalism, was ‘westernized’, ‘modernized’, and ‘developed’ before most of the colonial world had even become colonial, and that the peoples of the Caribbean—whatever their physical type—are the peculiarly disfranchised beneficiaries of centuries of Western capitalist solicitude” (Mintz 1974, 37). Thus, Haiti becomes a nexus of simultaneous events of modernity and coloniality—both in the name of an imagined ‘Progress’—whose occurrences and reoccurrences extend into past and future centuries.

In a repetitious history of foreign occupations touted as ‘development’, which the next chapter describes in more detail, the United Nations carried out six military-police operations in Haiti billed as peacekeeping missions between 1993-2003 (UNSC 2020). The first, in place 1993-1999, was tasked with professionalizing the armed forces, creating a separate police force, sustaining stability, and establishing an environment conducive to free and fair elections (UNSC 2020). All have been predominantly funded by the United States government.

The UN Stabilization Mission in Haiti (MINUSTAH) was established in 2004, in the midst of a period of escalating ensekirite following the (likely U.S. orchestrated) ouster of President Jean-Bertrand Aristide. Ensekirite, as Erica James (2010, 107) writes about, is a “term Haitians use to describe the state of episodic emergency and instability that is sparked by political and criminal violence.” Having deemed the situation in Haiti a threat to international peace and security in the region, the UN deployed an initial 6,700 troops, 1,622 civilian police officers, and 1,697 civilian administrators and staff (GAO 2006) to fulfill the mission’s mandate “to restore a secure and stable environment, to promote the political process, to strengthen Haiti’s Government institutions and rule-of-law-structures, as well as to promote and to protect human rights” (UN Peacekeeping 2020). Despite their presence, the security situation deteriorated over MINUSTAH’s first two years as armed conflict persisted in the aftermath of Aristide’s departure (Schuller 2012, 25-26). Moreover, the mission became mired in controversy, including allegations of sexual exploitation of the local population.

In a 2006 report comparing the cost of UN operations in Haiti to a hypothetical U.S.-led scenario, the U.S. Government Accountability Office estimated that it would cost the United States twice as much as the UN to conduct a peacekeeping mission similar to MINUSTAH. One substantial cost difference entailed the amount of funding for facilities: the United States would spend about $208 million for what the UN budgeted at $100 million (GAO 2006, 3). The U.S. government decided to keep the operation in UN hands.

By 2009, MINUSTAH comprised 9,158 soldiers and police officers from 47 countries living on bases throughout Haiti (UN 2011). Following the 7.0 magnitude earthquake that struck Leogane and Pòtoprens on January 12, 2010, which killed an estimated 220,000 to 300,000 people and left more than 1.3 million displaced, the UN ranks rose to 12,651 (UN 2011). Two months later, the U.S. Centers for Disease Control released a post-earthquake brief concerning the likelihood of an ensuing cholera outbreak, as is prone to occur following comparable disasters elsewhere in the world facing ineffective access to safe sanitation and water. "An outbreak of cholera is very unlikely at this time," the brief said, noting the absence of pathogenic *V. cholerae* in the country (CDC 2010). The introduction of cholera into Haiti is low, it explained, because relief workers are "likely to have access to adequate hygiene and sanitation facilities within Haiti, such that any cholera organisms they import would be safely contained" (CDC 2010). *"LEARN SAFETY TEACH SAFETY AND PRACTICE SAFETY," the ruins said back to me*. A chain-link fence provides a false sense of enclosure.

On October 20, 2010, the public hospital in Sen Mak where Nurse Etienne was working recorded 60 cases of acute watery diarrhea—*dyare dlo-lo-lo*—but it was not until the next day that the national laboratory confirmed these as cholera (Walton & Ivers 2011). By October 22 the hospital was inundated, as more than 1,500 people arrived with symptoms of the disease (Walton & Ivers 2011). *Moun sou moun [people on people]*. Most of these patients were coming from the Fifth Section.

As infectious disease experts, epidemiologists, and reporters scrambled to find the source of the epidemic, they began uncovering a disturbing connection. Beside a tributary feeding into the Latibonit River at Mibalè was situated a contingent of UN peacekeepers. People living near the camp told investigators about the foul smells often coming from the base and the black sewage-looking liquid spilling into the stream. When reporters followed up, they filmed UN soldiers using shovels to contain what looked like a sewage spill, observed an overflowing septic tank, and discovered a landfill situated upstream from where members of the community bathed. It turned out that on October 15, 2010 a contingent of Nepalese MINUSTAH troops arrived at this base after a cholera outbreak had happened in their homeland, where cholera is endemic (Sérant 2010). They were not tested for infection before being deployed to Haiti. When they became symptomatic, the camp's underfunded facilities management failed to prevent virulent *V. cholerae* from flowing directly into the adjacent stream. This epidemiological link was soon

confirmed by laboratory analyses showing that the vibrios in Haiti matched strains commonly found in South Asia (Chin et al. 2010; Talkington et al. 2011). The base outside of Mibalè was decommissioned several years later, but MINUSTAH did not end its mission in Haiti until 2017, after thirteen years of 'peacekeeping', almost 10,000 recorded cholera deaths, and more than 820,000 cases (Lee et al. 2020)—although the real burden was likely much higher, even by as much as three to ten times (Jackson et al. 2013; Luquero et al. 2016; Gladstone 2016).

The potent emergenc(e)y of the cholera outbreak marked the beginning of novel interactions among toxigenic *V. cholerae*, waters, and humans in Haiti. But, as I've demonstrated here, its event unfolds as a 'now' that recurs in past—and future—acutely traumatic encounters with pathogens mediated by the enduring vicissitudes and abyssal beginnings of coloniality. Now in Haiti *V. cholerae* of the O1 serogroup persists in its waters, as it does across much of the rest of the world. Still now cholera cases emerge globally in the continuities and simultaneities of both coloniality and anthropogenic climate change[13]—the sea, writes Edwidge Danticat (2013, 199), "does not keep secrets."

3.3 - Water-oriented Desire: Water as Repository for Lives, Loss, Desire

With the events of October 2010 Haiti's waters became a repository for *V. cholerae*, which grow preferentially in warm (>59°F), low salinity (<25 parts per thousand NaCl) environments (Baker-Austin et al. 2012). A novel form of life in the landscape, these bacteria gather with other creatures of varying scales and kingdoms in streams, rivers, estuaries, and even groundwaters, forming teeming microscopic worlds. Complications can arise among humans, though, when the water of these worlds is consumed.

Organisms like *V. cholerae* are not the only lives below the surface. I return here to Haiti's abyssal beginnings, to the human toll of coloniality. Of the more than 12.5 million enslaved African trafficked across Middle Passage, an estimated 1.8 million perished at sea not only from illness, but hunger, dehydration, torture, revolt, shipwreck, and suicide as well (Turner

[13] In 2014, as the cholera epidemic endured in Haiti and outbreaks struck in Central and West Africa, Finland and Sweden also saw spikes in *V. cholerae* infection (including toxigenic strains), corresponding to extreme heat wave conditions that warmed water surface temperatures along their coasts (Baker-Austin et al. 2016).

et al. 2020). For many captives, there was not just freedom in the abyss, but a future. "When they were enslaved," writes Danticat (1996), "our foremothers believed that when they died their spirits would return to Africa, most specifically to a peaceful land we call Guinin, where gods and goddesses live. … The past is full of examples when our foremothers and forefathers showed such deep trust in the sea that they would jump off slave ships and let the waves embrace them." The watery depths of a future-past persist in traditional notions of the afterlife. Upon death, the departed soul passes anba dlo, under the water, on their way to the paradise of Guinin—provenance and spirit world. In the wake of cholera, 10,000 more souls slipped under the surface to join the ancestors and the gods. Water, a passageway for return to Guinin in death, also becomes a repository for loss.

In waters accrue lives—some deadly to humans—and the spirits of the departed. As a source of and for life, healing, and health, I propose that certain waters also become repositories for desire. What I describe here as desire is a longing for "a broader world or set of relations in which the object is embedded and becomes meaningful," rather than for "a singular decontextualized object" (Biehl & Locke 2017, 6). Given the multiplicity of water's relational meaningfulness, as the saying "water is life" registers around the world, I focus on three ethnographic examples of *how particular waters become desired*.

a. Water-oriented Desire for Life

In mid-May 2019, I traveled from Sen Mak to the Fifth Section to visit Emmanuel at his farm beside the Latibonit River which at that time was not flooded. Water more green than brown flowed below steep banks, their pitch a trace of past inundations. Emmanuel and I sat below the shade of tall trees as we did most days, the river to our backs. In the midst of our discussion about the rapid expansion of Haiti's reverse osmosis water market, he provided a counterpoint:

> There are still people, presently, despite all that's happened with cholera, who continue to enjoy getting their drinking-water from the river. There are people who say that if they don't drink river water it doesn't feel like they've drunk water [it doesn't quench their thirst]. Recently, there was a person from this community who returned from the United States. And as soon as he arrived, he immediately took off his clothes and—PLOH!—he plunged into the river and swam underwater for five or ten minutes. And when he came up, he said that he's filled his belly with water! The man said that's what he missed most: drinking the river water, because it quenched his thirst and gave him more force.

In the story Emmanuel shared, the man not only preferred drinking river water but longed for it so much that he gulped it down. Immersing himself in the river, he swam in his desire for the life—and lifeforce—he missed while abroad.

b. Water-oriented Desire for Healing

Several months later, in September 2019, I was living at Emmanuel's homestead for a few weeks. This time, the Latibonit's riverbanks were brimming with light brown, sediment rich water. Sticks and plastic objects bobbed on its surface. Although this was my second time staying in the two-room house he shares with his mother, Ti Marie, I noticed for the first time a large glass container underneath my bed, filled with water and covered in a healthy layer of dust. Curious, I asked Emmanuel the next morning. "It's water my mom collected on Samdi Dlo Beni [Blessed Water Saturday], the day before Easter," he explained, continuing:

> Each year on Samdi Dlo Beni, everyone goes to the river to bathe in the holy water. People come from all over, even internationally, and enjoy spending the entire day in the river. People will fill their gallons with the water to use when doing mystical activities. If you aren't able to collect the water yourself, you have to buy it. It's also good for preparing women for birth and treating illnesses by either bathing with it or drinking it. My mom will pour some on her head if she has a headache.

In this example, Emmanuel, Ti Mari, and many others pursue water made holy on Samdi Dlo Beni through a desire for its healing properties. The specificity of water, including the place and timing of its collection, matters for human bodies and their ailments. People don't simply invest water with therapeutic potential; rather, they become oriented toward certain waters because the water's relation to time and place imbues it with the potential to heal.

c. Water-oriented Desire to Safeguard Health

At Emmanuel and Ti Marie's house they only drink Blue Heaven reverse osmosis water, produced in Sen Mak. Sitting yet again under the shade near the river, Emmanuel and I were pondering what it took to live a good life. "Water is life," he mused, "but life is health. We live so long as we are healthy. So, if you want to live well, you need to drink good water and eat good food. I love living! That's why I drink Blue Heaven water, even though it's expensive." In a slightly different register, Wilmar had described a similar desire to protect his health:

> … I'm a lucky person. I escaped, but *many* people died. … It's been a while since cholera was really bad, but it's still here. It's still here. For that reason, I don't drink just any water. … It needs to be treated. I'm obligated to make an effort to buy a biosand filter to put inside my house. From time to time, I get river water and filter it and then treat it with something else.

In both of these examples, Emmanuel and Wilmar are not expressing a craving simply for clean drinking water. Rather, they convey a deep longing to live safely enough to keep living. In order to do so, they feel that they must safeguard their health by drinking water treated by reverse osmosis or household filtration. That both of these processes vary in their point-of-use safety[14] only brings more potently into relief how the desire for these broader sets of 'safe' relations gets poured into water and imbues it with meaning: water is life. *In the wake of cholera, it seemed, learn safety teach safety and practice safety*.

The water-oriented desires for life, healing, and to safeguard health each chart what can be described as a geography of desire. The space between longing is not just an imagined spatial orientation—as in, there exists a directionality to it—but an orientation that can also be physically mapped across spatial planes. Studying the cartography of this landscape and the ways people negotiate it attends to where and how those desires are met. Reverse osmosis water, for example, does not simply appear in Emmanuel's home ready for consumption. He, like each of the individuals I spoke with on the road to the MINUSTAH base outside Mibalè, navigates a way to fulfill his water-oriented desire to protect his health. A geography of RO water vendors allows people to map out and use surrounding landscapes according to specific health-related desires. Though often disregarded in deductive studies of "market choices and practices," both commodities and people—including "Haiti's most vulnerable people"—are mobile. RO water circulates in water trucks and bottles, sachets filling the bed of pickups and buckets carried on heads,[15] and five-gallon jugs balanced on motorcycles and bicycles.

The demand fueling Haiti's burgeoning RO water market cannot be explained by resource scarcity alone. Nor am I arguing that a desire for health is the main drive behind individual patterns of RO water consumption (cf. Brown & Duncan 2000). Rather, I suggest that the kind of desire propelling Haiti's RO water market in the wake of cholera involves embodied

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[14] While living in Sen Mak and the Fifth Section, I conducted a small study testing drinking-water points—ten urban and ten rural—for coliform bacteria contamination. Among the rural samples, I analyzed water from two different biosand water filters. One came back positive for coliform bacteria, and the other was negative. In a much larger study, Patrick et al. (2017) sampled 1,340 RO water kiosks in Pòtoprens in 2013—more than 83% of which reported that the kiosk had been open for three years or fewer. Water quality testing found that "the water at more than 90% of the kiosks did not have detectable *E. coli* when sampled at the point of sale" (Patrick et al. 2017, 88). However, when I sampled RO water sources in Sen Mak in 2019, I detected coliform bacteria in three out of the five samples (one kiosk and Blue Heaven bottled water were negative).

[15] In the 2014 music video for his song, "Vann Dlo" (Sell Water), Haitian artist BélO portrays how people, mostly young men, sell water sachets on the streets of Haiti. Watch it here: https://youtu.be/CfEHUlruiKY

and emplaced relations among risk, preference, aspirations, trauma, and safety that would lead one to want to protect their health. The world of materials in desire's geography—a landscape shaped by past and future events—in turn affects and impinges on subjects, constraining or encouraging possibilities for movement and ways of consuming RO drinking water.

Conclusion: Water Ways of Desire

Knowing that Emmanuel and Ti Marie drink Blue Heaven water, I brought along another galon, five-gallon jug, while staying with them so as not to deplete their supply. The two jugs resided under the dining table in the room that doubled as Emmanuel's sleeping quarters. While living on my own in Sen Mak, I would drink a galon about every ten days. At the homestead of two peyizan in the Fifth Section, we would together finish a galon every three. The day arrived shortly after my arrival when both jugs were nearly empty. Without the motorcycle traffic of the city nor a vehicle at their disposal (not that Emmanuel knew or wanted to know how to drive one), I wondered how we would go about acquiring the water that was sustaining us, knowing that the Blue Heaven distributor—a small mechanic shop in the next village—was almost an hour's walk away.

Figure 3-8: The Blue Heaven water galon at Emmanuel and Ti Marie's home. Photo by Emmanuel, used with permission, 2019.

In his article, "A Political Ecology of Water and Enslavement," Mark Hauser (2017) uses archaeological evidence to re-assemble the "water ways" practiced on two plantations in the Eastern Caribbean island of Dominica during the eighteenth-century. Water ways describe the social and material "relationships humans have with and through water" (Hauser 2017, 251). They involve the types of water people consume as well as the methods of obtaining, distributing, and using it—all of which vary across place and time, leaving traces on landscapes and in artifacts (Hauser 2017, 228). As a constant negotiation of a nonsubstitutable substance in geographies of both desire and necessity, water ways are as fluctuating as they are enduring. Some are passed over generations—like the ancestral kanari, clay water jars, I discuss in Chapter Five—while others move among coherence, dissolution, and repurpose. After it broke, for instance, Emmanuel and Ti Marie no longer depend on the biosand filter at their house for drinking water, but still use the water it slowly drips for cooking, washing, and bathing. Instead, every few days Emmanuel rides his bicycle to the mechanic shop in the next village to replace a galon of Blue Heaven water. Exchanging an empty five-gallon jug for a sealed full one, Emmanuel balances the weight of the container on the bike's top tube. With the seat at a position far lower than might otherwise suit his height, he holds the neck of the jug with one hand while leaning over to steer the handlebars with the other, knees bending out in wide angles as he pedals. Carefully navigating around potholes and large stones in the dirt road, Emmanuel invariably returns home sweating from both exertion and concentration. The roundtrip takes about an hour, which he usually does in the evening when the balmy air has slightly cooled.

I opened this chapter with the question, how is Haiti's burgeoning reverse osmosis water market occurring? Positivist economic explanations attribute the rise in private water demand and expenditure to individuals' decisions, triggered by the cholera outbreak, to access potable water in the most cost-efficient way. Any behaviors that run contrary to such rational choices are deemed motivated by "attitudes" and "traditional beliefs on water quality" (World Bank 2018, xx). Reducing the rapid proliferation of RO water in Haiti to explanations of demand motivated by lack not only undermines Haitians' agency, but also obscures their affective attachments to, knowledges of, and relations in and through the waters they drink. In the repetitious, co-related, and traumatic continuities of cholera's event, Emmanuel, Ti Marie, Wilmar, Nurse Etienne, and those along the road between Mibalè and the Meye MINUSTAH base and elsewhere take care to

drink water as safely as possible. The potency of cholera's emergenc(e)y, situated among (social, material, religious, structural) entanglements where cholera had been previously unknown, complicated water ways throughout the country and challenged existing water-oriented desires to safeguard health in a rapidly changing drinking-water landscape. This, I propose, is contributing to how the RO water market in Haiti is being made, simultaneously, across urban and rural settings.

While the 2010 outbreak of cholera in Haiti was a novel occurrence, and the RO water market burgeoning in its wake among the fastest-expanding in the world, both of these events are only exceptional insofar as they have been made such through interdependent social and political processes over time. In this chapter, I drew on the concepts of repetition and haunting to trace how Euro-American coloniality mediated a striking convergence of historical particulars in Haiti's waterways. The next two chapters go even further—interrogating the notion of Haiti's exceptionalism itself (cf. Trouillot 1990). Instead of exceptional, I approach the cholera epidemic and RO water market as ordinary to the extent that they resulted from forces, institutions, processes, and structures made universal in "a world dominated by Christianity, capitalism, and whiteness" (Trouillot 1990): namely, racial capitalism, neoliberalism, and anti-Black racism.

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Chapter 4 Rice-Water

Cholera and Karavàns: Planned Disasters in a Hostile Environment

Introduction: "Ours is a Fabricated Misery"

I returned to Sen Mak's Fifth Communal Section on September 16, 2019 amidst one of Haiti's worst oil shortages in recent memory. Over the course of less than a month, the government's mounting debt to fuel companies had brought supply to a standstill, causing gasoline to become a scarcer and scarcer commodity. Soon, lines at rare open stations grew so long that people opted to sleep in their cars for multiple nights on end just to reach the pump, only to pay extraordinarily inflated prices. Others took their chances by purchasing triply price-gouged gallons of questionably sourced fuel on the side of the road. The government had promised the nation that fuel access would return to its relative normal by September 15th and rationing would be necessary until then, but few took the statement seriously when the government's debt to fuel suppliers already exceeded $130 million (Charles 2019).[1] Trying to reach and then living in Sen Mak, a port city two hours north of Pòtoprens, during that month, the resentment people felt and expressed toward the government, and the intensifying conflict that could close the airports at any moment (and for me, not being able to leave was not an option with a partner at home living with chronic illness) was palpable. The government's optimistic deadline came and went, as my fieldwork took me before dawn one morning across the stained shadows of burned tire barricades on glass strewn streets, past the city limits, and into the bright green rice farming lands of the Fifth Section. I arrived just in time for breakfast at Emmanuel's home, a wave of relief and gladness washing over me as soon as I crossed the

[1] At the center of Haiti's recurring fuel crisis throughout 2019 was a dispute with the U.S. energy trading firm, Novum, to which the Haiti government owed more than $40 million. By September 2019, the government owed a total of about $77 million to its fuel suppliers, and another $52 million to fuel companies in the country for the arrears of subsidies at the pump (Charles 2019).

threshold into the familiar yard (lakou). At the far end, I glanced the high waters of the Latibonit, swollen from heavy rains upstream.

Figure 4-1: "That water is river water, not rainwater," Emmanuel explained. Beyond the door in this photo is a path that leads to the Latibonit, so high at this time that its waters were coming up from the earth. Photo by author, 2019.

Over the next ten days, I conducted a Photovoice project with ten peyizan and interviewed several reverse osmosis water vendors, Vodou manbo and houngan, and various community members. Though physically distant from the roadblocks, clashes, and hijackings paralyzing Haiti's main arteries, the Fifth Section—and peyizan throughout the nation—experienced the fuel shortage and the "Peyi Lòk" protests locking down the country just as acutely. Not only do farmers depend on gasoline to reach the markets where they sell their produce and so that their buyers can reach the markets as well, but many also use fuel to run the pumps that irrigate fields where they grow onions, eggplants, tomatoes, and other crops. During this time of the year, in the midst of a drought and unable to adhere to a regular watering

schedule, many peyizan risked losing their entire onion crop, plunging them further into debt and worse. Peyi Lòk also percolated through rural communities along routes of travel, among kin, and over the airwaves.[2] As numerous scholars have already debunked, the borders between city and countryside in Haiti are far from fixed. Streams of family members, vendors, commodities, health care workers, Vodou sèvitè ('servants of the spirits'), clergy, drivers, and visitors flow constantly in both directions, though diminished during a fuel shortage. By late September, the entire nation was heated, on edge, and expressing frustration at every opportunity. But who was listening?

Groups opposing the government and demanding President Moïse's resignation launched a week of nationwide protests dubbed "Operasyon Moun Fou" ("Operation Crazy People") on September 23rd. Emmanuel and I sat on a bench in the shade listening to the radio as his mother worked on preparing the afternoon meal. "Why are they calling it 'moun fou'," I asked him. "They're crazy because they don't know what to do," he replied. "They've been driven crazy because no one is listening."[3] People across Haiti were consumed with despair, but still holding out hope that change was possible.

A woman's voice came on the radio. She was in the streets of a nearby town being interviewed by a reporter. At the end of her comments, she concluded, "… I don't even have water to wash down the banana in my throat!" Emmanuel, his mother, and I all giggled, taking pleasure in the poetics of her clever word play. The "banana" in her throat referred—if not symbolically belonged—to none other than President Moïse, the self-proclaimed "Nèg Bannann" ("Banana Man") whose 2015-2016 campaign capitalized on the success of his export-oriented northern Haiti banana plantation. Her stated lack of drinking-water invoked the plight of 42% of Haitians who lack access to improved or piped sources of water, according to one estimate (World Bank 2018).

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[2] For an excellent discussion and historical account of the role of radio in Haitian society and culture, see the series of essay blog posts, "Haitian Radio // Radyo Ayisyen," which launched on April 5, 2021 on *Sounding Out!*. https://soundstudiesblog.com/category/haitian-radio-radyo-ayisyen/

[3] Here, where Haitians are protesting the state as self-described crazy people driven mad by intractable ensekirite, poverty, marginalization, hunger, disenfranchisement, betrayal, we might recall Mbembe's (2016) theorization of the politics of viscerality, drawing on Fanon. Viscerality, as Mbembe says (2016), invokes "that which touches [the vital] organs of the body, and in touching them elicits…a bodily as well as an emotional response…that seems to suggest that vital processes themselves are at stake."

At Emmanuel's home, puddles were gradually expanding in the lakou—puddles not of rainwater, but of river water seeping up through the earth as the Latibonit grew increasingly swollen from rainfall upstream. This flood saturated the earth from below such that stagnant puddles formed that could not dry, prefiguring the ever possible inundation of house, yard, and garden. We'd try to avoid tracking mud into the home by leaving our mud-caked sandals outside, and I'd sweep twice as often. One morning, over our daily breakfast of bread, coffee, avocado, and politics, Emmanuel remarked on the flood. "Karavàn ap pase, chen an ap bwe dlo (literally: the caravan passes, the dog drinks water)," he said in his usual way that always made him sound well beyond his 37 years. Uncertain of the proverb's meaning, I asked him to clarify. "Karavàn describes something like a flood—a lot of something all at once that destroys everything in its path. After it passes, all that's left are puddles of water. Haven't you seen how much dogs love drinking from puddles?" I nodded. "The karavàn can't bring good results to the peyizan," he continued. "It only leaves us with more trouble, like the Karavàn Chanjman that came through in 2017." Emmanuel was referring to President Moïse's flagship initiative, launched in 2017, to rehabilitate Haiti's economy and mobilize capital through concentrated investments in agriculture, health, housing, education, and public infrastructures. With TV crews in close pursuit, convoys of mechanical excavators, dump trucks, and construction equipment darted across the country, promising Banana Man-esque higher yields and greater profits in their wake. As a prescriptive business solution to Haiti's macroeconomic woes, the Karavàn Chanjman exemplified the neoliberal ideal.

Figure 4-2: The logo for the Karavàn Chanjman (Karavàn Chanjman, 2017).

A core objective of the Karavàn was to increase the production of agricultural products in the Artibonite Valley, including the predominantly rice-farming Fifth Section. But, three years later, everyone I encountered there claimed the opposite was true, reinforced by my own observations of a region I first began visiting in 2015. "It was a good idea," a local priest said, "but poorly executed."

"Around here we call it Karavàn Dezespwa (the Caravan of Despair)," Emmanuel explained. "It was supposed to bring hope and change, but it was a lie. The government bluffed us. The peyizan are worse off than they were before. Not only has the price of fertilizer become completely unaffordable, but the backhoes they brought to dredge the canals dug them too deep and now the water level sometimes falls too low to effectively irrigate our rice fields. Ours is a fabricated misery." The caravan had passed, leaving misery and allegorical puddles for only dogs to drink. The relationality of water, floods, rice, and caravans exhibit but also exceed their metaphorical links, especially in Haiti's Lower Artibonite Valley. Why, we might ask, did the Fifth Communal Section of Sen Mak become such a major hotspot of the cholera epidemic? Why have RO water commodities become the primary source of drinking-water for a growing number of people—in both urban and rural areas—in the wake of the outbreak?

When pathogenic *V. cholerae* leaked from the sewage of the UN base in Meye, it entered waters feeding the Latibonit River, which feeds the irrigation network of the Lower Artibonite Valley, which attempts to feed the nation. At the eastern edge of the Fifth Section, river water enters a system of channels that disperses and drains irrigation water throughout much (though hardly sufficient enough for all) of the rice-farming region. Though the bacteria originated from further upstream, this is where epidemic cholera first exploded. On October 20, 2010, a public hospital in the nearby city of Sen Mak recorded 60 cases of acute watery diarrhea, but it was not until the next day that preliminary results from the national laboratory confirmed these as cholera (Walton and Ivers 2011). By October 22, the hospital was inundated, with more than 1,500 additional patients arriving with symptoms of the disease (Walton and Ivers 2011). Most of these patients were coming from the Fifth Section, whose population's hydrological entanglements, including religious ones, hinge on the Latibonit. Even as cases have subsided, more and more people across Haiti, including the Fifth Section, are turning to RO water products to stay safely hydrated. The threat of cholera still haunts untreated water sources. To understand why, we must

situate both membrane-related phenomena—the epidemic and the RO market—in the entangled social and material processes that contributed to their 'fabrication' over time.

Often, the explanations for exceptional occurrences in Haiti get reduced to the country's exceptional resource scarcity—as we saw in Chapter 2—or, even more reductively, to its 'unique culture'—blaming the scale of the cholera epidemic on people's 'poor hygiene' behaviors, for instance.[4] In the following pages, I examine how the "exceptionalism" (Trouillot 1990$_b$) often ascribed to Haiti has been co-constructed with the increasing inequalities and unfreedoms of the "state of exception" (Agamben 2005; Mbembe 2019) instituted under its state of U.S. military occupation, 1915-1934. This era witnessed the imperial institutionalization of a market approach to 'development' and 'democracy'. While marketization can generate emancipatory effects (Marx 1990; Fraser 2014), that promoted by the United States and others remained grounded in the plantation (McKittrick 2013) and "fictitious commodification"—the assumption that foundational elements of social life, such as money, labor, and the natural environment, can be treated like ordinary objects of market exchange (Polanyi 1944).[5] After the Occupation, rice cultivation expanded in the Lower Artibonite Valley and sustained the nation. Then, trade liberalization policies starting in the 1980s flooded the Haitian market with imported U.S. rice, which devastated the regional economy, intensified the structural vulnerability of the peyizan, and provoked growing frustrations toward the ways existence (for humans and nonhumans) was being made treacherous, as echoed in the words of the woman on the radio. I argue that histories of neoliberalism linking Haiti and the United States both contaminate and weave together entangled markets of rice and water and serve as a substrate for a politics of *ressentiment* in cholera's aftermath.

[4] Another example is how evangelical Christian TV preacher Pat Robertson blamed the 2010 earthquake on Haiti's "sworn pact to the devil."

[5] As Nancy Fraser (2014, 545) writes, "The effects of this 'fictitious commodification', as Polanyi called it, were so destructive of habitats, livelihoods and communities as to spark an ongoing counter-movement for the 'protection of society'. The result could only be a crisis of society, on the one hand, and a crisis of economy, on the other. Society, in Polanyi's view, cannot be commodities all the way down."

4.1 - Making a Transnational State of Exception: The U.S. Occupation of Haiti, 1915-1934

A critical turning point in Haiti's history occurred a little more than one hundred years into its hard-won independence from French colonial rule. While France continued to intervene in Haiti's affairs throughout the nineteenth century, especially economically, the early twentieth century marked instead a repetition of colonial occupation. This occupation began the institutionalization of Haiti's exceptionalism—an exceptionalism that would make an outbreak of a fully treatable disease like cholera disastrous. On the orders of President Woodrow Wilson, the United States Marines invaded Haiti in July 1915 with the intent to restore order following the assassination of President Jean Vilbrun Guillaume Sam, establish democratic governance, and place Haitian society on the path to modernization. Underpinning the ostensibly humanitarian grounds of the mission were both a wider arena of global politics and national strategic interests as well as a racialized liberal conception of development (Minn 2011).

The rise in United Sates economic power during the turn of the century had placed it in direct competition with industrialized European nations for world markets. Rapidly increasing domestic industrial production motivated—if not demanded—territorial expansion to match consumption and access to raw materials. As one U.S. politician advocated in 1914, "[Haiti] is practically part of the shore line [*sic*] of our republic, and is in control of the avenues of our greatest routes of commerce to the world, and lies at the mouth of the canal which has cost us untold sums of money" (MacCorkle 1914, 36). Haiti presented the geographical advantage of not only proximity, but also a strategic location in protecting the newly completed Panama Canal and restricting European, especially German, interference in the Caribbean in the run up to World War I.

Within months of the invasion, the United States forced the election of a new pro-American President, Philippe Sudré Dartiguenave, by the Haitian legislature (Office of the Historian n.d.) as well as a treaty shortly after that authorized the U.S. to create a new Haitian military, granted it total control over Haiti's financial system through the customs houses and the state treasury, and prohibited Haiti from selling or renting territory to another foreign power (Pomerene 1922). While the United States operated through a client government, Rear Admiral William B. Caperton, commander of the forces intervening in Haiti, "effectively governed the country through martial law" (NHHC 2020). In 1917, after a failed attempt to strong-arm the

Haitian legislature into adopting a new constitution—drawn by Assistant Secretary of the Navy Franklin D. Roosevelt—that would allow foreign land ownership, the Wilson administration forced President Dartiguenave to dissolve the legislature (Office of the Historian n.d.). Haiti's legislature would not convene again until 1929. Over these years, U.S. military and civilian administrators held positions as Haiti's Financial Advisor and General Receiver of Customs, Engineer of Haiti, and Sanitary Engineer of Haiti, among other roles (NHHC 2020). From 1922-1930, control of all U.S. activities of the Occupation both civil and military was consolidated under Brigadier General John H. Russell, USMC, who had been appointed American High Commissioner and Personal Representative of the President. On August 14, 1934, President Herbert Hoover ended the Occupation following multiple Haitian insurrections (known as the Caco wars, 1915-1920) and a series of strikes and uprisings in 1929 that culminated with U.S. Marines opening fire on demonstrators in the southern city of Cayes, massacring 12 Haitians (NHHC 2020).

During these nineteen years of military occupation and shadow rule, the United States controlled Haiti in a transnational 'state of exception', effectively functioning outside of the established legal system. Despite the fact that among the government functions managed by U.S. administrators the United States "forgot justice and education," as Americans in Haiti said (quoted in Balch 1927), the Occupation practically operated through martial law and pressuring the courts. In one case brought against Admiral Caperton, the court sided with the claimant, yet the U.S. authorities blocked the court's decree from being carried out because, "If so, the whole structure upon which was built the Occupation would fall" (Colonel Williams in Balch 1927, 139). U.S. forces consistently infringed on citizen's liberties—seizing privately held land, opening private correspondence, repressing free speech,[6] torturing, and killing—often, without any redress.

Through the occupation of Haiti, President Wilson advanced a liberal vision for the economic development of the "Black Republic" funded by U.S. finance capital, achieved under efficient U.S. management, and premised on the expansion of free markets, free trade, and the

[6] "Preventive imprisonment" and prolong pre-trial detention of dissenting journalists and press editors was common under the Occupation (Balch 1927, 145). Although the 1918 Constitution guaranteed freedom of the press (Article XVI), this document was modified several times (1922, 1923, 1924) to become ever more repressive against speech that might stir up agitation (Balch 1927, 146-147).

rule of law (Shah 2009). At the heart of Wilson's liberalism—and at the heart of many Marines deployed to Haiti and Americans supporting the Occupation—was a racialized form of domination and paternalism (Renda 2001), by which the burden of reforming Haiti's derelict economy, 'degenerate' government, and 'immoral' culture rested with "enterprising white men based on their unique heritage of justice, liberty, and democracy" (Shah 2009, 26). The burden of 'civilizing' the Black Republic legitimized forms of violence that included but were not limited to village burnings, religious intolerance, the reintroduction of forced labor, torture, sexual assault, and the killing of 15,000 Haitians (Danticat 2015). While the U.S. instituted a singular conception of development through international capitalism and racial subordination, Haitians were denied not only their rights as citizens but their agency as full humans.

Since introduced by Carl Schmitt in the 1920s, numerous political theorists have elaborated on the concept of the "state of exception" as it develops in varying contexts. Common across all of its manifestations, states of exception emerge from the sovereign's ability to transcend the established rule of law in the name of the public good. Giorgio Agamben (2005) investigates how governments extend and increase their power over the legal status of individuals by instituting states of exception during supposed times of crisis—an example being the military orders issued by U.S. President George W. Bush in the aftermath of the September 11, 2001 attacks which established military tribunals to try non-U.S. citizens outside of the U.S. legal system.[7]

Like Agamben, Achille Mbembe (2003, 14) draws on Schmitt's definition of sovereignty as the power to decide the state of exception in the "generalized instrumentalization of human existence," but specifically locates its aim at "the material destruction of human bodies and populations"—a logic he describes as necropower. Mbembe identifies the settler colony and slave plantation as quintessential sites where the exercise of sovereignty departs from the common law. These are the locations "par excellence where the controls and guarantees of judicial order can be suspended—the zone where the violence of the state of exception is deemed

[7] "On November 13, 2001, President Bush signed a military order that established military tribunals to try non-U.S. citizens fighting for al Qaeda or involved in terrorism against the United States. These tribunals functioned differently from courts within the U.S. legal system. The Bush administration decided to hold the accused terrorists at Guantanamo Bay in Cuba, without a right to a writ of habeas corpus, that is, they could not challenge whether the U.S. government was holding them legally and therefore could be held indefinitely. The Bush administration also classified those accused terrorists as unlawful enemy combatants instead of prisoners of war, which placed them outside the protections of the Geneva Conventions" (Gregg II n.d.)

to operate in the service of 'civilization'" (Mbembe 2003, 24). While Agamben examines the stakes of citizenship and legality in states of exception, Mbembe (2003, 27) recognizes that coloniality rests on preformed definitions of who constitutes 'civilization', who counts as human, "who matters and who does not, who is *disposable* and who is not." Following Frantz Fanon (2008 [1952]), Mbembe (2003, 26) holds that colonial occupation creates new spatial relations and classifies people into different categories, allowing for the extraction of resources and the production of cultural imaginaries that justify the violent relegation of the colonized "into a third zone between subjecthood and objecthood."

For Alexander Weheliye (2014), states of exception—whether emergent in "early-" or "late-modern colonial occupation" (Mbembe 2003, 27)[8]—are always already racialized because modernity rests on and is ever relative to the subjugation of the racialized 'Other'. Race and racial identities function as "sets of political relations," or 'racializing assemblages', that "discipline humanity into full-humans, not-quite-humans, and nonhumans" (Weheliye 2014, 3-4). While race and racial identities have different histories and lived experiences in different places, it is important to recognize that U.S.-generated racializing assemblages specifically "conscripted" Haiti (cf. Asad 1992)—both the "unthinkable" (Trouillot 1995) "idea" of Haiti (Polyné 2013) and its constitutionally proclaimed Black citizens (Haiti Const. 1805)—since its organized rebellion against French colonization, White domination, and Black subjugation began in 1791 (Nesbitt 2013; Fischer 2004; Byrd 2019). The relegation of nonwhite subjects outside the category of the human not only calculatedly consign them to the condition of "bare life" amid the state of exception (Agamben 2005), but fundamentally make nonwhite lives vulnerable to death.

This brings me to a critical tension in the language and concept of "exception"—a term that assumes comparison. Weheliye (2014, 11) asserts that, "because black suffering figures in the domain of the mundane, it refuses the idiom of the exception." By focusing only on Black suffering, we not only participate in the "weird" project of its exceptionalism (Trouillot 1990$_b$), but also lose sight of what the idiom of the exception is *doing* to Black life. Exceptional compared to what notion of ordinary? And who is deciding? As Trouillot writes:

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[8] Mbembe (2003, 27) offers the colonial occupation of Palestine as an example of how necropower is operating contemporarily, in contrast the "early-modern occupation" of European colonies: "Late-modern colonial occupation differs in many ways from early-modern occupation, particularly in its combining of the disciplinary, the biopolitical, and the necropolitical."

> The majority of Haitians live quite ordinary lives. They eat what is for them—and many others—quite ordinary food. The die quite ordinary deaths from quite ordinary accidents, quite ordinary tortures, quite ordinary diseases. Accidents so ordinary that they could be prevented. Tortures so ordinary that the international press does not even mention them. Diseases so ordinary that they are easily treated almost everywhere else. Exceptional, isn't it? (1990$_b$, 5)

The mundanity of daily racial injustices and injuries, of Haitians' experiences of ordinary yet preventable death, is not *un*exceptional, but has rather been made *non*-exceptional by the racializing assemblages of coloniality. In other words, endemic to the transnational state of exception operating in Haiti since the U.S. Occupation is a "planned" disaster (Sharpe 2015, 26): an actual hostility toward nonwhite lives, making Black suffering "a social and political, rather than a natural and ineluctable, fact" (Beckett 2020).

Haiti's transnational state of exception institutionalized under the 1915-1934 U.S. Occupation serves as a continuation of what Christina Sharpe (2016, 5) describes as the "planned disaster" of enslavement. The first Africans trafficked to the Americas for the intended purpose of exploiting their forced labor for the accumulation of European capital arrived in 1505 on the shores of Hispaniola. Soon, hundreds and later thousands followed across the Middle Passage. In a brutal sort of calculus, plantation owners in the French colony of Saint-Domingue considered it cheaper to work enslaved people to death and replace them than to actually give them what they needed to stay alive. Over the course of Saint-Domingue's one hundred years (1697-1803), the conditions, cruelty, and violence of slavery killed about a million enslaved people, and thousands more chose suicide (Abbott 2011). This kind of engineered death not only underwrites and saturates the institution of slavery in the Americas but lives on and unsettles teleological narratives of overcoming racial antagonism and White supremacist violence.

While the U.S. Occupation of Haiti ended in 1934, the legacies of this nineteen-year state of exception carried through the remainder of the century and beyond. The planned disaster of antiblack coloniality continued as the centralization of the economy, shift toward export-oriented production, construction of a repressive military force, and sanctioned violence against dissent and cultural traditions fractured the social and economic coherence of the country. In the wake of the Occupation were conditions that concentrated wealth and power in the hands of Haiti's elite and ushered in nearly 30 years of bloody dictatorship under François and Jean-Claude Duvalier. By keeping certain sectors of Haiti's civil society weak and disorganized (Trouillot 1990$_a$), the country's elites managed to preserve a hostile system of surplus extraction, political marginalization, and environmental degradation that set the stage for the neoliberal deluge to

come. In the following pages, I investigate what the interpellation of people and ecologies in Haiti into exceptionalism tells us about the global neoliberal regime.

4.2 - A Neoliberal Karavàn: Water Becomes Asset, Rice Becomes Flood

The nineteen-year long colonial occupation of Haiti not only assembled its enduring transnational state of exception, but also intensified its political, economic, social, and cultural entanglements with the United States. As the bonds between the countries grew ever tighter, Haiti became ever more marked by specific tags of exceptionalism that continue to "reinforce antiquated ideas in popular imagination that ultimately serve particular racialized and geopolitical purposes" (Gina A. Ulysse in Johnson 2016). The continuous casting of Haiti as exceptionally unique, whether for its for its singular history or its perennial status as "the poorest nation in the Western Hemisphere" (even when it's not) and "the Republic of NGOs," both masks the ways Western powers have shaped Haiti (and Haitians) and reinforces its peripheral, incongruous positionality (Trouillot 1990_b). As I've argued above, these purposes center on making Haiti into an exceptional state—in both meanings of the term—for the advancement of racial capitalism. "The more that Haiti appears weird," writes Trouillot (1990_b), "the easier it is to forget that it is the longest neocolonial experiment in the history of the West." In this section, I consider how the "stealth revolution" of neoliberalism (Brown 2015) extended this project through the late-twentieth and twenty-first centuries.

Neoliberalism describes a body of ideas and an economic project directed at increasing and assuring the mobility of capital on a global scale. When countries implement—or are forced to implement—neoliberal restructuring, the intention is to promote the expansion of markets, deregulation of the corporate sector, and privatization of public institutions and services all of which are meant to induce competition for the swift and ultimate benefit of all. As experts have shown many times over, the promise of economic growth, however, turns out to be a nightmare of socioeconomic inequality and environmental devastation. And yet the 'stealth revolution' of neoliberalism continues, converting "every dimension of political, juridical, educational, and socio-cultural activity—the foundations of democracy itself—into economic metrics" (Thomas 2016, 191). My analysis here focuses on how two material components of living in Haiti became

implicated in neoliberal attempts to pursue 'development' through state-driven modernization, transforming their life-sustaining capacities into conduits for immiseration and, particularly, cholera.

a. Water Becomes Asset

I begin with water, specifically the water people drink to stay hydrated. Though an emphasis on water's fundamental link to health and, thereby, life—as described earlier—persists among the general public both ethically and in practice, it by and large no longer grounds the governance approach enacted by the national government or promoted by its international supporters. By the end of the twentieth century, drinking-water in Haiti found itself in the crosshairs of the 'stealth revolution.' Efforts focused on supplying clean water (with the goal of achieving health benefits) had given way to an approach that views water as an asset for economic productivity and the government's role as facilitating service coverage based on demand (Nicol 2000). While my discussion for now concentrates on water, the linearity of the page contradicts the not necessarily coordinated simultaneity of neoliberalism's embrace. Appreciate, if you can, as I chart water's transmutations—and later those of rice—how the policies and ideologies surrounding its 'development' implicate myriad other resources and systems at once.

As the Cold War unfolded in the wake of World War II, countries like Haiti became instrumental to the struggle for global power. Emergent neoliberal ideologies accompanied an acceleration in geopolitical jockeying for market domination and the expanding influence of transnational corporations and international financial institutions. Western governments grew increasingly concerned about the burdens of disease and poverty—framed as 'underdevelopment'—among countries that could potentially tip the scales of the Cold War in one way or the other. By the late 1950s, clean water supply became a central concern of recently established international financial institutions, with the World Bank and Inter-American Development Bank (IDB) increasingly engaging in water-related development lending to governments in Africa, Asia, and Latin America (Bakker 2010). The 1960s saw a growing acceptance that investing in public infrastructure was necessary to stimulate improved health outcomes and the broad, stable economic prosperity needed not just for a Western model of modernization but also protection against the encroachment of communism.

The major operational challenge, however, lay in how to achieve durable systems and sustainable integrated services. While efforts during the 1960s, 1970s, and into the 1980s focused on achieving coverage levels through governments extending water supply to communities, accompanied by an increasing emphasis on community participating, "problems of unsustainable technology, poor delivery systems and government incapacity in operation and maintenance meant that the largely unrealistic targets were missed, and highlighted the problem of financing the necessary huge capital expenditures" (Nicol 2000, 10). With public sector delivery declared financially unsustainable, national and international efforts transitioned from a supply-oriented, health-based to a demand-based approach, which happened to converge with other discourses at the time aiming to create 'ownership' at the local level. Because, what better way to involve poverty-stricken community members than to give them the opportunity to have a 'financial stake' in their water supply? Doing so would serve the dual political-economic purpose of 'decentralizing' and 'democratizing' the public sector—two central tenets of the so-called Washington Consensus taking hold of international financial institutions at the end of the 1980s.[9] Adhering to this framework meant that development aid and access to the (West-dominated) global economy were conditioned on restructuring national economic policy along neoliberal lines of financial deregulation, privatization, and trade liberalization (Shamsie 2004). Water's usefulness expanded beyond its 'social good' for sustaining life to serving as a conduit for a unified political-economic model of market-led development. Marketization carried the optimism of generating emancipatory effects by "creating the basis for new, more inclusive and egalitarian solidarities" (Fraser 2014, 547). But such effects would be complicated, unsurprisingly, by Haiti's ongoing state of exception at the hands of foreign (colonial) powers, most notably the United States.

The 1992 International Conference on Water and the Environment in Dublin marked pivotal event in water's neoliberal interpellation. Highlighting its importance as a resource for environmental protection and human development, the gathered experts agreed that the 'increasing scarcity' of fresh water demanded new approaches to its sustainable management.

[9] The so-called Washington Consensus was named for the city where the World Bank and Inter-American Development Bank are headquartered. It involved a set of policies embraced by the development banks that "included financial liberalization, privatization, deregulation, the creation of secure property rights, tax reform, the introduction of competition, and public sector fiscal 'discipline'" (Bakker 2010, 72).

The meeting produced a declaration known as the Dublin Principles (ICWE 1992) which embody the first major international expression of water as an economic good and endorsement of its commoditization—the implication being that as a commodity, water's availability and allocation could be more sustainably managed based on expressed demand by communities of 'consumers'. The new approach transitioned the role of government away from guaranteeing service coverage to one that would "enable and facilitate a new service delivery relationship between civil society and the private sector" (Nicol 2000, 10). The Washington Consensus era focused on macroeconomic prescriptions, however, was short-lived. Water, on the other hand, retained its fictitious commodification as a natural element subsumed into capitalism (Polanyi 1944). With income gaps widening, poverty intensifying, and global climate change accelerating, "the neoliberal cure for the ills of markets in nature [was] more markets" (Fraser 2014, 552).

By the late 1990s, neoliberal skepticism about informal businesses and small-scale independent water providers was shifting toward a paradigm that considered them important ingredients for effective economic development and the needy masses as both potential producers and consumers (de Soto 2000). As the World bank introduced 'formalization' as an objective for reconstituting 'informal' enterprises in the realm of the market (de Soto 2000), an interrelated effort made the case for approaching water as not just a good which has associated costs in its delivery and disposal, but as "an asset in productive processes at a household level" (Nicol 2000, 21). Water is not just a need which must be paid for, but an asset which can generate revenue in combination with other household assets. This 'livelihoods view' aims to incorporate into the demand-based policy environment an understanding of water's economic value in household strategies to produce income. When water becomes an asset, its value becomes reduced to its financially sustainable if not profitable management by humans, paving the way for neoliberal inundations of privatization and commoditization as well as individualization. Water becomes produced—and consumed—for economic gains.

In Haiti, water also became an international political-economic neoliberal bargaining chip, contributing to the kind of hostile environment in which a waterborne disease like cholera and the fictitious commodification of water thrives. Nearing the end of the 1990s, the Inter-American Development Bank (IDB) performed an assessment of Haiti's potable water and sanitation sector to inform opportunities for investment, selecting the northern city of Port-de-Paix for a series of loans aimed at overhauling its water infrastructure (IDB 1997). In 1998, the

IDB approved a $54 million loan and a $965,000 grant to improve potable water and sanitation services in Haiti, the provisions of which the government of Haiti accepted in 2000. A landmark report by a team of human rights lawyers and global health experts chronicles what happened next (Varma et al. 2009). The U.S government, as the largest individual stakeholder at the IDB, interfered in 2001 to stall the loan disbursement in order to use it as leverage for influencing electoral processes in the wake of President Jean-Bertrand Aristide's reelection. While the IDB's Articles of Agreement explicitly prohibit taking such political considerations into account, the U.S. had made an exception. The rules, it determined, simply did not apply in this case—and in many other cases. In an exercise of sovereignty, U.S. government interests in maintaining economic and political hegemony in Haiti overrode the legality of its contract, without recourse and, perhaps we might say, san konsyans (without conscience).

A full ten years after the IDB loans were first approved, the water projects in Port-de-Paix had yet to be implemented (Varma et al. 2009), rendering Haiti's water insecurity even more exceptional. In just this one instance, a karavàn, or figurative onslaught, of neoliberal development attempts to 'modernize' both water and the state dragged Haiti further into debt, expanded the immiseration of the masses, and 'planned' both the cholera epidemic disaster and the proliferation of RO water to come, as I explore in more detail in Chapter 5 and 6, respectively.

b. Rice Becomes Flood

In Haiti's Lower Artibonite Valley, it is impossible to discuss water without invoking its edible counterpart: rice. Their entanglements saturate agricultural production and the bodies it sustains. Water channeled from the Latibonit River irrigates over 30,000 hectares of land predominately dedicated to cultivating rice (FAO 2000), while common knowledge in the region affirms that consuming a decent meal (of which rice is a staple) fittingly prompts the drinking of plentiful water. "If someone tends to drink lots of water," a friend of Emmanuel's explained to me, "it's said that it's because they've just eaten." Others around us nodded in agreement. "That's why you always see Emmanuel drinking water!" he quipped, as giggles erupted among us and Emmanuel shifted his sturdy frame in his chair.

Applying the logic of a livelihoods approach as described above, the waters used for irrigation and drinking ultimately derive their value from their capacity to generate income for

households. Being hydrated enough to tend to gardens that are well enough watered bears agricultural products that farmers are able to bring to markets which form the core of Haiti's largely agrarian society. Though rice now constitutes nearly a quarter of Haitians' average daily calorie intake (Cochrane et al. 2016), the vast majority of this demand is being met—and created—by imported rice that often sells for half the price as domestic crop. Early on in my fieldwork in 2019, Emmanuel somberly informed me, "We've even started to see imported rice being sold in the Artibonite. It's an insult to the peyizan." While the Lower Artibonite Valley was and remains Haiti's rice basket, the waters of neoliberalism are steadily rising, flooding out local production in the wake of a karavàn of restructuring the began decades prior.

This section examines how neoliberal interventions into Haiti's rice sector link historically to the 2010 cholera epidemic by first swerving back to the previous discussion of water infrastructure development. Yet here, the water supply in question is not necessarily that meant for drinking—though it was certainly drunk—but the parallel mid-century development efforts, on behalf of the Haitian government and foreign actors, to expand irrigation in the Artibonite Valley. These preliminary designs at agricultural 'modernization' served to further entrench and eventually catalyze a subsequent wave of U.S.-driven disruption amidst Haiti's extended state of exception.

Among the many infrastructural projects engineered by the U.S. Marines during the 1915-1934 Occupation described earlier were small gravity irrigation systems in the Artibonite Valley, often coinciding with sites of colonial waterway networks near the ruins of former plantations. Following Haiti's independence from France in 1804, historians argue, the Haitian state abandoned forms of agricultural technical assistance associated with the plantation economy (Chochotte 2017; Lundahl 1979). As the peasant economy prevailed, colonial irrigation systems in Haiti's semi-arid plains fell into decay. The government's nineteenth-century Department of Agriculture, which gradually combined with the Department of Public Works into a single institution (and building), seemed more concerned with the surveillance of small farm labor than technical development (Chochotte 2017, 95). U.S. intervention during the Occupation, however, not only physically detached Agriculture from Public Works by moving it into a new building but also financially attached it to U.S. funding ever since (Chochotte 2017; Lundahl 1979).

Attempts to institute broad reforms and expand social programs following World War II were hampered by the country's millions of dollars in debt to the United States, including those accrued during the Occupation. In 1949, President Dumarsais Estimé and Haitian agricultural experts sought U.S. financial support and technical expertise to implement plans to integrate and extend Occupation-era irrigations into a larger system throughout the Artibonite Valley. The two governments agreed to establish a jointly managed autonomous agency called the Organisme de Développement de la Vallée de l'Artibonite (ODVA) to administer the irrigation project. While the Haitian government—in theory—appointed the ODVA director, the most important financial positions were reserved for U.S. officials (Chochotte 2017, 95). The following year, however, a military coup overthrew President Estimé, leaving the ODVA project stalled until construction resumed in 1952 under President Paul Magloire—himself a member of the junta that ousted Estimé—with plans to expand the system to cover 33,000 hectares in the Artibonite mainly for the benefit of rice farmers. By the close of Magloire's austere and rampantly corrupt term, though, irrigation reached a mere 8,000 hectares (Chochotte 2017, 96) in spite of $40 million spent on the project (Lundahl 1979, 342).

After taking the helm of Haiti's government once elected president in 1957, soon-to-be "President for Life" François Duvalier's regime leveraged an unprecedented—though turbulent—influx of U.S. aid to rapidly expand the irrigation system (Alcindor 2002). By 1962, 28,000 hectares in the Artibonite were being irrigated (Chochotte 2017, 99), peaking agricultural yields and economic returns particularly in regard to rice. Throughout the 1960s and much of the 1970s, in fact, Haiti managed to produce enough rice to remain self-sufficient, in respect to both supply and demand (Lundahl 1979, 46). As Duvalier concentrated his power within the government, his U.S. funded investments in rural development and populist programs gained him the peasant-based popular support he needed to secure his regime. But it was his action in 1960 to dismiss the ODVA's administrator, who was essentially a puppet for U.S. personnel (*Le Nouvelliste* 1960), which set in motion events that would eventually lead to not only the suspension of almost all direct U.S. aid to Haiti from 1962-1969,[10] but also—and more immediately—the formation of Duvalier's notorious civil militia (Chochotte 2017, 102-107).

[10] Perhaps unsurprisingly, the first U.S.-backed IDB loan granted to Haiti following this long hiatus was one of more than $5 million to improve the water system of Pòtoprens (Loescher and Scanlan 1984, 329).

Venturing deeper into the subsequent years of Duvalier's bloody and complicated reign is, for now, beyond the scope of this chapter;[11] but 1962 presents a fitting pause point, if only because the further development of the Artibonite Valley irrigation system effectively paused here as well.

In the meantime, I turn our focus from water infrastructure development to rice itself. As attempts to 'modernize' Haiti's irrigation system stagnated, Green Revolution interventionists of the 1970s sought different inroads for increasing agricultural production in order to protect Haiti from not only famine but communism as well (cf. Shiva 1991; Patel 2012). The political crisis of the 1960s had taken its toll, leaving canals frequently filled with alluvial silt and soil increasingly salinized due to inefficient drainage (Lundahl 1979, 66). The incoming Green Revolution karavàn presented a techno-political framework for both rebuffing the threat of communist insurgency and advancing capital. Coinciding with this period were the gradually improving relations between Haiti and the United States, accelerated not the least inconsiderably by the ascension of 19-year-old Jean-Claude Duvalier upon his father's death in 1971 (Loescher and Scanlan 1984, 329). What followed was a wave of interest in, among other things, modernizing the practices and inputs of rice cultivation in Haiti in the context of a 'deficient' irrigation system.

Entering the 1980s, the Haitian peyizan grew two varieties of rice: mountain rice *(Oryza montana)* and swamp rice *(Oryza sativa)*:

> The latter is a typical cash crop, sold mainly for urban consumption, grown in irrigated areas in the Artibonite valley (which is the most important rice-producing area of the country), in the Plaine du Nord, in some areas on the southern peninsula and between Port-au-Prince and Léogâne, while the mountain rice is more of a pure subsistence crop grown all over Haiti. (Lundahl 1979, 46)

Though domestic rice production had kept pace with national demand for two decades, economists and international relations experts—hailing primarily from the United States, western Europe, and Scandinavia—became entranced by Haiti's 'exceptional' state of poverty. Inquiry into the economic problems of countries of 'the South' heralding Green Revolution prescriptions proved a rapidly growing field by the late 1960s. Among the cocktail for agricultural development were interdependent "high-yielding technologies" such as 'improved seeds', fertilizer, and a functional irrigation system, which also required an efficient credit system and

[11] I point readers to *Haiti: State Against Nation* by Trouillot (1990) for a more thorough and nuanced—if not the definitive—discussion of the Duvalier era in Haiti.

the adoption of specific farming techniques (Lundahl 1979). As Vandana Shiva (1991) and others have argued, however, the Green Revolution's promised 'quick fix' to poverty in reality violently disrupted local social and biological ecosystems alike. Emerging efforts to increase rice yields in Haiti, for example, did not square with indigenous rice varieties, among them Lakrèt (La Crête)—still treasured to this day, despite being effectively wiped out by sheath rot in 1998.[12] In their 1971 volume, *Haiti: The Politics of Squalor*, Robert Rotberg and Christopher Clague observed:

> Fertilizer frequently does not raise the yields of traditional varieties because they have been selected by farmers in the absence of fertilizer. Hence the introduction of fertilizer often requires the simultaneous introduction of new crop varieties. In addition, single applications of fertilizer in poor soils may prove uneconomical; annual applications over a considerable period of time may be required in order to make the practice advantageous (1971, 278).

While "improved seeds are an important complement to fertilizers and *vice versa*" (Myrdal 1968, 1290), in Haiti the introduction of fertilizer appears to be key to the deluge of interventions to come. As Mats Lundahl (1971, 585) highlights, "In 1973, an American team gathered information regarding fertilizer use in Haiti, and then identified the Artibonite valley as the area that provided the best immediate opportunity for extension of fertilizer employment." It strikes me as no accident that the following year saw the founding of Agroservice, S.A., a company that remains Haiti's largest importer and distributor of fertilizer, among other agricultural inputs.[13] By the end of the decade, rice imports had resumed (Lundahl 1971, 46).

As loans, corruption, repression, and worsening economic disparities accrued under Jean-Claude Duvalier, President Ronald Reagan entered the White House in 1981—and with him the tide of neoliberalism began rising globally. While experts puzzled over Haiti's failed Green Revolution conversion, the population endured an environment made increasingly hostile by violent authoritarian rule, the U.S.- and Canada-ordered extermination of Creole pigs (Farmer 1992), the introduction and epidemic spread of HIV, dwindling harvests, and systematic attempts to 'develop' Haitians beyond their 'primitive' conditions. Pointing to escalating discontent, hunger, and instability—not just within Haiti but throughout the region—Reagan launched the Caribbean Basin Initiative (CBI) in 1982, thus beginning "the most massive foreign intervention

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[12] For more on the history of Lakrèt rice in Haiti, listen to this *Radio Haiti-Inter* interview from October 29, 1998 with agronomist Jean-Claude Délicé, then-director of ODVA, and rice farmer Charles Suffrard: https://repository.duke.edu/dc/radiohaiti/RL10059-CS-0631_02 (Radio Haiti Archive, Duke University).

[13] These early years of Jean-Claude Duvalier's reign were marked by an influx of large private enterprises. As I discuss in Chapter 6, Culligan established the Caribbean Bottling Company in 1973.

in Haiti since the 1915-1934 American occupation" (Mullin 2017). Projected into a sustained transnational state of exception less than seven decades prior, interpolating Haiti into neoliberal designs seemed a given at the level of policy, although acceptance of such was far more contentious on the ground.[14]

The years leading up to the CBI bore striking parallels to those before the Occupation: the perceived encroachment of a U.S. foe, an emerging paradigm shift in economic policy, Haiti's skyrocketing debt (Farmer 1994), and the inauguration of a vocally racist, laissez-faire U.S. president (Naftali 2019). Leading up to Reagan's first term, the Caribbean had become a focus of U.S. geopolitics when in the late 1970s the State Department warned that instability in the region was creating "'targets of opportunity' for Cuba to exert a growing influence" (Polanyi-Levitt 1985, 239). Panic grew in the White House as 'radical governments' emerged in Nicaragua, Jamaica, Grenada, Guyana, and Suriname—signaling, it seemed, the U.S.'s failed ability to control its own backyard. Through a new trade and aid relationship that aggressively promoted private enterprise and the free market, Reagan's CBI promised a means to not only mitigate the social and economic roots of political turbulence in the Caribbean, but also reassert U.S. control of the region. Critical development experts at the time, however, stressed that the CBI would operate as "a mechanism to integrate local private sector activity more closely with American business groups and lock the fragile and vulnerable mixed economies of the Caribbean countries more firmly into a relationship of dependence on the favours of the United States government" (Polanyi-Levitt 1985, 237). The CBI effectively removed all other alternatives. In a setting like Haiti, establishing a 'cycle of dependency' was an inevitable, if not intended, outcome.

In contrast to previous economic development designs at improving Haiti's capacity for self-sustaining agricultural production, the CBI called for integrating Haiti into the global market by redirecting 30% of its domestic food production towards growing crops for export. One obvious and anticipated consequence of this modification in—or attack on—peasants' land use concerned the exacerbation of hunger nationwide. The implementation of CBI restructuring prompted the first flood of U.S. food aid into the country. Conditioned on Duvalier's

[14] In examining how cholera in Haiti was a planned disaster, this chapter's analysis focuses on the ways Haiti was made and maintained as a state of exception. Unfortunately, beyond its scope remain the myriad examples and enactments of resistance against the colonial/imperial and neoliberal embrace.

incorporation of trade liberalization reforms, the new program nearly doubled the amount of U.S. food aid provided to Haiti: from $11 million in 1984 to $54 million spread over three years, 1985-1988 (DeWind & Kinley 1988, 98).[15] While the policy benefitted American farmers and transporters and, to be fair, probably saved many Haitians from starvation in the short term, the influx of inexpensive provisions wrecked local economies and food markets and transformed consumption patterns. The cycle was well underway—deteriorating domestic agriculture, exacerbating poverty, concentrating wealth, creating dependence on foreign imports, and funneling millions of aid dollars into Duvalier's regime—by the time a popular revolt ousted Duvalier in 1986.

After Duvalier fled Haiti in a U.S. Air Force aircraft, a military junta headed by General Henri Namphy took power. The U.S. lost no time in intensifying its measures to restructure Haiti's economy, pressuring the new regime with substantial loans from the Bretton Woods institutions.[16] In exchange, Namphy closed state-owned industries, opened all ports to commercial activity, reduced the ODVA budget, removed agricultural input assistance to local farmers, and, in particular, slashed rice import tariffs to 50%—some of the lowest in the Caribbean at this time (COHA 2010; Gros 2010). Meanwhile, the passage of the 1985 Farm Bill in the United States had boosted subsidies to American rice growers such that 40% of their income was coming from the government by 1987 (Aristide 2000, 12).

As a result of these combined measures, in addition to massive contraband and rice smuggling operations, U.S. rice—known as "Miami rice"—began pouring into Haiti in 1986, selling at prices far below the market value of a domestic product that was becoming increasingly difficult to grow. In under three decades, rice would go from a luxury food, constituting just 7% of Haitians' average caloric intake in 1985,[17] to both the cheapest source of carbohydrates and a national staple (Cochrane et al. 2016, 2). This rapid increase in domestic consumption, reflecting both population growth and changes in consumption patterns, compounded the impact of imports on local rice production. U.S. imported rice increased from just 7,000 metric tons in 1985 to 25,000 metric tons in 1986 (Cochrane et al. 2016, 3). Haiti's

[15] In 1986, Haiti became one of the few countries to reach the elevated status of a fully open economy, with a ranking of 1 on the IMF's Trade Restrictiveness Index (TRI) (IMF 1999). Another striking finding to emerge from the TRI was that, by 2000, Haiti and Chile were four times as open as the United States and Canada (Watkins & Fowler 2002, 126).
[16] The World Bank and the International Monetary Fund.
[17] In 1985, the majority of Haitians' diet consisted of starchy roots and corn (Cochrane et al. 2016, 1).

local rice production plummeted: falling 25% by the end of that first year (COHA 2010). Outraged peyizan protesting the catastrophic deluge barricaded highways and ports for months but stood no chance. The neoliberal flood was here.

For a brief moment in the early 1990s, it seemed as though the masses would stay the inundation. As neoliberal discourses on globalization and democratization gathered into a cohesive consensus in Washington, the Lavalas movement, led by liberation theology priest Jean-Bertrand Aristide and promoting social justice and political and economic redistribution, swept through Haiti. In December 1990, Aristide was elected president of Haiti, winning 67% of the vote. Once inaugurated in February 1991, Aristide initiated efforts to curb government corruption, control drug trafficking, raise taxes on the wealthy, double the minimum wage, secure labor rights, institute land reforms, and provide for public health, education, and human rights (Smith 2001)—efforts that quickly earned him many enemies among the country's economic elite, military leadership, and U.S. investors. After a mere seven months in office, Aristide was ousted in a military coup.

While various scholars have done much to plumb not only the complex internal and international dynamics of the ensuing embargo-ridden three years of military rule under the leadership of Raoul Cédras but also the political transformations of Aristide during his exile,[18] I continue here to ground my analysis in rice. With Aristide forced out and yet another repressive junta in power, the stakes were high across the board, including for Haiti's rice sector. Enter American Rice, Inc. (ARI), a subsidiary at the time of Erly Industries. American Rice started as an agricultural cooperative founded by a group of Gulf Coast rice farmers in 1969, and later purchased what was then the Blue Ribbon rice mill, located in Houston, Texas, to begin milling its farmers' rice in 1975 and eventually growing into one of the largest rice millers and international exporters in the United States by 1986 (Grant 2000). As the 1985 Farm Bill drove up production, profits, and U.S. competition, ARI joined with Erly Industries' Comet Rice in 1986, went public in 1988, and by 1990 entered a merger that left Erly in control of more than 75% of ARI's shares (Grant 2000).

[18] See Morley & McGillion 1997; Dupuy 2007; Shah 2009; and G. Berggren et al. 1993, *Sanctions in Haiti: Crisis in Humanitarian Action Working Paper No. 93.07*, Harvard University Center for Population and Development Studies.

Gerald D. Murphy, Erly's founder and CEO, was an ambitious and, as it would turn out, unscrupulous businessman—with a history of repeated legal, financial, and political irregularities[19]—whose particular interest in Haiti's rice market stretched back decades. Comet Rice, which Erly had acquired in 1970 (Grant 1997), not only became the largest exporter of the "Miami rice" which started pouring into Haiti in the late 1980s (WOH 1995$_a$), but also one of the most prodigious smugglers of contraband rice into the country (WOH 1995$_b$). Erly Industries did not shy from exploiting the hostile environment amid Haiti's ongoing colonial state of exception—then, and even to this day.[20]

Following the coup against Aristide, ARI—now chaired by Murphy and directed by his son Douglas as CEO—established the import company Rice Corporation of Haiti (RCH) by signing a nine-year contract in December 1992 with the *de facto* military government (COHA 2010). Soon, RCH was importing about half of the rice consumed in Haiti and maintaining "a virtual monopoly" on subsided U.S. rice imports to the country (Toler & Gawlik 1996, 2). In spite of the embargo, ARI's Caribbean consultant, Reagan's first director of the Caribbean Basin Initiative, and RCH's chief Washington lobbyist, Lawrence Theriot, had convinced the United States and United Nations to allow continued rice imports (Theriot 1994). Though the Haitian government attempted to levy both duties and taxes on rice importers, RCH was not only structured to evade them but also routinely payed bribes to government officials (USA v. Kay & Douglas 2007), despite Theriot's repeated public statements claiming otherwise (Theriot 1994; WOH 1995$_b$). For several key years, heavily subsidized, under-taxed American rice imported by RCH flooded Haiti's extremely vulnerable market. The ensuing disruption further destabilized the domestic agricultural sector,[21] the precarity of which drew even more attention from U.S. rice farmers who, with RCH as a convincing example, saw in Haiti opportunities for both lucrative

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[19] See "Erly to Sell Some Units, Focus on Juice and Rice," *Los Angeles Times*, 1989 (https://www.latimes.com/archives/la-xpm-1989-09-23-fi-582-story.html); "A Company Under Investigation, But Its Shareholders Aren't Told," *New York Times*, 1993 (https://www.nytimes.com/1993/10/11/business/a-company-under-investigation-but-its-shareholders-aren-t-told.html); "ERLY Industries Inc. History" (http://www.fundinguniverse.com/company-histories/erly-industries-inc-history/).

[20] Currently, the primary subsidiary of Erly Industries is its international development firm, Chemonics International, founded in 1975 and based in Washington, D.C. Chemonics has for years stood as the largest for-profit recipient of U.S. government foreign aid. In 2019, it netted more than $1.5 billion in USAID contracts. In 2012, controversy erupted around Chemonic's work in Haiti following the 2010 earthquake. The largest single recipient of post-earthquake funds from USAID, receiving over $196 million in contracts, many of which were "no-bid," Chemonics was cited after the fact for gross mismanagement of funds and failure to involve local community members in their activities. The firm continues to implement projects in Haiti, including (as of 2021) interventions in reforestation, the judicial system, and the agricultural sector—with the express aim to "modernize agriculture."

[21] RCH also pushed Texas rice seed varieties onto farmers in the Artibonite Valley (Theriot 1994). Given the discussion several pages ago, we can assume that such a move only deepened farmers' plight.

and political gains. This was especially the case as RCH's dominance began waning. By 1995, ARI, Erly, and Gerald and Douglas Murphy were mired in legal troubles that would spell their downfall—and bankruptcies—within four years (Grant 2000). In 2000, the Haitian government confiscated RCH, accusing the importer of customs fraud and rice smuggling (Radio Haiti-Inter 2000). Douglas Murphy and Theriot convinced U.S. Senator Jesse Helms (R-N.C.) to order more than $30 million in aid to Haiti suspended in retaliation (Dobbs 2000)—a year before the U.S. government interfered to stall the IDB water infrastructure loan to Haiti in 2001

The RCH flood of Miami rice was only a trickle compared to the inundation to come. On October 15, 1994, Aristide arrived in Haiti aboard a U.S. government aircraft accompanied by several prominent U.S. government officials, including Secretary of State Warren Christopher who praised Aristide's return as "a culmination of Clinton's vow to restore democracy [to Haiti], made during his 1992 presidential campaign" (Farah 1994). Less than a month before, on September 19, U.S. troops invaded Haiti for the second time in the country's history. After over a year, diplomatic negotiations between Cédras and Clinton's government had reached a stalemate. With Cédras refusing to step down, the U.S. launched Operation Uphold Democracy—a moniker I can only assume was eventually (and intentionally) adopted by popular uprisings, like Operasyon Moun Fou, attempting to depose Haiti's government leaders over the decades to come. In brief (despite the complexity of this period of Haiti's history), by the time the President-in-exile landed in Pòtoprens, Cédras had fled, a 21,000 strong U.S. military force occupied the country, and Aristide had pledged to implement the Emergency Economic Recovery Plan (EERP).

Designed by major bilateral and multilateral donors and tied to a promised $2.1 billion in aid over five years, the EERP not only undermined any notion of 'upholding democracy'[22] but also entailed the implementation of a strict structural adjustment program intended to improve Haiti's macroeconomic stability and incentivize private investment. In her astute case study of this period of neoliberal interventions in Haiti and the role of international actors in shaping events leading up to the ultimate collapse of Aristide's second presidential term in 2004, Yasmine Shamsie (2004, 1102) argues, "While the Aristide government had been committed to

[22] See Anita Isaacs (2000) "International Assistance for Democracy: A Cautionary Tale," in Jorge Domínguez (ed), *The Future of Inter-American Relations*; and Adam Pzreworski (1992) "The Neoliberal Fallacy," *Journal of Democracy*, 3 (3): 45-59.

fostering democracy, processes related to globalization, such as the internationalization of the state and the internationalization of authority, ultimately made the Haitian state more responsive and accountable to international financial and political institutions than to its own citizens. Haitian leaders became subordinated to the needs of the global market and to the demands of the IMF, the World Bank and other international institutions, upon whom they depended for aid and investment."

When Emmanuel was explaining to me what was meant by karavàn in the Haitian proverb, karavàn ap pase, chen an ap bwe dlo (the caravan passes, the dog drinks water), he described it as a torrential flood that leaves havoc in its wake. He was commenting on the 2017 Karavàn Chanjman that opened this chapter, but in our conversation also invoked as an example Lavalas, Aristide's social and political movement described several pages ago. The Kreyol word 'lavalas' refers to the Biblical flood or, when translated, roughly means 'avalanche'. "Lavalas," writes literary author Nikòl Payen (2002, 766), "the great flood that was to have cleansed a century of corruption and baptized the new Haiti." For Emmanuel and others, especially rice farmers in the Artibonite Valley, the metaphorical link between Lavalas and the passing karavàn has exceeded wordplay. "At first, some people were worried by Lavalas just because of its name," continued Emmanuel. "And then we saw what happened to the peyizan during and after its time in government." With Aristide restored as president, the EERP structural adjustment program he was forced by the donor community to carry out would shatter any remaining floodgates on rice imports.

In 1995, Aristide's administration cut import tariffs on rice from 50% to 3% (Watkins & Fowler 2002, 141), which immediately increased imports by more than 60,000 metric tons to 207,000 metric tons (Chocrane et al. 2016, 3). Experts claimed such a move would not only curb food insecurity, which had worsened during the embargo, but also increase Haitians' purchasing power because they would need to spend less money on provisions. With heavily subsidized rice pouring from the United States into Haiti through RCH and others, prices for rice fell by 25% in the second half of the 1990s and consumption soared (Watkins & Fowler 2002, 141). Though the burgeoning urban populations may have benefited—in the short term—from cheaper rice, the trade liberalization policy devastated smallholder rice producers. Yet again but at an unprecedented scale, the peyizan became unable to compete with cheap U.S. imports which soon

accounted for more the majority of the domestic market, making a hostile environment for local farmers who find their resources growing increasingly scarce.

By the end of the decade, what limited national rice production was left had plummeted by almost half (IMF 1999), triggering repercussions that rippled throughout the country. Haiti's rice farmers responded to the hostile conditions by sending family members to find employment in cities or cutting costs in other areas, such as education and health. By 2001, the majority of Haitian children were malnourished and more than 80% of the rural population was living below the poverty line, with rice-growing areas facing some of the highest concentrations of malnutrition and poverty (Oxfam International 2001). The short term income gains for rice consumers were quickly dwarfed by the poverty and food insecurity extending across the country. Haiti's dependency on rice imports was secured, as was its market now all but completely open to the vicissitude of global rice prices.[23]

Fueling this cycle of dependency were new agricultural policies within the United States as well. Soon after Aristide lowered Haiti's rice import tariffs, President Clinton signed the Federal Agricultural Improvement and Reform Act of 1996, which allowed for direct federal government payments to farmers (O'Connor 2013)—a practice that continued until the belated passage of the 2014 U.S. Farm Bill. Farmers in Clinton's home state of Arkansas, which ranked first among the top rice-producing states in 1995 and to this day (Schnepf & Just 1995), received more than $2 billion in direct payments between 1995 and 2011, half of which went toward rice production (O'Connor 2013). Riceland Foods, a cooperative based in Arkansas and the largest rice miller in the world, became the leading recipient of all U.S. farm payments, receiving more than $500 million between 1995 and 2010 (Furche 2013, 64).

At this point it should come as no surprise that Riceland established commercial ties with a Haiti-based rice importer and wholesaler: Tchako S.A. (although it is unclear when Tchako was founded—the best evidence I could find would point to sometime in the early 2000s (*Le Nouvelliste* 2005)). According to a 2005 Oxfam International report, "Riceland's profits jumped by $123 million from 2002 to 2003, thanks, in large part, to a 50% increase in exports, primarily to Haiti and Cuba" (Raworth & Green 2005, 3). Three decades of reticulated interventions had

[23] See MJ Cohen and JL Garrett (2009) "The Food Price Crisis and Urban Food (In)security," *Human Settlements Working Paper Series, Urbanization and Emerging Population Issues 2*, London: International Institute for Environment and Development and UN Population Fund (UNFPA).

manufactured a thriving market out of not only a shattered domestic agricultural sector but also radically transformed consumption patterns. By 2004, Haiti has steadily become one of the top five export destinations for U.S. rice (Boriss 2006), with foreign rice accounting for more than 80% of the nation's supply (Furche 2013, 64). These figures have only grown during the past decade: in 2020, Haiti ranks the largest market for U.S. long-grain milled rice (Childs 2020), which represents more than 90% of the total 480,000 metric tons of rice imported to meet demand (Cledo 2020).[24] Tracing the historical transformations in Haiti's rice sector provides a conduit for examining the broader mechanisms through which externally enforced and internally adopted (at the government level) neoliberal policies entangled with simultaneous processes aimed at making water an asset and together flooded Haitians' reality—both materially and viscerally.

Conclusion: A Hostile Environment, a Threatened Existence

The U.S. military occupation of Haiti from 1915 to 1934 manufactured an environment made hostile for the majority of Haitians' lives under ensuing regimes of neoliberalism brokered by the government apparatus in place.[25] In the Lower Artibonite Valley, this means that even if a peyizan is able to yield a decent crop of rice in spite of soaring costs of agricultural inputs, limited irrigation, and worsening soil quality, they're forced to compete in local markets with imported rice that sells for half the price. Karavàn after karavàn passes, wave after wave of state sanctioned 'intervention', but only misery grows. The reticulations of policy, capital, and ideas involving essential elements like food and water inevitably implicate not only consumption, but also visceral emotion, as this chapter described. Permeating "Operasyon Moun Fou" ("Operation Crazy People"), for example, the woman on the radio's quip about drinking-water directed at President Jovenel Moïse, and Emmanuel's "Karavàn Dezespwa" dig (pun intended) is not a

[24] In contrast, Haiti was forecast to produce 75,000 metric tons of milled rice between July 2019 and June 2020 (Cledo 2019).
[25] My use of the term "hostile environment" also serves as an allusion to Prime Minister Theresa May's "hostile environment" policy instituted in the UK in 2012 and paralleled in the U.S. government's weaponization of desert terrain (starting in 1994) and, more recently, forced family separation. This strategy constitutes a neoliberal governance model of 'planned disaster' that, in these cases, attempts to discourage immigration to the UK and United States by deliberately exposing Black and Brown people to trauma, discrimination, and death within their borders while, at the same time, disavowing the hostile environments those same governments fabricated in the very countries from which people are fleeing.

politics of resentment reacting to an intrinsically hostile world,[26] but rather a politics of colonial *ressentiment* responding to an environment made hostile to existence.

'Hostility' invokes the tension of *ressentiment* between the colonized and colonizer. Friedrich Nietzsche (1996 [1887]) famously—and with a theorized two types of European morality, "master" and "slave," that represent two types of judgement: an active or reactive manner of relating to the world, respectively. Nietzsche casts the reactionary types of moralities as the moralities of *ressentiment*, fundamental to which is an outward orientation. "In order to exist," he writes, "slave morality always first needs a hostile external world" (Nietzsche 1996, 37). José Haro (2019, 27) takes up Nietzsche's critique, but claims that the process of colonization transformed the slave morality and *ressentiment* exported to and imposed upon people European powers colonized into a distinct "colonial *ressentiment.*" While an outward orientation persists in colonial *ressentiment*, people's reactions are aimed not at an intrinsically hostile world but specifically at the hostile system perpetuating their oppression and ability to exist in the world. At the same time, this is not to deny that resentment does not manifest among Haitians. In fact, Trouillot (1996) discusses how resentment—driven by colorism—has played a significant role in Haiti's social and political movements.

On September 27, 2020, I held my last formal interview before my premature departure from the Fifth Section the following day. I sat down with Emmanuel to discuss the digital photographs he had taken as part of a Photovoice project I designed to prompt discussion about the lasting effects of the cholera epidemic on people's lived experiences, particularly as they relate to water—or *waters*, as it would turn out, in varied configurations. After talking through the images he chose to capture, Emmanuel launched—as he often did—into broader reflections on the hostile environment faced by Haiti's peyizan. On his mind this particular afternoon as we sat on the front porch, which was finally giving shade from the slowly setting sun, were rumors that ODVA and its multilateral partners would soon venture to make irrigation water an asset.[27]

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[26] See Jeremy Engels's *The Politics of Resentment: A Genealogy* (2015).

[27] Although Emmanuel described this as a shocking possibility, there have been multiple attempts at and implementations of irrigation water taxes in Haiti's history. Ann Hague (1984) provides a thorough account of irrigation taxes in Haiti, beginning with the Irrigation Law of 1913. In practice, the irrigation tax law passed in 1959 required all farmers whose plots benefited from irrigation water controlled and distributed by the government to pay an amount based on the irrigated surface area and the number of months per year of irrigation (Bloch et al. 1988, 53). A decade later elsewhere in the country, peyizan resistance to market and irrigation taxes sparked a rebellion against the Duvalier regime, whose response led to the 1969 Peasant Massacre

> Today, there are many people who say that they are going to try to make us pay for our irrigation water, which makes our hearts break. We're worried because it will make things more difficult for us. If we have to pay for water, it won't be possible for us, the poor, who already have to pay for everything else. We have problems in our konsyans [awareness/conscience] keeping us preoccupied because we don't know what we would do without it. If we can't afford the water, we can't have gardens to grow food, and the country cannot exist if it doesn't have food. Of course, we're not involved in the process—they'll make an executive decision. But we the peyizan say, No! Egzistans nou ap menase [our existence is threatened]. We will continue to accompany the environment, because it is nature that sustains humanity.

Emmanuel, like the woman on the radio and the 'crazy people' in the streets, expresses a politics of colonial *ressentiment* toward the floodwaters of neoliberalism imperiling not just the peyizan but also the mutual relationality among humans and the natural environment.[28] "Our existence is threatened," Emmanuel specifically said; not "existence is threatening us"—a distinction that highlights not a frustration with an intrinsically hostile existence, but a keen awareness of the forces threatening all of the life-sustaining relations which comprise it.

The ways that always already racialized forms of neocolonial capitalism and fictitious commodification unfold in practice reveal how the novel emergence and exceptional devastation of Haiti's cholera epidemic were not just 'ordinary' but a continuation of "the long history and present" of an antiblack ideological and material global climate (cf. Sharpe 2016, 115). This chapter charted a path of the afterlife of enslavement in the making of Haiti's transnational 'state of exception' during the early twentieth century to the 'exceptionalism' of Haiti's novel cholera outbreak, which quickly became the deadliest cholera epidemic in recent global history. As I explore further in the next chapter, although the outbreak itself was a spontaneous incident, its event was already a planned disaster for Haitians in the ongoing, interdependent projects of coloniality and Black subjugation (Mignolo 2011; Beckett 2020).

(Chochotte 2017, 136). Though as of yet unconfirmed, this possible new attempt, however, will likely differ from previous centrally enforced tax measures in that it will probably entail an autonomous government agency and foreign actors specifically levying a 'livelihoods approach' on the peyizan.

[28] This is just one of many examples that would directly contradict Lundahl's assertion that "the Haitian peasant sector exhibits a profound antagonism between man and his environment" (1979, 254).

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Chapter 5 Diarrhea

Pathogenicities of *Vibrio cholerae*: The Sociogeny of an "Infectious Disease of Poverty"

Introduction: Situating Cholera Biologies

To reach the cholera treatment center (CTC) in Miablé, the epicenter of Haiti's 2010 cholera outbreak, you must climb by foot, vehicle, or otherwise far up an unpaved road on a hill behind the former municipal hospital. In 2013 and with substantial funding from post-earthquake donations, a new public 300-bed facility opened at the base of the hill. The hospital, built and managed through public-private partnerships between the Government of Haiti and U.S.- and Haiti-based nongovernmental organizations, namely Partners In Health and Zanmi Lasante, remains one of the most 'modern' in the country. Beyond the overgrown chain-link fence behind the CTC's water reservoir, which looks like a giant flat blue water balloon, you're able to glimpse the solar-paneled roof of the facility's main building. But the CTC remains apart.

Inside, on a day in late June 2017, after rinsing my hands with bleach water and checking in with the nurses on shift, I met Thomas, a 26 year-old patient from a neighborhood in the center of Mibalè. "Behind the prison," he later explained. The nurses told me that he had been receiving care at the CTC for the past four days. On a wooden cot sheathed in plastic tarp, Thomas lay on his side so that his body curved around the characteristic central eight-inch hole of a cholera bed, below which was placed a five-gallon bucket meant to catch vomit or, more conveniently, telltale rice-water stool from leaking bodies. Intravenous ringer's lactate solution, the preferred treatment for cholera, dripped from a bag hanging above Thomas's head and into the IV line connected to his arm. As the nurses described his case, Thomas's eyes, sunken in his gaunt face, watched us, but he hardly moved. His body looked wrung dry. One nurse reached over to demonstrate the severity of Thomas's dehydration by pinching his dusky gray-colored skin, which stayed stretched and wrinkled after she let go, indexing its loss of elasticity. I

hesitated to disturb him with any questions, but his watching, weary eyes caught mine, waiting for me to speak. He agreed to a conversation, and I tried to make it as brief as possible.

"I've been here longer than four days," Thomas began. "My daughter fell ill with cholera, and I brought her to the CTC for treatment. I was caring for her here and then got sick myself. She recovered a couple days ago and is back home. I live with her and my wife in Mibalè, in the area behind the prison. The other day while I was taking care of my child, I needed to go into town for a job. A little later, I started having terrible stomach pains and diarrhea. I came back to the CTC at once, and the nurses gave me oral rehydration solution and then an IV." Thomas paused. He propped himself up on one hand and turned to bend over the hole in the middle of the hard wooden bed. Yellowish fluid spilled from his mouth into the bucket; some splashed onto the cot, forming a thin river making its way towards the edge. Shifting his withered body, Thomas positioned his rear over the hole so that his legs hung over the side of the bed, his face downcast. Thin, milky diarrhea followed, each milliliter of which, I recalled from my medical training, teemed with up to 10^9 hyperinfectious *Vibrio cholerae* organisms, giving it the appearance of water left over from rinsing rice; between 10^8 and 10^{11} viable vibrios are needed to produce disease in a newly infected host (Nelson et al. 2009). A nurse increased the flow of his IV fluid and ushered me away.

In severe cholera cases like that of Thomas, fluid losses may exceed 1% of total body weight per hour as toxigenic *V. cholerae* bacteria disrupt osmotic processes in the cells of the small intestine (Cash et al. 1974). But not all *V. cholerae* strains are capable of producing the kinds of symptoms Thomas was suffering; nor does every human host respond in the same way when infected with one of the strains that is; nor is cholera ubiquitous in non-White/Western, poor, or post-disaster settings, as has become readily assumed. By following cholera's rice-water diarrhea in Haiti, this chapter considers the ways in which *V. cholerae* acquires disease causing properties—in other words, its pathogenicities. Under what material, environmental, and social conditions do these pathogenic faculties become activated? How do such shifts in relationality unfold, and what does the knowledge that coheres around them reveal? To what extent are the situated biologies of cholera, including biomedical ways of knowing them, re-crafted by local and global (necro)political interests?

In this chapter, I investigate how *V. cholerae*'s capacity to spark in Haiti the deadliest cholera epidemic in recent world history emerged through situated, interrelated biological, social,

and epistemological processes spanning time, space, and scales. Through the relational poetics of osmosis, I probe the membranes marking such alleged binaries as the natural and cultural, human and nonhuman, knowledge and power. Toxigenic *V. cholerae* operates through mechanisms fundamentally entangled *with* humans and with those *of* humans which allow to them disrupt physiological osmosis in both the intestinal environment and in environments made vulnerable to their infectious spread. In other words, *V. cholerae*'s disease causing properties and effects are as biogenic as they are sociogenic,[1] or socially produced within, among, and by humans and nonhumans.

5.1 - Long-shedding Diarrhea

The next day, I went back to the CTC to check on Thomas. Sitting up in his cot, one leg folded underneath him, Thomas spotted me immediately and shared a wide smile. Though he needed to prop himself up on one arm, color had started to return to his skin and his eyes were not quite as sunken as the day before—signs that the rehydration therapy was helping him survive cholera. The transformation, already, was astounding. His wife sat next to him in the bed, feeding him a meal she had brought to keep up his strength. His vomiting was beginning to subside, Thomas explained, but he was still having intermittent diarrhea. The strain of *V. cholerae* imported into and circulating in Haiti not only carry traits that increase their virulence and lethality; this variant is also characterized by its "long-shedding" effects (Withey, personal correspondence, 2020). In the biological model of cholera, when *V. cholerae* microbes reach the intestines, they begin forming a concentrated matrix of bacteria attached to one another, in what is called a biofilm, which adheres to the villi—or fingerlike projections—lining the walls of the small bowel. The concentration of a certain signaling molecule, cyclic diguanylic acid (c-di-GMP), within the vibrio cell coordinates the transition from the organism's individual, motile lifestyle to one that is fixed in a multicellular community (Silva & Benitez 2016). As vibrios gather and reproduce in these biofilms they eventually reach a cellular density that induces a

[1] In this chapter, I intentionally draw on the concept of sociogeny because it was theorized by and from the perspectives of Black Caribbean philosophers—Frantz Fanon (of Martinique) and Sylvia Wynter (of Jamaica), especially—who not only bore witness to but also experienced in their own lives the pathogenicities of coloniality.

process of cell communication and coordination known as quorum sensing. At high cell density, *V. cholerae* quorum sensing triggers self-limiting signals to stop producing pathogenicity factors and diminish biofilm formation (Silva & Benitez 2016). By disintegrating their intestinal biofilms, vibrios detach from the host and transition back to "a lifestyle adapted for the external environment" (Hammer & Bassler, 2003, 109).[2] Shed in vomit or diarrhea, *V. cholerae* that reach the outside are available to infect anew.

Similar to other seventh pandemic wave 3 strains of the O1 El Tor serogroup (the predominant lineage causing epidemic cholera around the world since the 1990s), the *V. cholerae* variant in Haiti has selectively developed an increased ability to colonize a host, increased production of cholera toxin, and increased motility. In evolution, however, there are almost always trade-offs to optimizing certain traits. Because it produces less c-di-GMP, for example, this strain of *V. cholerae* has a reduced ability to form biofilms (Satchell et al. 2016). But trade-offs may prove advantageous in other ways. While these vibrios are limited in their ability to persist in aquatic environments during interepidemic periods, it also helps to explain why Thomas was still having diarrhea after five days. Were they fit to develop robust biofilms in the small bowel, these pathogens would more rapidly reach the high cell density necessary to activate their detachment via quorum sensing. Instead, they linger, taking longer to shed, not yet losing their grip on Thomas's guts while using his body as an incubator for their explosive replication.

After speaking with Thomas and his wife briefly, I returned to the nurses' station to learn more about the updates on his case. They brought me to a bench to sit outside of the CTC. "His symptoms are much improved, but he is still having diarrhea," one of the nurses said. "When you pinch his skin, it's still loose. We will probably keep him here for another couple days on rehydration therapy and observation until his symptoms completely resolve."

"What happens then?" I asked. "What happens to patients after they recover?"

The nurse shook her head and sighed. "When someone gets sick with cholera, we take care of them here at the CTC. The care they receive here is for free. But then they go back to their home where they find the same conditions that made them sick in the first place. Even if

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[2] *V. cholerae* bacteria can establish themselves in aquatic hosts or on surfaces in aquatic ecosystems, forming multicellular biofilms as they would in the human small intestine. Unlike in the human host, however, vibrios in this biofilm persists in a dormant state during interepidemic periods (Almagro-Moreno & Taylor, 2015).

this patient has some immunity for a while, you have to think about the others in his area. There is a spring behind the prison that people like him use. The latrines for the prison were built right above this spring. The prisoners use the bathroom there, and the waste washes into the spring and also contaminates nearby waters. This has made it very difficult to eliminate cholera in Haiti. Even this CTC was built near a ravine! And don't get me started talking about our toilet! We've been asking the hospital to improve our facilities—and even pay us a living wage—but they don't listen. When we're thirsty, we have to get sachets of water from a vendor nearby on credit because we don't have the money to pay her. And the toilet here is in such bad disrepair that if we need to use the bathroom, we try to ask someone who lives around here to let us use theirs. Otherwise, such as during our nightshifts, we use a black plastic bag and then try to throw that away somewhere safe. But there's nowhere safe here. The rains come and the waste washes downhill, contaminating the ravine and anything else. If things stay like this, there will always be cholera."

The other nurse chimed in. "In Haiti, there's a saying that 'mikwòb pa touye Ayisyen' [microbes don't kill Haitians]," she said. As with many Haitian folk expressions, this adage carries a dual implication: on the one hand, meaning that Haitians have remarkably strong immune systems and capacity to survive infection; and on the other, that it isn't microbes that kill Haitians, but rather sorcery, poverty, or—in some cases but not all—maleficence fueled by the socially erosive effects of resource scarcity. Here, I'm quite certain that the nurse was invoking the former. "But cholera proved to many people that it isn't true," she continued. "Pretty much everyone knows and believes now that cholera is caused by a microbe. What some people don't want to accept is that the water they drink can make them sick. There should be a way that everyone can access treated water, so that they don't just drink any water that's around them. But, like this CTC, there is little investment in making it safer. The environment doesn't have to make people suffer."

Indeed, pathogenic *V. cholerae* can be isolated from fresh and estuarine waterways throughout the world, including in Australia, Italy, the United Kingdom, and the United States (Islam et al. 1993). It's not a question of whether these vibrios can or cannot make people sick—they certainly can. Instead, the question becomes whether they do. If the environment doesn't have to make people suffer, then what *is* making people suffer from sickness in their environments? In a similar vein, what makes *V. cholerae* not only pathogenic (disease-causing

potential), but able to realize that pathogenicity (the property of causing disease)? How did the introduction of a toxigenic strain of *V. cholerae* into Haiti spark the deadliest cholera epidemic in recent world history?[3]

According to the dominant global health paradigm of the past two decades, the answer would lie in the fact that Haiti was and remains unequivocally 'the poorest country in the Western hemisphere'. In 2012, the World Health Organization's Special Programme for Research and Training in Tropical Diseases, with support from the European Commission, released its *Global Report for Research on Infectious Diseases of Poverty*—an effort three years in the making. Central to this framework is the premise that "poverty creates conditions that favour the spread of infectious diseases and prevents affected populations from obtaining adequate access to prevention and care" (WHO 2012, 12). Aligned with other scholarship on the social determinants of health, the authors make the case that certain infectious diseases are more prevalent among poorer individuals worldwide. In other words, their manifestation is far from 'natural', but rather tracks along gradients of social and economic deprivation.

Though presented in the *Global Report* as a novel framing and approach, "infectious diseases of poverty" corresponds to a much longer history. Etiological associations between disease and social conditions came to dominate European epidemiological epistemologies by the mid-nineteenth century, shifting away from attributions to climatic factors like air currents and temperature (Brown 2008). Around this time, one sickness in particular became synonymous with filth, squalor, and poverty: cholera, an acute diarrheal disease caused by waterborne pathogenic strains of *V. cholerae* bacteria. The first pandemic of cholera, the most severe and deadly of diarrheal diseases, started in 1817 (Hamlin 2009). Two hundred years and six pandemics later, the *Global Report* includes cholera among examples of "emerging and re-emerging infectious diseases of public health importance" (WHO 2012, 31). What is it about *V. cholerae* that made it come to matter for health at a global scale? And how has cholera remained, according to this narrative, a persistent pathology of poverty?

Answering these questions requires that we start with the pathogen itself, but also trace its ability to cause disease into the pathogenic milieus in which it emerges. With the goal of

[3] Though I won't be discussing it in this chapter, one could also ask how an enormous cholera epidemic continues to rage in Yemen, where more than two million cases have been recorded since 2016.

attenuating "infectious diseases of poverty," the *Global Report* reflects a contemporary axiom that "freedom from disease" no longer seems achievable. Instead, management becomes the objective. In 2017, the World Health Organization announced its latest approach: One Health, a governance framework embedded in conceptualizations of how human, animal, and environmental health are interlinked and interdependent (Hitziger et al. 2018; Zinsstag et al. 2011). Difficult to square as key players in the mutually beneficial optimization of social-ecological wellbeing, pathogenic microbes are often used as foils for accentuating the ways humans, animals, and environment are involved in disease transmission—for the purposes of developing coordinated efforts to manage their spread. I argue, however, that pathogens have much more to tell us about what it takes to make life livable.

5.2 - An Infectious Disease of Poverty

In the previous chapter, I followed Haiti's Latibonit River as it carried *V. cholerae* downstream, complicating the relationality of both waterways (with humans) and water ways (of humans). Here, it is cholera diarrhea that tells the story of an otherwise invisible agent whose effects not only draw water out of the body by osmosis but also draw on pathogenicities socially produced in micro- and macroscopic milieus. These scales of sociogenesis meet at the enteric membrane between microbe and human—where part of the microbe gets in and part of the human leaks out. But this encounter doesn't just happen in any environment. As I've already alluded to, *V. cholerae* is what is called a 'facultative' pathogen, making it versatile and, specifically, able to survive both within and outside of a host (Reidl & Klose 2002). Activated by the conditions of their circumstances, toxigenic vibrios are only pathogenic once they reach the human intestinal tract. If we figure 'facultative' in a broader sense—as situated, relational responsiveness, rather than a given or fixed nature—we might understand humans in many ways also as facultative.

Attending to the structural forces—namely, poverty—that drive infectious diseases like cholera is not enough. What we need is an approach that studies "the inseparable entanglement of material and social processes" in which pathologies emerge (Niewöhner & Lock 2018, 684), including, to take up Sylvia Wynter's (2003) development of Fanon's 'sociogenic principle', the

social environments that create hegemonic forms of knowledge about those pathologies. In the following pages, I explore how the contemporary epistemology of cholera as an "infectious disease of poverty" emerges from a legacy of coloniality and anti-Black racism, all the while serving to perpetuate a disavowal of racism as a factor in Haiti's epidemic. As the nurse at the Miablè CTC said, "the environment doesn't have to make people suffer." Seemingly absent from the *Global Report* or One Health literature, for instance, is any mention of the link between racism and disease burden, despite their well-established associations (DeLoughrey & Handley 2011; Taylor 2014). Rather, *V. cholerae*'s facultative capacity to cause widespread disease in Haiti was activated in an environment made not just structurally but pathologically vulnerable by racism as an "atmospheric force that shapes the relations of individuals and milieu" (Opperman 2019, 58).[4] Relations mediated by social and material structures as much as they are mediated by theories of knowledge (cf. Wynter 2003). Roy Opperman (2019) terms these settings "racist environments." As a departure from and intervention on the concept of "environmental racism" (Chavis 1993), which describes how environmental burdens—toxic exposure, infectious diseases, food deserts, etc.—are differentially distributed according to race, Opperman's approach gives us a way to understand how the violence of Haiti's cholera epidemic was not simply structural, but "atmospheric." Temporally diffuse; inescapable; an interpermeating force. With atmospheric, Opperman (2019, 59) invokes Fanon's phenomenological analysis of an "atmosphere of violence," in which life is experienced as "a permanent struggle against omnipresent death" (Fanon 2005, 36; Fanon 1994, 128).[5]

The following pages begin with a discussion of the sociogeny of toxigenic *V. cholerae*, involving multispecies processes in the genetic acquisition of "pathogenicity islands" (Faruque & Mekalanos 2003). Although there exist more than 200 *V. cholerae* serogroups, only two, having acquired critical virulence factors through inter-organism horizontal gene transfer or bacteriophage transduction, are associated with epidemic disease among humans (Ritchie and Waldor 2009). Next, I return to a question above, asking: what about *V. cholerae* made it come

[4] In their work on the cholera epidemic in Venezuela in the early 1990s, Charles Briggs and Clara Martini-Briggs (2003) document the ways that racism shaped narratives of blame. Politicians and public health officials used reductive notions of 'culture' to racialize cholera and redirect blame for their failures onto indigenous populations.

[5] While Opperman draws directly from Fanon's theorization of 'atmosphere', he also references the work of Christina Sharpe (2016, 104) who similarly uses Fanon's concept in her theoretical articulation of "the weather" as "the totality of environments; the weather is the total climate; and that climate is antiblack."

to matter for health at a global scale? In 1855, the year after Italian microbiologist Filippo Pacini first isolated *V. cholerae* as the microbe responsible for cholera, a British physician named John Snow published the results of his investigation into the connection between cholera cases and water supply during the London epidemic of 1854 (Snow 1855). His "ghost map" demonstrated the pathogenicity of cholera's entanglements with water (Johnson 2006), contributing to the genealogy of knowledge that would ultimately give rise to One Health (Hill-Cawthorne 2019). In the final section, I consider how the strain of *V. cholerae* in Haiti came to realize its pathogenicity in what would become the world's deadliest cholera epidemic in decades (Satchell et al. 2016). A sociogenic analysis of the outbreak expands our understanding of cholera beyond an "infectious disease of poverty." Rather, the continuation of regimes of coloniality rendered Haiti an environment where racism operates trifold: to effect structural vulnerability to a waterborne epidemic, to afford the denial of UN accountability, and to make "infectious diseases of poverty"—as a concept, as an approach—possible. Expanding understandings of health beyond 'freedom from disease' or 'freedom from material constraint', cholera reveals how health is dialectically linked with pathogenicity.

5.3 - Phylogenesis of Pathogenicity

In October 2010, what mobilized a massive international effort to determine the origin of Haiti's cholera epidemic was not the *V. cholerae* pathogens newly circulating in waterways, invisible as they are to the unaided human eye and, indeed, innocuous unless swallowed. Rather, it was that people—like Thomas, years later—were presenting with deadly bouts of profuse rice-water diarrhea. Confirmed by the national laboratory within days of the first cases, these symptoms signaled an outbreak of enteric disease caused by a toxigenic strain of *V. cholera* never before encountered in the country—or in the intestinal tracts of most Haitians. In Chapter 3, I examined how these microbes were allowed to leak from a United Nations military base and into a tributary of the Latibonit, from which they were ingested. This section starts at the other end, with the diarrhea that cholera induces.

If it survives the acid shock of the stomach, a typical pathogenic *V. cholerae* maneuvers its polar flagellum to swim into the small bowel and burrow within the mucosal barrier

protecting the epithelial cells that line the host intestine. As more vibrios arrive, they adhere to one another using their toxin-coregulated pili—a type IV pilus resembling long, thin, hairlike filaments—to form entangled microcommunities that accrue into dense biofilms attached to cell surfaces, as described above. Here, adjacent to the epithelial cell membranes, the concentrated microbes secrete their major virulence factor, cholera toxin, which attaches to a surface receptor and gets carried into the cell. Inside, part of the cholera toxin molecule binds to an endogenous protein from within the cell, triggering a cascade of enzymatic activity that eventually causes transmembrane chloride channels on the apical, lumen-facing end of the cell to switch open. Negatively charged chloride ions pour out, accompanied by a rapid efflux of positively charged sodium ions to counterbalance the extracellular electrical gradient.[6] As these ions quickly accumulate in the small intestine, water follows, drawn out of the cell by osmosis. Water, electrolytes, and vibrios that have detached from their biofilm spill through the bowel, exiting the body as profuse amounts of diarrhea.

As I mentioned earlier, however, the *V. cholerae* variant introduced into Haiti's ecosystems—both within and outside of human bodies—is not just a 'typical' strain. Early clinical and epidemiological data on the outbreak pointed to a vibrio pathogen more infectious, more toxic, and more lethal than observed in prior waves of pandemic cholera. Yet, initial biochemical and micro-biologic analyses of the organism indicated that the variant belonged to the same *V. cholerae* El Tor biotype of serogroup O1 of the seventh cholera pandemic, situating it among other toxigenic strains circulating in endemic settings worldwide since 1961.[7] How could this be possible in a non-endemic setting like Haiti? While public health officials, epidemiologists, and reporters traced the probable origin of the epidemic to the UN base in Haiti's central region, biomolecular researchers around the world raced to unlock the pathogen's phylogenetic identity: where did this variant fit among the evolutionary relationships of known *V. cholerae* species? Answering this question would help to determine whether the microbe at

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[6] By a different mechanism, cholera toxin has also been shown to inhibit Na^+ absorption by down-regulating two sodium-proton exchangers, membrane proteins that transport Na^+ into the cell and H^+ out of the cell. See Subramanya S.B., et al. 2007. "Differential regulation of cholera toxin-inhibited Na-H exchange isoforms by butyrate in rat ileum." *Am J Physiol Gastrointest Liver Physiol* 293: G857-G863.

[7] The ongoing seventh pandemic of cholera began in 1961 and is attributed to a *V. cholerae* O1 El Tor lineage, which differ from the O1 Classical biotype strains thought to be responsible for previous pandemics starting in 1817. The sixth pandemic of Classical *V. cholerae* lasted from 1899-1923. Following that, El Tor strains began to gain dominance among pathogenic *V. cholerae* populations.

the heart of the outbreak emerged spontaneously from the local aquatic environment or was introduced into the country from an external source. Using emerging technologies like whole-genomic sequencing to detect DNA variations and reconstruct phylogenic trees, scientists compared the strain in Haiti to isolates from different epidemic contexts, including those linked to outbreaks in Latin America (1991) and South Asia (mid-2000s). In less than three months after Haiti's first cholera cases, these studies began revealing more details into the variant's genetic filiation and dispositions.

Pandemic cholera was absent from the Americas for nearly 100 years until 1991, amidst the seventh pandemic, when O1 El Tor *V. cholerae* emerged in Latin America as a result of two independent intercontinental introductions: one that was carried into Peru was linked to cholera outbreaks in West Africa, and the other in Mexico derived from a lineage originating in South or Southeast Asia but possibly imported from a secondary site in Eastern Europe (Domman et al. 2017). Though epidemics extended throughout South and Central America in the 1990s, neither strain nor their subsequent lineages were ever reported to have caused cholera in Hispaniola. Multiple genome-wide analyses of the 2010 variant in Haiti provided unequivocal genetic evidence that it shared ancestry with O1 El Tor strains sampled from South Asia and a more distant relationship with those from the 1991 Latin American outbreak (Hendrikson et al. 2011; Chin et al. 2011; Reimer et al. 2011). In fact, high-resolution phylogenic mapping of hundreds of isolates from cholera epidemics around the world links all seventh pandemic vibrios to a common ancestral *V. cholerae* population in Bengal from which have issued three distinct but overlapping waves of transmission (Mutreja et al. 2011; Domman et al. 2017).

The O1 El Tor *V. cholerae* clade differs from the O1 Classical biotype that predominated in previous pandemics in several key genetic traits, with variations in the genes encoding cholera toxin and the toxin coregulated pilus (Zhang et al. 2014)—the essential virulence factors described above—and having acquired two gene clusters through horizontal transfer[8]: Vibrio seventh pandemic (VSP) islands I and II. "Pathogenicity islands" describe relatively large, mobile or once-mobile segments of DNA that carry one or more virulence genes (Schmidt &

[8] A widespread phenomenon among bacteria, horizontal gene transfer describes the movement of DNA fragments from one bacterium to another, even if they are only distantly related. This process of genetic recombination happens through conjugation (the transfer of DNA through cell-to-cell contact), transduction (whereby genes from a host cell are transferred to another by bacterial viruses known as bacteriophage), or natural transformation (by which bacteria absorb free-floating pieces of DNA from their environment). Horizontal gene transfer contrasts with the conventional "vertical" passage of genes from parent to offspring.

Hensel 2006). Present in the genome of a pathogenic bacterium but absent from the genomes of nonpathogenic microbial kin, these islands of genetic sequences mark the shorelines of pandemic disease. Strains within each wave of El Tor transmission from the Bay of Bengal can be distinguished and grouped by certain alterations in VSP-I and -II and other mobile genetic elements. The event that distinguishes the transition between wave 1 and wave 2 pandemic *V. cholerae*, for instance, was the acquisition of an "integrative conjugative element" with antibiotic resistance properties (SXT) (Spagnoletti et al. 2014).[9]

Genome analyses reveal that isolates from the 2010 cholera outbreak in Haiti "share a very recent common ancestor with South Asian strains at the tip of wave 3" (Mutreja et al. 2011). Distinguishing this novel lineage are alterations in the cholera toxin gene sequence, structural variations within VSP-II and SXT (Chin et al. 2011), and higher levels of expression of the type VI secretion system (T6SS)—a needle-like nanomachine that delivers protein toxins into target cells, killing them (Zhao et al. 2018). Emerging research on the significance of T6SS in cholera pathology highlights how *V. cholerae* uses the apparatus to attack other bacteria in the gut microbiota, clearing its niche in the small bowel of inhibitory competitors and thereby facilitating its colonization of the intestine (Zhao et al. 2018). Combined, these traits confer on O1 El Tor wave 3 variants a synergism of increased pathogenicity and increased transmissibility (Chin et al. 2011). By causing a more severe dehydrating disease, these hypervirulent vibrios enhance their own dissemination through the increased production of rice-water diarrhea by their human hosts—the long-shedding I described earlier.

5.4 - The Microscopic Social Production of Virulence

I've attempted to tell the phylogenic and molecular physiological story of the Haiti epidemic *V. cholerae* strain to not simply trace its ancestral lineage and supply genomic evidence confirming its introduction from a single external source. Rather, doing so lays bare the sociogenesis, or social production, accompanying the phylogenesis of its pathogenicity. Relations spanning the microscopic and macroscopic—molecules, genes, membranes, vibrios,

[9] Specifically, drug resistance to the antibiotic drug trimethoprim/sulfamethoxazole (a.k.a., Bactrim).

aquatic organisms, microbiota, guts, humans, families, waterways, prisons, markets, military occupations, hospitals, corporate schemes, government graft, religion, religious evangelization, religious conflict—coordinate the multifactorial process called cholera. Becoming pathogenic involves both the vertical inheritance of genetic material through a lineage of vibrios as well as, and even more critically, the horizontal transfer of DNA fragments between and among *V. cholerae* and other bacteria. The ability of cholera vibrios to induce epidemic and pandemic spread began in part with a bacteriophage-mediated transduction of a cluster of genes called the toxin-coregulated pilus (TCP) pathogenicity island (Faruque & Mekalanos 2003), which includes a gene associated with the type IV pilus of infectious *E. coli* (Karaolis 1998). The acquisition of TCP not only allowed *V. cholerae* to colonize the human intestine—using pilus-pilus interactions to tether together in biofilms—but also acted as a highly specific receptor for the cholera toxin phage, conferring virulence by providing the genes that make vibrios toxigenic (Waldor & Mekalanos 1996).

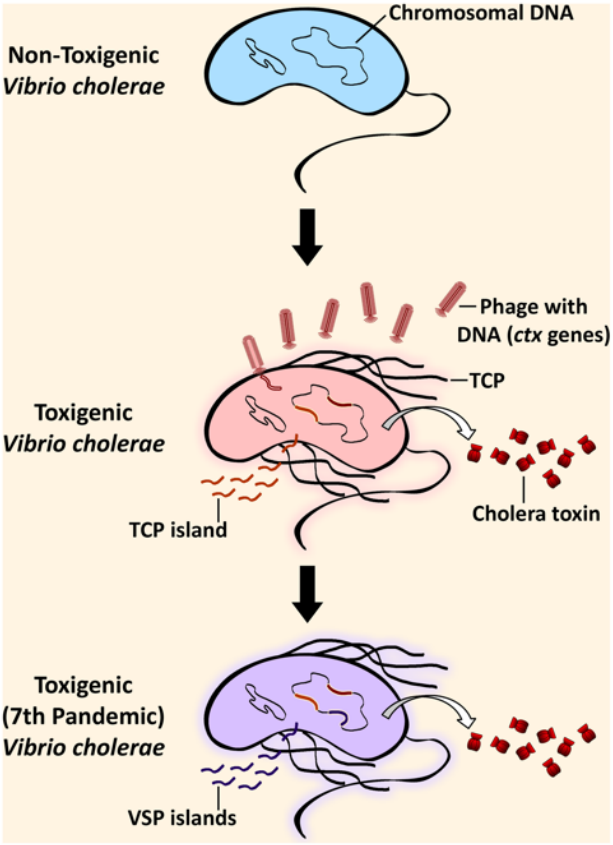

Figure 5-1: A figure from Orata, et al. (2014) illustrating the pathogenesis of toxigenic V. cholerae. (TCP = toxin-coregulated pilus; VSP islands = Vibrio seventh pandemic [DNA] islands)

Pathogenic strains of *V. cholerae* cannot induce disease, however, without receiving specific cues from within the milieu of the human body. Elements of the small bowel environment such as mucus, bile, oxygen concentration, temperature, and osmolarity activate the genetic expression of TCP, cholera toxin, and the T6SS, among other virulence factors (Peterson & Patrick 2018). Interrelated cascades of signals within the bacterial cell itself provide a mechanism by which the expression of certain pathogenic components regulates the expression of others. For example, quorum sensing—the process vibrios use to self-monitor cell population density, as discussed in the beginning of this chapter—is one of several signaling pathways that controls the T6SS (Zheng et al. 2010). Besides its critical pathogenic role in the host, the T6SS may contribute to the sociogenesis of *V. cholerae* pathogenicity through horizontal gene transfer. As in the small bowel, but through distinct regulatory pathways (Ramamurthy et al. 2020), *V. cholerae* uses its syringe-like T6SS to kill competing bacteria in aquatic environments. When these microbes die, their DNA is released into the extracellular milieu, making it available for vibrios to absorb and integrate into their genome (Borgeaud et al. 2015). Amidst fluctuating ecosystem elements like temperature and pH, social interactions among *V. cholerae* bacteria and with other aquatic organisms may pressure the emergence of virulence traits in vibrios (Sakib et al. 2018). Since the number of toxigenic strains in the environment is very limited during interepidemic episodes, however, intestinal passage of a mixed population of *V. cholerae* plays a more potent role as processes of microbial colonization and rapid replication in the small bowel select for and amplify virulent variants (Almagro-Moreno & Taylor 2013). It follows that cholera diarrhea thereby serves not only as a vehicle of transmission, but as a mediator of pathogenicity.

At a microscopic scale, the relational, responsive elements of *V. cholera* taking place both within and outside of human hosts complicate the story of its pathogenicity as strictly phylogenetic and encourage us to also consider its social production. Interestingly, emerging high-resolution genomic data on the phylogenesis of seventh pandemic O1 El Tor *V. cholerae* strains appear to make the same suggestion, albeit from a macroscopic level. For decades, a prevailing theory on cholera outbreaks—particularly outside of South Asia—held that pathogenic variants originated from indigenous *V. cholerae* lineages in local reservoirs, triggered into epidemic spread by climatic and environmental factors. Indeed, that very claim circulated with some weight in the wake of the 2010 Haiti epidemic. A team of researchers at the

University of Maryland proposed that a so-called "perfect storm" of three converging "natural" events[10]—an earthquake, a heat wave, and a passing hurricane—churned Haiti's river systems into the ideal environment for indigenous vibrios to thrive, replicate, and acquire virulence (Hasan et al. 2012).[11] Extensive whole-genome sequencing alongside rigorous epidemiological investigations, however, conclusively proved otherwise: the toxigenic *V. cholerae* at the heart of the Haiti epidemic had been carried into the country by humans.

As phylogenetic analyses expanded, incorporating increasing numbers of isolates from cholera outbreaks around the world, a similar trend emerged. Their results conclusively show that cholera epidemics which occurred in Latin America (Domman et al. 2017), Africa (Weill et al. 2017), and Europe (Oprea et al. 2020) since 1970 each resulted from intercontinental introductions of a pandemic *V. cholerae* variant. Contradicting suggestions that epidemic cholera in these regions of the world primarily derive from aquatic *V. cholerae* reservoirs or climatic events, the studies bring attention to "the role that humans play in the long-term spread and maintenance of the pathogen, whether by direct (human-to-human) or indirect (pollution of the environment with feces from cholera patients) transmission" (Weill et al. 2017, 789). In other words, pathogenic *V. cholerae*'s ability to cause disease derives as phylogenetically as it is sociogenically, driven by social forces mediating entanglements of material human and material environmental processes, practices, enactments, and "worldings" (Tsing 2010).

5.5 - Sociogeny of Cholera: Multiple Pathogenicities

Once Thomas fully recovered from cholera at the treatment center, he returned to his home near the center of town, behind the municipal prison whose latrines seep perennially into the neighborhood spring. Mibalè's prison is among the most overcrowded in the country (U.S. Department of State 2016). Incarcerated people in Haiti—a population estimated at more than

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[10] While the trifecta of this "perfect-storm" involved three climatic events, their effects were far from limited to the "natural." Decades of disinvestment from public works, the agricultural sector, safe housing in Haiti, along with rapid urbanization (due to surplus labor from rural areas) and environmental erosion (due to poverty-driven practices), contributed to making these events disasters. Moreover, hurricanes and heat waves are becoming more intense, frequent, and destructive due to anthropogenic causes of climate change.

[11] See also the NPR interview with the scientist leading this research: "Scientists Find New Wrinkle in How Cholera Got To Haiti" by Richard Knox (June 18, 2012).

11,000, almost three-quarters of whom have yet to be tried (MINUSTAH, 2017)—face detention in facilities lacking "basic services such as plumbing, sanitation, waste disposal, medical services, potable water, electricity, adequate ventilation, lighting, and isolation units for contagious patients" (U.S. Department of State 2016, 3). These tortuous conditions, in addition to accounts of actual torture, have persisted in spite of coming on three decades of United Nations missions mandated, in part, to oversee Haiti's national police and strengthen its 'corrections' sectors—as had been entrusted to MINUSTAH during its thirteen years in the country (2004-2017). After pathogenic *V. cholerae* leaked from the MINUSTAH base outside of Mibalè in 2010, this prison (and many others) became one of the most vulnerable and prolific sites of transmission.

"The environment doesn't have to make people suffer," Thomas's nurse had said. Rather, humans craft institutions and infrastructures that make certain elements of some people's environment pathogenic. Further downstream from Mibalè, in the rice farmlands of Haiti's Lower Artibonite Valley hard-hit by the epidemic, a middle-aged farmer and cholera survivor explained it this way: "It wasn't the river that made us sick. It was MINUSTAH that allowed cholera to happen in Haiti." As I discussed in the previous section, *V. cholerae*'s capacity to cause disease is not confined to its phylogenetically derived virulence factors. But, as both the nurse and the farmer imply, nor is humans' role in shaping vibrios' pathogenic potential confined to direct physiological entanglements with these bacteria. A deeper investigation into the sociogeny of epidemic cholera begins to reveal a multiplicity in *V. cholerae* pathogenicity: as disease-causing potential *with(in)* humans, *among* humans, and *by* humans. In addition to their toxigenic components, *V. cholerae* becomes pathogenic because it is known as such and, relatedly, because it is ensnared in human-driven social and racialized forces that not only structure but also activate vulnerability to its transmission.

Developed by Frantz Fanon in his book *Black Skin, White Masks* (2008 [1952]) amidst the anticolonial liberation movements of the 1940s and 1950s, sociogeny redefines the biocentric—and Eurocentric—logics of the human condition. While Sigmund Freud, reacting against the late nineteenth-century focus on phylogeny (the evolution of a species or group), offers ontogeny (the evolution of the individual) as a substitute, Fanon takes on the explicit and implicit racism embedded in the ways these 'scientific' approaches applied comparative methods to studying the human species. Instead, Fanon puts on equal standing with evolutionarily and

individually programmed processes of phylogenesis and ontogenesis, respectively, the social production of being. "Alongside phylogeny and ontogeny," he writes, "there is also sociogeny" (Fanon 2008, xv). As a psychiatrist, Fanon grounds his theory in the mental tribulations of living in a Black body in a normative White supremacist world. What he proposes is the possibility of a phenomenology by which social structures, rather than nature or biology alone, induce suffering, and in particular manifest certain neurotic afflictions. Reciprocally, "society, unlike biochemical processes, does not escape human influence" (Fanon, 2008, xv), which carries the implication that the social structures making people sick are linked inextricably to the ways humans bring about a sick society. Using the concept of sociogeny, Fanon both argues and exposes how power and internalized discrimination, therefore, matters in the prognosis.

In this formulation, racial categories are not based in the body but rather are built in a social imaginary rooted in colonial differences and anti-Black racism. Sociogeny describes how social fictions, such as race, come to shape bodies, subjectivities, and biological processes: modes of being human and the experience of what it is like to be human. As part of her vast project to "make sense of our flesh-and-blood and neurological and cultural claims to humanness" (McKittrick 2015, 144), Sylvia Wynter, elaborating on Fanon's concept, considers sociogenesis with respect to the physiology of human consciousness. In doing so, she recuperates the ways in which biochemical processes, too, are not immune to human influence. Underscoring relationality and interhuman narratives, Wynter asserts that the biocentric—Darwinian, objective, racist, sexist—stories humans tell about themselves condition "*the terms in which*" physiological processes "will be activated, and, therefore, the phenomenological experience" (Wynter in Scott 2000, 189, emphasis in original).[12] Race and racial disparities—in health, for instance—are not the only 'social constructions'; scientific knowledge is also not naturally pregiven and, as such, bears on the bodies onto which this knowledge is applied. Eurocentric, biocentric, hierarchical logics underpinning the natural sciences, Wynter suggests, reify race and racism as outcomes in the very scientific study of them. Enlightenment-derived scientific knowledge, in other words, languages certain biological phenomena into existence. Paralleling Wynter (1994, 49-50), I argue that whilst toxigenic *V. cholerae* is bio-evolutionarily programmed to *be* pathogenic on the basis of the unique nature of its virulence, it realizes itself

[12] In reference to physiological processes, Wynter is herself most concerned with "neural firings."

as pathogenic only by coming into relation with humans and by humans, including by means of the "narratively instituted conceptions of its pathology": cholera.[13]

5.6 - V. cholerae *by Humans*

Cholera's distinct symptoms, including rice-water diarrhea, have been manifesting in humans for thousands of years. But, until 1817, outbreaks of the disease were common only to the Ganges River Delta, where it was and is called "haija" (हैज़ा) in Hindi and "haiza" in Urdu (ہیضہ)—meaning "shattered" or "broken" (Barua 1992, 2). That year marked the beginning of *V. cholerae*'s first pandemic, which lasted until 1823. In the midst of what was "probably the most terrible of Indian cholera epidemics" (Rogers 1928, 8), pathogenic vibrios were carried along routes of travel, pilgrimage, trade, and war, arriving as far east as Indonesia and Japan, and as far west as the Persian Gulf and Tanzania. The second pandemic followed closely on the heels of the first, starting around 1829 but lasting much longer and reaching much further, spreading relentlessly across Asia, Europe, Africa, the Americas, and parts of the Caribbean as European imperialism, global capitalism, and modes of transportation expanded. For 22 years, epidemics swelled, subsided, and flared, ravaging cities and villages across the world and causing such heavy casualties to hold mass burials (Barua 1992, 10). Three more waves of pandemic cholera swept through much—though not all—of the globe before the end of the nineteenth century. Though only sporadic outbreaks struck western Europe amidst the sixth pandemic (1899-1923), cholera continued to seethe across Asia. After the sixth pandemic retreated but before the start of the seventh emerged several epidemics in East Asia and Egypt, where staggering losses of over 10,000 deaths were reported in the 1947 outbreak of cholera.[14, 15]

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[13] In "'No Humans Involved'," Wynter writes: "For whilst the human species is bio-evolutionarily programmed to *be* human on the basis of the unique nature of its capacity for speech, it realizes itself *as human* only by coming to regulate its behaviors, no longer *primarily*, by the genetic programs specific to its genome, but by means of its narratively instituted conceptions of itself…" (1994, 49-50).

[14] For a more detailed account of the history of cholera pandemic and epidemics, see *Cholera Outbreaks* edited by G. Balakrish Nair and Yoshifuma Takeda (2014).

[15] Iraqi poet Nazik al-Malaika (1923-2007) reflects the toll of the 1947 Egypt cholera epidemic in her poem, *Cholera*, translated by Husain Haddawy in *Poetry of Arab Women: A Contemporary Anthology* (2001), edited by Nathalie Handal.

> It is dawn.
> Listen to the footsteps of the passerby,
> in the silence of the dawn.

Coinciding as it did with the early decades of Western industrialization, many scholars claim that cholera was "the first truly modern pandemic" (O'Connor 2000, 225n). But the disease, as Erin O'Connor argues, was not associated with modernity simply because of the timing of its pandemics nor the means of their transmission. Captured in the prolific literature of nineteenth-century Europe and North America were the stories being crafted about *V. cholerae*. "Linked in the popular imagination to such pervasive social problems as immigration, poverty, poor sanitation, and revolution, cholera was synonymous with the modern condition" (O'Connor 2000, 27). The threat the new contagion posed was not limited to its physical sequelae, gruesome and frightening as they were. Rather, anxieties about this novel disease integrated escalating fears of social change. Cholera seemed to converge all too closely with an industrialized form of progress that was manufacturing socioeconomic disparities, immigrant invasions, crowded urban slums, destitution, and filth.

Interestingly, cholera was not the most lethal disease during England's Victorian period, as elsewhere in Western Europe and North America: endemic diseases such as 'fever',[16] tuberculosis, measles, and influenza had far greater tolls. Yet, as O'Connor writes:

> cholera's social significance was tremendous; it killed with a violence that was shocking to behold, and no one knew what caused it or how it could be cured. But the disease itself was unmistakable: horribly dehydrating after purging massive amounts of "rice-water" diarrhea, its victims could be dead within a few hours and seldom lasted more than two or three days. So great was the impact of cholera on Victorian sensibilities that it inspired the first sociological investigations of slums and ultimately motivated a series of legislative and bureaucratic measures dedicated to sanitary reform; indeed, Asiatic cholera was in many ways directly responsible for the birth of the public health movement in Britain. (2000, 32)

Dr. Dhiman Barua (1992, 11), who had himself lived through twentieth-century cholera epidemics in Bangladesh as a young boy and treated cholera patients throughout his medical

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> Listen, look at the mourning processions,
> ten, twenty, no… countless.
> …
> Everywhere lies a corpse, mourned
> without a eulogy or a moment of silence.
> …
> Humanity protests against the crimes of death.
> …
> Cholera is the vengeance of death.
> …
> Even the gravedigger has succumbed,
> the muezzin is dead,
> and who will eulogize the dead?
> …
> O Egypt, my heart is torn by the ravages of death.

[16] Before bacteriology made it possible to isolate pathogens, the diagnosis of 'fever' encompassed diseases such as malaria, typhus, and scarlet fever as well as a range of nonspecific inflammatory ailments.

career, describes how "international cooperation in health began [through] fear of cholera,"[17] starting with the first of many Paris-based meetings in 185—only twenty years after the first cases struck in Western Europe.[18] Shortly after, in 1854, Italian anatomist Filippo Pacini successfully isolated the *Vibrio cholerae* microbe, the causative agent of the acute diarrhea, sunken eyes, and loose skin classified as cholera. With the results of Pacini's study largely disregarded by his colleagues, however, the explanatory link between *V. cholerae* and cholera was not widely accepted until 1884 when German microbiologist Robert Koch isolated the comma-shaped bacterium in India. By then, British physician John Snow had determined the mechanism of disease transmission, illustrating in his 1855 dot distribution map the relationship between water quality and the incidence of cholera cases—and famously convincing a local council in a hard-hit London neighborhood to disable a potentially contaminated water pump based on his epidemiological findings.[19] As Charles Rosenberg (1987, 2) writes, "the cholera epidemics of the nineteenth century provided much of the impetus needed to overcome centuries of governmental inertia and indifference in regard to problems of public health."

With their high mortality rates, cholera and other waterborne diseases were wreaking havoc on life expectancy in the urban environment and, thereby, on processes of modernization and capital accumulation dependent on that labor. Beginning in the 1850s was no less than one of the most extensive and transformative infrastructural feats of the modern world—at least in countries which had the capital to do so. Within a generation, nations in Europe and North America established the regulations, technology, and financial structure needed for the provision of massive municipal water and sanitation networks (Rosenberg 1987). But doing so required huge lump sum investments, particularly in the early phase of system expansion. Between 1853-1900, for example, the government of Paris invested more than 1.9 billion francs in its water and sanitation infrastructure, spending another 651 million francs during the first quarter of the twentieth century (all inflated to 1925 values) (Reghizzi 2014, 48). My goal here, though, is not

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[17] O'Connor notes that "*choleraphobia* was a popular term for the widespread communal panic caused by the disease" (2000, 224n).

[18] In his chapter in *Cholera*, Barua (1992, 11) charts how these initial meetings coalesced into the signing of an International Sanitary Convention in 1903, followed by the establishment of the Paris-based Office International d'Hygiene in 1907. This first international health organization paved the way for the Health Organization of the League of Nations, created in 1920 in the wake of the First World War, which was succeeded by the World Health Organization, founded in 1948.

[19] See Steven Johnson's *The Ghost Map: The Story of London's Most Terrifying Epidemic – and How it Changed Science, Cities and the Modern World* (2006).

in advancing the notion of epidemic cholera as a vector of social values, be they moral (cf. Rosenberg 1987) or biopolitical (cf. UNDP 2006).[20] Rather, I'm interested in bringing to light the "darker side of Western modernity" at work during the cholera years (Mignolo 2011). How have human social forces served as vectors for *V. cholerae*'s pathogenicities?

Taking up the Paris example, for instance, we might consider how the city had the means to completely transform its urban landscape—and the health of its inhabitants—with enormous investments in aqueducts, reservoirs, water pumping stations, wastewater disposal plants, sewers, and water distribution networks. By the mid-nineteenth century, France had benefitted from three hundred years of colonial rule over lands spread across the Caribbean, North America, and parts of South America and Asia. Under the ruthless control of la Métropole, Saint-Domingue became one of the richest colonies in the world.[21] Unsurprisingly, hardly any of that wealth was invested back into the long-term infrastructures of the island colony or into the long-term wellbeing of its majority enslaved, majority Black population. As Sidney Mintz (1974, 44) writes, "the 'economic development' of the [Caribbean] islands was largely responsible for their 'underdevelopment' at a later time. The peculiar mix of agriculture and industry, as developed by the Europeans, was adapted to the assimilation of the Caribbean territories to their metropolises only in ways that made the territories themselves increasingly backward, relative to the economic growth of the metropolises." The modernization of France's water and sanitation infrastructure, like the modernization and industrialization of all European colonial powers, was and remains a process linked inextricably to wealth extracted from colonized territories, capital accumulated through the plantation economy, and lives, labor, and cultures stolen from enslaved Amerindian and African peoples (cf. Galeano 1973; Robinson 1983; Mintz 1974).

France's economic exploitation of Saint-Domingue continued even after its hard-won independence in 1804. After nearly a century of resistance against French colonial rule (and longer if including the Spanish colonial period), the institution of slavery, and White supremacy,

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[20] Linking bodies through water's capacity to both give life and to threaten it if in deadly abundance or bearing disease and pollution, water invites and also becomes the target of modern biopolitical strategies to optimize national productivity by regulating individual and population health (Foucault 1990 [1978]). Modernization and the expansion of state power has depended on the industrialization of water. By harnessing water as an economic input and by guaranteeing a workforce access to safe drinking-water, nations in nineteenth-century Europe and North America were able to rapidly develop and accumulate wealth (Bakker 2011).

[21] At the time of the French Revolution of 1789, Saint-Domingue's 500,000 enslaved people "produced almost as much as all the English Caribbean sugar colonies put together, and supplied about half of the sugar and coffee consumed in Europe and the Americas" (Dupuy 2004, 6-7)

the subjugated peoples of Saint-Domingue launched an insurrection in 1791 that catalyzed one of the most revolutionary achievements in history: the sovereign state of Haiti, the world's first Black-led republic.[22] But Haiti's freedom would be short lived. Facing persistent threats of French reinvasion and war, President Jean-Pierre Boyer agreed in 1825 to pay la Métropole an indemnity in exchange for diplomatic recognition (Dubois 2012, 97-101). Under the terms of King Charles X's royal ordinance, Haiti would compensate France 150 million francs for its lost 'properties'—by taking out a loan with an 80% interest rate from its former ruler (U.S. Senate 1922). While this figure was later reduced to 90 million francs in 1838 (estimated at 1 billion francs in 1925 values), the total debt plus interest that Haiti eventually finished paying France in 1947 amounted to $21 billion US dollars in 2010 values. With this capital at France's disposal, it is not surprising that Paris was able to meet the 1.9 billion franc "impetus" provided by cholera "to overcome centuries of governmental inertia and indifference in regard to problems of public health" (Rosenberg 1987, 2).

5.7 - Languaging Biological Phenomena into Existence

The darker side of Western modernity manifests not only in the nineteenth-century economic forces involved in cholera's social production but also in that era's 'narratively instituted conceptions of its pathology' (see Wynter 1994, 49-50). Extensive as the archive of literature on nineteenth-century cholera pandemics is (although largely confined to Europe and North America), I focus here on *V. cholerae*'s social entanglements in the United States and Victorian England. With England the foremost power at the time (in the midst of expanding into what would become the most extensive empire in world history), and the United States rising on the global stage, British and American accounts and explanations of cholera supply a window into the emerging dominant narratives about *V. cholerae* pathogenicity.[23] As cholera engulfed

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[22] What began in 1791 ended in 1804 with the former colony's independence. The revolution, led first by General Toussaint Louverture and then Jean-Jacques Dessalines, defeated Napoleon Bonaparte's military forces and was the only slave uprising in history that led to the founding of a state which was both free from slavery and ruled by non-Whites and former captives. On January 1, 1804, Dessalines officially declared Saint-Domingue's independence, renaming it "Haïti" after the indigenous Taíno name: the land of mountains.

[23] For important contrast, see David Arnold (1986), "Cholera and Colonialism in British India," *Past & Present* 113, 118-151.

Western Europe and North America in the 1830s, a potent fear washed over their predominantly White or light-skinned populations. Among the dramatic symptoms of this novel disease was one that particularly terrified those observing them: the darkening of the skin. Medical accounts circulating in nineteenth-century England and United States include descriptions of how in cases of cholera "the skin assumes a blue or blackish hue, which is almost general; the nails become livid and almost black…" (Tardieu 1849, 8, cited in O'Connor 2000, 43). Another text reads, "In cases that terminate fatally, we find a peculiar dusky look, less bluish than heart cases, in fact really blackish" (Benson 1893, 99, cited in O'Connor 2000, 52). "Look at the skin," writes an American physician, "and you might almost imagine you have an Ethiopian" (Jameson 1855, 282, cited in O'Connor 2000, 44).

Figure 5-2: A cholera patient in nineteenth-century England (Wellcome Collection, London).

Cholera's capacity to transfigure a white patient into a black Ethiopian invoked a racist model of pathology whereby victims were infected not only with a Black phenotype, but also with a Black phylogeny. Thus, medical depictions of cholera's physical presentation layered onto its assumed etiology at the time: smelly, filthy poverty.

> An epidemic disease that could "make" thousands of white working-class bodies "black," cholera lent itself to the development of a materially embodied fiction of collective vulnerability, a physiological fable in which squalid urban living enables the poor to be infected with a deadly dose of darkness. Striking the working-class populations of towns almost exclusively, and making them over in the image of the exotic Other, Asiatic cholera suggested a series of affinities between poverty and primitivism, a cultural likeness between urban and exotic space that expressed itself through a symptomatics of racial regression. (O'Connor 2000, 44)

As Western Europe and North America invested themselves out of structural vulnerabilities to cholera, the by then widely accepted notions yoking "poverty and primitivism" persisted and were only reinforced by pandemic outbreaks continuing among predominantly non-White, purportedly backwards populations beyond their borders. The great irony being, of course, that many of these populations had been or were at the time colonial subjects of Western powers. Ironic, perhaps, but far from antithetical to the mechanisms of racial capitalism and White supremacy dominating globally and fueling country-level disparities not only in wealth but also public infrastructure.

While popular projections of "cultural likeness" racialized the urban poor and working class, inhabitants of the colonies were cast as hardly being worth the equivalent. The expansion of wage labor amid nineteenth-century industrialization engendered markets that organized not simply the value of goods, but also the value of people along existing contours of racial hierarchies. In 1872, British observer W. W. Hunter lamented how "the 'over-crowded, pest-haunted dens around Jagannath' in the eastern Indian city of Orissa were 'at any moment the centre from which the disease radiates to the great manufacturing towns of France and England.' Though the Indian pilgrims might 'care little for life or death … such carelessness imperils lives far more valuable than their own'" (Greene et al. 2013, 39-41). The darker side of Western modernity, coloniality, involves the slow violence of capitalism (Nixon 2011), as well as the long pathology of Whiteness and its intersectionalities with class.

With cholera effectively eliminated from Europe and North America by 1925 through the coordinated implementation of sanitation reforms and scale-up of water infrastructure, twentieth-century narratives relegated pathogenic *V. cholerae*'s natural habitat to the global south. That epidemics continued in places like South and Southeast Asia, West Asia, and Egypt conveniently aligned cholera with the emerging world health classification of "tropical infectious diseases." Regions, of course, where colonial control and extraction had outweighed investments in durable water and sanitation infrastructure. Imagining cholera's natural domain as "tropical" preserved these settings in the colonial imaginary as ever in need of domination: "colonization has succeeded only once this untamed nature has been brought under control" (Fanon 2005, 182). Reducing cholera's epidemiology to its geographic (and implicitly raced) distribution, however, concealed the racist conflation of "poverty and primitivism" and served to disavow the social forces allowing outbreaks to recur in those settings in the first place. Indeed, colonization, the

plantation economy, and global capitalism had wrought the very ecological and social transformations that allowed for cholera to thrive.

By the late twentieth century, a mounting wave of post-structural critiques of this Eurocentric classification was shifting the explanatory framework in global health from "tropical infectious diseases" to "infectious diseases of poverty"—not just for cholera, but a number of conditions.[24] In the mid-1980s, as a different pandemic was sweeping the globe, a rapidly growing community of scholars had begun to critically examine and analyze the epidemiology, political economy, and sociocultural aspects of "infectious diseases of global proportions," particularly HIV (Rylko-Bauer & Farmer 2016, 51). Drawing from the work of Johan Galtung, Latin American liberation theologians of the late 1960s, and world systems theories developed by scholars such as Wallerstein and Mintz, this emerging literature approached diseases as biosocial phenomena and their distribution as a form of "structural violence" disproportionately burdening the poor (Farmer 1997; Farmer et al. 2006). By the mid-2000s the dominant global health narrative was expanding from a country-based paradigm to a socially-determined one that hinged most centrally on income. "Major epidemics emerge and chronic conditions cluster and persist wherever poverty is widespread," the World Health Organization's *Global Report* reads (2012, 12). In arguing for "the primacy of poverty" as the strongest determinant of extreme human suffering (Rylko-Bauer & Farmer 2016, 52), this framing gestures toward locally specific social forces that condition the structures of structural violence, including coloniality and anti-Black racism. Rather than it being the case that people don't have access to safe drinking water because they're poor, perhaps it is because a system was created that values some lives above others. Perhaps the environment doesn't have to make people suffer, as the nurse at the Mibalè CTC had said. Perhaps the very stories told about structural violence serve to reinforce violence, both figuratively and materially, as the outcome. To paraphrase the rice farmer from earlier, it wasn't the river that made people get sick with cholera in Haiti, but MINUSTAH—and the

[24] Under the umbrella term of infectious diseases of poverty is the category of "neglected tropical diseases." The definition of this classification remains premised on the key contradictions I discussed: "Neglected tropical diseases (NTDs), such as dengue, lymphatic filariasis, trachoma, and leishmaniasis, are called "neglected," because they generally afflict the world's poor and historically have not received as much attention as other diseases. NTDs tend to thrive in developing regions of the world, where water quality, sanitation, and access to health care are substandard. However, some of these diseases also are found in areas of the United States with high rates of poverty" (United States National Institute of Allergy and Infectious Diseases, 2016).

pathogenic social forces underpinning its presence, purpose, and protocols—that allowed the epidemic to happen.

The more recently developed concept of "environmental racism" works to highlight the centrality of racism in patterning structural violence, health risks, and exclusion (cf. Chavis Jr. 1993). This approach interrogates the historically rooted mechanisms disproportionately thrusting Black people (and people of color (POC)) into physical settings that have been made vulnerable to environmental hazards, such as toxic exposures, climate disasters, resource scarcity, and epidemic disease. The disenfranchisement and marginalization of those most affected perpetuates the differential distribution of environmental burdens according to race. Although this theory was developed in the context of the United States in particular, it has proven useful in analyzing similar patterns worldwide, as indeed their systemic and material reach extend globally (cf. Bullard 1993; Park 1998). While the concept of environmental racism helps us to identify connections between racialized processes such as redlining, gentrification, and global capitalism and discrimination in the enforcement of environmental regulations, defining of environmental policies, and sanctioning of dangerous pollutants in predominantly Black/POC settings (Chavis Jr. 1993; Park 1998), "we need a way to think the relationship between racism and the environment that does not presuppose that they are initially distinct and only incidentally linked" (Opperman 2019, 58). Moreover, we need a way to think this relationship that is not limited to Euro-American contexts, yet where social hierarchies based on race or color still dominate.

Take the cholera treatment center in Mibalè, from the beginning of this chapter, as an example. This CTC is affiliated with what is currently the largest hospital in Haiti and largest health care provider outside of the government, an organization dedicated to bringing the "fruits of modern medicine" to the poor. The efforts to do so have entailed significant support and involvement from U.S.-based donors and partners and the employment of Haitian clinicians, staff, and directors, many of whom are not from the communities where they work. For seven years and counting, the hospital's and its affiliated organizations' administrators allowed the Mibalè CTC to remain in a location and in a horrible state of disrepair such that it put its employees, patients, and the surrounding community at greater risk. During my first visits in 2017, messages denouncing inadequate pay and "bad leadership" were visible in red spray paint across multiple structures. The one latrine on the grounds was nonfunctioning, the storage room

was dangerously low on chlorination supplies, and PVC drainpipes leading from the patient ward were exposed and cracked. When the CTC staff advocated to the hospital administrators for improvements, they were ignored and became compelled to go on strike. In fact, there were multiple community demonstrations against the hospital during 2017.

Figure 5-3: The side of the CTC (cholera treatment center) in Mibalè, where exposed and cracked PVC drainpipes are just some of the traces of its disrepair. Photo by author, 2017.

While the framing of structural violence helps to link the vulnerability of CTC employees, patients, and neighbors and their environment to resource scarcity, and the concept of environmental racism recuperates institutionalized discrimination as a factor, neither proves adequate for understanding the ways in which these Haitian individuals and their environment were fabricated as exploitable and disposable. Membrane thinking serves as a reminder to pay attention not just to the elements in flux, but to the forces and boundaries mediating their flows. By reframing the problem of environmental racism in terms of "racist environments," as Opperman (2019) proposes, it becomes possible to appreciate the ways in which racism acts as an "atmospheric force" in conditioning not only the structures of structural vulnerability and

violence, and not only the social construction of knowledge (shaped by both humans and their more-than-human entanglements), but how all of these relate. In other words, this approach generates a study of the social environments—material and epistemological—in which pathologies emerge. The hospital/organization, in this case, is immersed in the racist environment of (neo)liberal humanitarian aid and global development (cf. James 2010; Minn 2011; Schuller 2012; Schuller 2016). Indeed, the darker side of modernity is coloniality. Uncritically enmeshed in the "colonial matrix of power" that persists (Quijano 2000), the institution and the leadership within it end up perpetuating much of the same racialized and environmental harm that has accompanied U.S.-driven projects in Haiti for more than a century. From Victorian England to the prison and CTC in Mibalè to the dominant narratives about cholera transmission, the virulence of *V. cholerae* implicates pathogenic processes both with(in) humans and by humans. A sociogeny of cholera helps to chart how multiple pathogenicities of *V. cholerae* emerge through the atmospheric racism of coloniality which imbues the microbe with the capacity to disrupt osmosis as multiple scales.

Conclusion: Pathogenicities of V. cholerae *in Haiti*

The 2010 cholera epidemic in Haiti demonstrates how hierarchies of race and class suffuse complex webs of human and more-than-human entanglements. In this conclusion, I build on Wynter's sociogenic analysis of previous sections to briefly examine not the social production of the outbreak, which I explored already in the previous chapter. Rather, I consider how notions of anti-Blackness served to condition the terms by which the epidemic unfolded and how this compounded the traumatic experience of cholera. In following rice-water diarrhea, in the dissolution of the separation of humans and microbe, sociogeny implicates both together.

In the aftermath of the January 12, 2010 earthquake in Haiti's capital, some Euro-American media outlets, policy-makers, aid workers, and publics assumed that a cholera outbreak would soon follow, particularly within crowded camps of internally displaced persons (Romero 2010; Park 2010). In a place regarded as filthy and backwards (and Black) as Haiti, cholera seemed the natural sequela of a massive disaster. But, as Jonathan Katz reviews in a *Popular Science* article (2013), the notion that spontaneous epidemics inevitably follow

terrestrial catastrophes is a myth. There was an even lower risk of an outbreak of cholera in Haiti because toxigenic *V. cholerae* was not circulating in the environment.[25] Before extensive epidemiological research and whole-genome sequencing confirmed the epidemic's origins, there was the conspicuous absence of cholera from Haiti's history. Surely, I ask facetiously, a country as systemically poor as Haiti (a word often coding blackness, as we've learned) was not spared the ravages of the nineteenth century pandemics that swept through Europe, the Americas, and parts of the Caribbean?

Through an exhaustive review of archival data, Deborah Jenson (2011) and her team at Duke University proved otherwise. Amidst several major cholera epidemics that struck the Caribbean region between 1833-1872, Haiti's government—independent from French colonial rule since 1804—took strict sanitary measures at its ports and borders to prevent the introduction of the contagion (Jenson et al. 2011, 2133). Even when an outbreak emerged in the neighboring Dominican Republic in late 1867, Haiti instituted a policy that successfully averted its spread. Unlike most other Caribbean territories in the nineteenth century, Haiti had abolished slavery and gained its independence from colonial rule. Thus, it did not face the risk of newly arrived European/American soldiers or enslaved captives importing the pathogen. In the Haiti of 2010, on the other hand, "influxes of international soldiers from cholera-endemic areas, who lived in barracks-style housing, present[ed] an unexpected parallel to the nineteenth-century risk factor of new colonial enslaved or military populations living in crowded conditions" (Jenson et al. 2011, 2134). As I described in Chapter 3, the number of UN troops in Haiti rose to 12,651 in the aftermath of the 2010 earthquake as part of the ongoing peacekeeping mission occupying much of the country (UN 2011). These soldiers were housed in environmentally hazardous facilities whose budget amounted to less than half of what the U.S. Government would have spent for its own operations (GAO 2006).[26]

In November 2011, the Institute for Justice and Democracy in Haiti, a U.S.-based legal advocacy organization, and its Haitian partner organization, the Bureau des Avocats Internationaux, filed claims against the United Nations on behalf of 5,000 Haitian cholera

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[25] Moreover, contrary to many assumptions, people living in post-earthquake internally displaced persons camps were actually relatively protected from the spread of waterborne disease. This was because humanitarian organizations at the time were providing camp residents with access to safe drinking-water.

[26] It's important to note that the United States is the single largest contributor to UN peacekeeping activities (Blanchfield 2021).

victims. Together, they petitioned for 1) investments in water and sanitation infrastructure to combat the epidemic; 2) just compensation; and 3) a public acceptance of responsibility (IJDH 2018). In February 2013, the UN finally responded, dismissing the claims as "not receivable" (IJDH 2018). As the toll of the epidemic mounted, the UN continued to refuse to resolve the victims' grievances. In October 2013, IJDH and BAI sued the UN and MINUSTAH. By then, in the epidemic's first three years alone, there had been about 690,000 cholera cases reported, leading to nearly 8,500 deaths. Despite multiple attempts to advance the lawsuit, the UN continued to assert its immunity and refused to hold itself accountable to victims of cholera in Haiti. It wasn't until 2016—six years after the outbreak started and in spite of overwhelming evidence—that the UN finally acknowledged any kind of role it played in causing Haiti's cholera epidemic, issued a long overdue apology, and launched a $400 million initiative to end the spread of cholera.

On April 30, 2020, a group of fourteen of the UN's own independent experts released a joint statement condemning the UN for failing to uphold its obligations to those affected by Haiti's cholera epidemic (OHCHR 2020).[27] More than three years since the UN acknowledged the role played by its peacekeepers in causing the outbreak, the experts said, "It has since failed to pay any compensation and its subsequent underfunded aid effort has amounted to little more than a spate of symbolic development projects. … Despite initially seeking $400 million over two years, the UN has raised a mere $20.5 million in about three years and has spent a pitiful $3.2 million." Raising concerns about the UN's decision to help people through community assistance, like building open-air market buildings, rather than the direct financial support demanded by victims, the experts emphasized that "compensation is ordinarily a central component of the right to an effective remedy, and development projects are simply not a replacement for reparations." The lack of compensation has had devastating consequences—financial, social, and psychological—for thousands of people affected by cholera in Haiti. As such, the UN's response to the cholera epidemic has served to reinforce the many centuries of making Haiti into a categorical land of les damnés (Fanon 2005 [1961]): not condemned *to* an

[27] This follows on the heels of a formal complaint filed by IJDH and its Haiti affiliate, BAI, and the International Human Rights Clinic at Harvard Law School in January (Human Rights@Harvard Law 2020).

environment but condemned *by* racist environments generated by the colonial matrix of power that persists within the state and international apparatus.

Shortly after the UN experts published their letter, *The Guardian* interviewed Philip Alston, the UN monitor on extreme poverty and human rights—and lead signatory of the statement. Reflecting on his many years of studying the cholera disaster, Alston declared that the UN's conduct was only understandable by accepting that "an element of racism is involved here" (Pilkington 2020). "If this happened to a white community in a country with any standing globally," he continued, "the UN wouldn't have done—and wouldn't have been able to do—nothing. But this is Haiti, a country which has largely been written off" (Pilkington 2020).

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Chapter 6 Reverse Osmosis Water

Crafting Purity: The Fragment Work of Reverse Osmosis Water Ways during Haiti's Cholera Years

Introduction: Tracing Reverse Osmosis Upstream

No matter the weather, the roadside gutter outside of Dianne's home is constantly running with water. I first met Dianne, her sisters, cousins, and more than a dozen other extended family members and neighbors one evening in 2015 just before a downpour swept through Sen Mak, making us wait it out under an awning. At that time, water surged in the concrete trench, carried by its gradual slope toward the sea. Made sense. But when I went back the next afternoon to return the plastic containers they had filled with soup for my dinner, the water was still flowing even though no rain had fallen the whole day. I puzzled over its source in my mind as I accompanied Dianne, her two sisters, and a few cousins in watching the constant stream of passersby: cars and trucks ambling up and down the relatively wide road—one of Sen Mak's main thoroughfares—their speed curbed out of caution, surrounded as they are by rivers of motorcycles; the motorcycles moving much swifter and more fluidly than the cars, carrying combinations of passengers and articles in infinitely variable configurations; people walking in almost single files along the edges of the avenue, careful not to step too far out into the street or, at least on this side, slip into the gutter carrying who-knows-what-else in its waters. Plastic bottles, empty sachets, and Styrofoam boxes were only some of the materials floating downstream. Drivers, moto-taxis, and pedestrians periodically peeled out of the oppositely moving currents of traffic to stop by the restaurant next door, but not necessarily to stay to eat. After a few moments, they'd return to the flow with one or several bags of ice in hand. In a city where temperatures typically range from 72°F to 93°F over the course of the year yet receives only a few hours of public electricity each day, ice is one of Sen Mak's hottest commodities.

Figure 6-1: The gutter in front of Dianne's home. Photo by Dianne, 2019, used with permission.

Dianne sloshed the tall cup in her hand and took a drink, then passed it to her sister. I could hear the ice clinking inside, melting into the perfect refreshment on a late afternoon in June. "Where does this ice come from?" I asked her.

"There's a business up the road called Blue Heaven which uses reverse osmosis to make water for ice, juice, bottles, and gallons," Dianne explained. "You see the water running here? It's coming from that company and another one around the corner which also makes treated water but mostly for re-selling. One of my cousins opened this kiosk behind us in 2014 and sells that water, but we mostly drink Blue Heaven water ourselves." I turned my head to appreciate the narrow, two-story rectangular building covered in bright blue and white tiles, with a small window facing the road. People would occasionally bring their empty jugs up to the window where Dianne's cousin would fill them from a spigot dropping down from a huge plastic tank situated on the upper level. As I sat there steeping in the early makings of a lasting connection to Dianne and her family, reverse osmosis water and its byproducts seemed to proliferate and circulate all around us.

Throughout *Following Water*—and particularly in the third chapter—I've demonstrated how a novel twenty-first-century cholera epidemic has not simply catalyzed but also sustained a massive expansion of the RO water market in Haiti. This is not the first time, of course, that encounters with pathogenic *V. cholerae* have fueled widespread transformations in geographies

of drinking-water distribution and consumption. In the previous chapter, I described how pandemic cholera devastated populations, especially in urban areas, across Europe, North America, and elsewhere during the mid-nineteenth century. The threat cholera outbreaks posed to the economic productivity of industrialized nations drove these governments to place water and sanitation at the center of emerging biopolitical strategies for managing the health and labor power of citizens (cf. Foucault 1978). Within a generation, states made wealthy-enough largely through colonial resource extraction established the regulations, infrastructure, technology, and financial structures needed for the far-reaching provision of safe drinking-water and sewerage systems for their citizens (UNDP 2006, 5). Not only did cholera epidemics rapidly become a thing of the past and primitive, as discussed in Chapter 5, but such interventions also afforded more life-years to populations that had access to them. Water purification alone, according to one estimate, accounted for half of the mortality reduction in the United States by the mid-twentieth century (Cutler and Miller 2005). Tap water piped to homes quickly became a hallmark of proper trajectories for progress and modernity.

While many parallels exist between the widespread drinking-water transformations that have occurred in the wake of the Haiti cholera epidemic and those in nineteenth-century Europe and North America, each remains specifically situated. In addition to the ways anti-Blackness, racial capitalism, and coloniality both shaped and afforded biopolitical interventions in European and North American water and sanitation systems, as I detailed in Chapter 5, were emerging postulates that located the circulation of water as a major agent in the circulation of certain infectious diseases. On the heels of John Snow's 'ghost map', scientific investigations into the relation between microorganisms and disease during the second half of the nineteenth century converged with a network of forces, including the public hygiene movement and colonial interests (Latour 1988), to topple the prevailing theories of miasmic etiologies and usher in the era of 'germ theory'. "Instead of contact with foul airs, bodily invasion by microbes was the thing to be avoided" (Illich 2012 [1986], 75). With the discovery of waterborne pathogens like *V. cholerae* and experts' promotion of hygiene, citizens insisted upon germless drinking water from their taps. Purity became not only the demand but also the strategy. The possibility of controlling microbes through decontamination on the one hand and isolation on the other readily aligned with biopolitical techniques of rational management. "Pure" social relations uninterrupted by microbial contagion made for a more predictable and ordered human population (Latour

1988)[1]—a logic to which fascist regimes have fervently aspired in more ways than just this one (cf. Saraiva 2016).

The biopolitical approach to population governance became constitutive of European modernity, but as a conceptual tool for analysis remains just that: Eurocentric and particular to the histories and relations of continental nation-states. In other words, the biopolitical is incomplete without its colonial precursor. As such, encounters with germ theory, toxigenic *V. cholerae*, and technology, vary by their timing, place, and social environments. For all the reasons discussed in previous chapters, mechanisms of coloniality have dispossessed Haiti, like many other postcolonial and predominantly Black and/or Indigenous nations, of the capital and capacity needed to invest in large-scale water and sanitation infrastructure. In its relentless quest for control of economy, authority, social reproduction, and knowledge (Mignolo (2007, 156), the colonial matrix of power subjects both the nonhuman elements of the natural world and colonized humans to precarity, alienation, and trauma—all the while promoting the myth of purity: pure morality, pure institutions, pure categories, pure products. A sanitized sameness where difference is disavowed, and detritus displaced to atmosphere, landfills, oceans, rivers, and aquifers.

Reverse osmosis (RO) is one process by which waters can be purified and ensured safe for drinking.[2] Using pressure, water molecules are forced across a semipermeable membrane, leaving behind any chemicals and pathogens too large to pass through the microscopic pores. Put simply, pure water is made to permeate across the membrane while contaminants get removed and "flushed away" (see Figure 7-2) (Culligan 2021). In my own RO system at home in Michigan, the only evidence of this 'wastewater' is a slight trickle heard in the drainpipe below my sink—a modern ideal, for only as contaminants get controlled, conveyed out of sight and proximity, can the assumptions of a 'pure' lifestyle hold and afford the 'pure' social relations necessary for productivity.[3] Membrane-thinking, however, challenges us to follow not just the

[1] Heather Paxon elaborates on Latour's (2008, 17) argument to examine how biopolitics is thus "joined by microbiopolitics: the creation of categories of microscopic biological agents; the anthropocentric evaluation of such agents; and the elaboration of appropriate human behaviors vis-a-vis microorganisms engaged in infection, inoculation, and digestion."
[2] Water purified by reverse osmosis is also used in various industrial processes, including in the automotive, pharmaceutical, and aerospace sectors.
[3] For a discussion on how the notion of modern "improvement" became linked with "convenience" and ideologies of utility in the U.S.-based expansion of household plumbing systems connected to public works, see Maureen Ogle's (1996) *All the Modern Conveniences: American Household Plumbing, 1840-1890*.

purified permeate of reverse osmosis but also the co-related flow of that which the semipermeable membrane has cleaved; not doing so leaves a social and material analysis of RO water incomplete. What might the ways people relate to the multiple products of RO tell us about the alleged boundary between purity and mixture? To begin, what they *can* tell us is always already situated in a place- and historically-specific milieu.

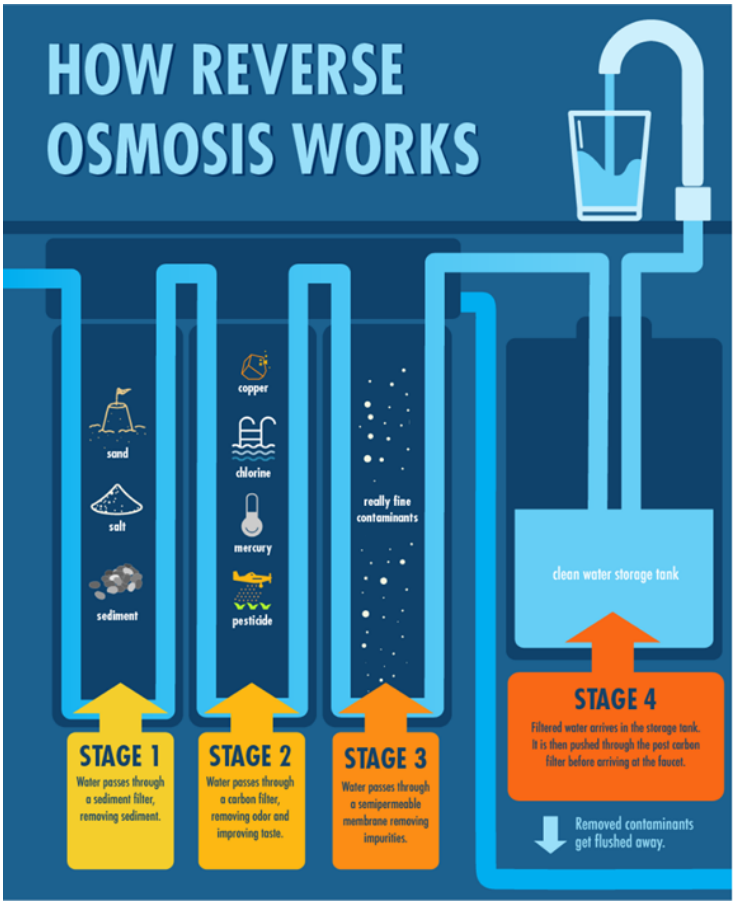

Figure 6-2: A diagram explaining "How Reverse Osmosis Works" by Culligan (Culligan 2021).

As I've discussed throughout this dissertation, an increasing proportion of Haitians, and not just those living in Pòtoprens, are drinking reverse osmosis (RO) water rather than municipal or environmental sources in the wake of the 2010 cholera epidemic. In following Haiti's main waterway—the Latibonit—in Chapter 3, I examined how the country's RO water market is rapidly expanding, driven not simply by lack but by cholera's potent emergence and the potencies of water-oriented desire. Here, picking up where that chapter left off, I analyze the

water ways of RO in Haiti to understand how this proliferating technology both works and is working. How is the production and consumption of RO water reflecting, shaping, and changing social relations? My ethnographic, survey, and observational data point to ways the fragmented making and circulation of RO water products both emerge from and flow into the "fragment work" at the center of Antillanité. Édouard Glissant (1996) developed the theory of Antillanité against European philosophies of universalism to describe how the cultural configuration specific to the Caribbean archipelago gets created through the relation, encounter, and fecundity of diverse constituent elements conditioned by the massive historical disaster(s) of coloniality.

With cholera's traumatic disruption of the relation between humans and the water they drink, the engineering of hybrid RO systems proliferated across Haiti as a necessary mode of survival. As in Glissant's metaphysics of Antillanité, fragmentation breaks with White Western figurations, governance, and false notions of purity to make worlds alive to relation, complication, and creolization. An opaque movement from unity to multiplicity. Thinking with RO membranes in Haiti draws our attention to the ways 'fragment work' is driving the expansion in 'purified' water production just as the process of RO simultaneously produces fragmented waters of that which passes through and that which gets rejected, of tanks, gallons, bottles, and sachets, and of so much more.

6.1 - Water Ways: Results from a Household Water Survey

Over the rest of that summer in 2015 and the following four years, I continued to visit Dianne and her family—at their dense maze of rented rooms in the center of Sen Mak, their ancestral lakou in the rural Fifth Section, and even in the U.S. Virgin Islands after several family members migrated there in 2017. Staying with them for days at a time or dropping by on occasion while living nearby, I learned to appreciate the specific ways different waters are used, contained, and consumed. Where Dianne lives in the city, two underground cisterns stock communal water: half of the residents on one side of the community tend to use one and the other half another. One of cisterns is supplied—for a fee—by a standpipe that runs about once a week with water from the Sen Mak network, managed by a subsidiary of a French water corporation. For the other, Dianne, her family, and a few neighbors pay a private water trucking

company to periodically fill the cistern from which they communally draw small buckets for cooking, cleaning, washing, and bathing. The water in these trucks usually comes from a spring, private well, or surreptitiously accessed municipal pipe and gets delivered for a price above that of city water. Although it would be possible for them to also pay the Sen Mak water authority to provide water from their already existent municipal tap, these residents opt instead to have their water delivered by truck. The reliability of the water truck company outweighs its relatively higher cost when needing to supply essential water for so many people. While a few residents might use the water in these cisterns for drinking as well, the vast majority of people living in Dianne's community drink water treated by reverse osmosis and sold in refillable gallons, bottles, or bags—including bags of ice, as I described earlier in this chapter.

Figure 6-3: Dianne washing dishes by the cistern at her home. Photo by author, 2018.

As with most Haitian cities, Sen Mak's municipal water system does not extend to its surrounding rural areas. Dianne's grandfather, father, and several other relatives live in a large lakou of five dwellings tucked away near a bend in the Latibonit River in the Fifth Section, while other family members make frequent trips there from town. The proximity of the Latibonit here lends well to washing laundry and bathing directly in the river, its current helping to rinse whatever needs cleaning. For other daily household tasks, family members draw water in large plastic buckets from the river, carry them to homes, leave the water to stand such that sediment

settles, sometimes treat it with chlorine, and use this water for cooking and cleaning. Like at Dianne's home in Sen Mak, most of the people living in this lakou drink water treated by reverse osmosis. In May 2019, I returned to learn more about the ways Dianne's relatives navigate their hydration. "One day each week we buy drinking-water from the kiosk up the road and store it," explained one of her aunts, a rice farmer. "There are three people in our household, and we usually get three galon [equivalent to 15 gallons] to last us seven days. We tend to drink more when the weather is hotter. My husband is the one who goes to get the water on his motorcycle or a car, if someone from Sen Mak is visiting. It usually takes him about forty minutes roundtrip. I used to drink water from a well, but about five years ago it began giving me diarrhea [for reasons unknown]. I went to the hospital and they told me to stop drinking that water and buy treated water instead. It was during cholera when people really started to buy reverse osmosis water. Buying water from a business is easier because you don't have to treat it again—it's already purified. But sometimes the water business doesn't have water for several days, so we have to plan for that."

The ways that Dianne and her relatives in both the city and countryside access and manage different waters is hardly unique to her family, especially in the wake of cholera. Between 2006 and 2012 in Haiti, water managed commercially—including bottled and bagged water, trucked water, and treated water sold by private companies—was the only category of water access to increase, compared to municipal piped water or other improved or unimproved sources (World Bank 2018, 16). Water products poured into the market as private RO water businesses proliferated across the country and public health campaigns persisted. By 2012, people across socioeconomic groups were spending more on bottled water than other commodified forms of water (World Bank 2018, 17). These trends seemed to persist throughout the years following.

In May 2019, my research assistant, Mardochée Noël, and I conducted a participant-based water "diary" study to assess the quantity and costs of water used at homes across localities in Sen Mak and the Fifth Section. Recent scholarship has shown that household diaries can be effective tools for assessing patterns of water consumption, including in resource-poor settings (Thornton and Riedy 2015; Wiseman et al. 2005). Our study involved recruiting participants in 25 different neighborhoods of Sen Mak and 25 different areas in the Fifth Section to track the water sources and quantities they used each day over the course of a week, as well as

how much they spent on water if applicable. Upon collecting the diaries, Mardochée and I then conducted brief semi-structured interviews with respondents. Though limited in several ways—from the small sample size to the inherent challenges in tracking water use and expenditure—the results of our week-long surveys provide a sound enough glimpse at water consumption patterns in this part of Haiti.

Of the 24 households that completed the diary in Sen Mak, all but one purchased their drinking-water from an RO water vendor. These families, which numbered about six people per household, purchased an average of three gallons of RO water for 28 Haitian gourdes (a little less than US$0.50 at the time) per person each week. In the Fifth Section, 14 out of 25 households bought RO drinking-water. Here, participants reported purchasing three times as much weekly RO water (nine gallons per person) as their city counterparts. With only a slight difference in terms of price per gallon—somewhat higher in rural areas due to the cost of transporting water from Sen Mak—there is a fair chance that these data are reliable.[4] Several common factors emerged during our interviews with respondents that seem key drivers of RO water consumption: in addition to the water-oriented desire to safeguard health in the wake of cholera, participants also emphasized the advice of health workers and the relative safety and convenience of RO water, as Dianne's aunt described above. "Since cholera, people have come to understand that if they drink untreated water, they can get sick," explained one resident of Sen Mak. "There are more places selling treated water now. And with this option to purchase drinking-water, people will lose time to go buy it, even if it's very far."

As in many other parts of the world, "small-scale, unregulated private businesses (rather than government or large-scale private companies) play the lead role in supplying water on a daily basis" to people across Haiti (Bakker 2010, 5). Here, I intentionally refrain from using the language of "formal" and "informal" to describe water businesses and the RO water economy in Haiti. Reflecting what Jean Price-Mars once described as "collective Bovaryism" (1983 [1928]), the informal/formal binary underplays "the role of decolonization, structural adjustment, liberalization, deunionization, and other 'formal' structural forces in creating and sustaining the

[4] Among the 11 rural households that did not buy RO water, respondents shared that they source their drinking-water from wells, pumps, springs, or the river. Though most people said that they treat this water with chlorine products, these products are not often available, especially in remote areas of the Fifth Section. Four of these 11 individuals reported using biosand filtration at home to treat their water; one uses cactus mucilage to eliminate turbidity; some also add chlorine to purify the water.

informal labor sector in the first place" (Ranganathan 2018, 313). Following Haiti's independence from French rule in 1804 and the ensuing decades of its marginalization by Euro-American nations, Price-Mars (1983, 20) argued that "the West is now going to *reincorporate* us neocolonially, and thereby mimetically, by telling us that the problem with us *wasn't* that we'd been imperially subordinated, *wasn't* that we'd been both socioculturally dominated and economically exploited, but that we were *underdeveloped*."

While the ethics of water commodification and marketization remain hotly contested in longstanding debates over public or private water provision, a rapidly increasing proportion of people in Haiti and throughout the world are already operating in highly commercialized private water markets.[5] My interest here is in these lived experiences, in the real world workings of the waters circulating now, rather than abstractly disputing the moral implications of forces already in motion—forces set in motion by networks of institutions that embroil many of those/us doing the debating. To navigate these "waterworlds" (Hastrup & Hastrup 2016),[6] people craft materially and affectively contingent "water ways" through which waters mutually participate in the crafting of people (Hauser 2017). What can these strategies tell us not just about the political economy of water, but its political ecology, its entangled human and nonhuman social relations? Using archaeological evidence from the Caribbean island of Dominica, Mark Hauser argues that the workings of "water ways"—such as the means by which water was accessed and utilized, the vessels used for its storage, its modes of circulation, the management of its distribution—make different types of water. We can think of this 'making' as not just the process of RO water production, for example, but also the practice of categorizing different waters, in which different sources of water are used for different purposes.

Several months after the household water diary study, I enrolled 20 adult participants (ten in Sen Mak and ten in the Fifth Section) in a Photovoice project.[7] Among them was Erma, a 40-

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[5] As Karen Bakker (2010, 6) writes, the debate over public and private is "predicated on a concept of popular sovereignty that fails to account for the ways in which many communities actually manage water access."

[6] Kirsten Hastrup and Frida Hastrup (2016) define the concept of "waterworlds" in contrast to received framings that treat water only "as a substance that connects many realms of social life" (Orlove & Caton 2010, 410). Water doesn't just remain outside of what it connects, they argue. They write, "water has become acknowledged as an in-between category, permeating anthropological discussion in new ways and linking the two pillars upon which modern science developed: nature and culture" (Hastrup & Hastrup 2016, 6-7). Water that is part and parcel of the lived world. Water that is social by nature. Here, I use "waterworlds" to invoke the sociality of RO water.

[7] Photovoice is a participatory-research method through which individuals use photography and stories about their photos to identify and represent issues of importance to them in their everyday lives (Wang and Burris 1997). For this study, I asked each participant to visually document their responses to several questions using a digital camera I provided: 1) Why is water important

year-old mother of three and rice farmer I've known for nearly just as long as I've known Dianne. "Water is useful in multiple ways," Erma said as we began to review the photos she had taken to illustrate water's importance. "There's the water in the canals that we use to irrigate our gardens. We also use this water to wash clothes and to bathe, even though it makes us itchy.[8] Then there's drinking-water. We used to drink well water, but since cholera ravaged Haiti, we buy Blue Heaven water, by the gallon or in sachets, to avoid microbes. If we drink well water now, it will upset our stomachs. You could say that there are different categories of water. Without water you can't live, but certain water that might be good for one purpose could be dangerous for another, like drinking."

Figure 6-4: Erma washing off the mud from her hands in an irrigation canal after planting rice in her garden. Photo by Erma's daughter, 2019, used with permission.

to you? 2) How do you access the water you drink? and 3) Why do people get sick from cholera? After collecting and reviewing their images, I then conducted semi-structured interviews with each individual, using their photographs as prompts for discussion.

[8] Although there are a number of reasons why bathing in the canal water makes Erma and other itchy, one likely cause might be due to runoff from the surrounding farmland, which contains fertilizers, pesticides, and organic matter from animals.

Figure 6-5: Erma pouring Blue Heaven RO water into a vessel at her home. Photo by Erma's daughter, 2019, used with permission.

People and the waters they craft through practices and processes *become* in relation to one another: drinking or using certain waters reciprocally transforms the bodies doing the drinking and using. As Erma mentioned, for instance, people become abitye (used to) the particular water they regularly consume, which I described in more detail in the second chapter. In other cases, waters designated for bathing can have different effects on skin, causing rashes or, according to some, altering color—city pipe water lightens skin, while rural surface waters darken it. The ways waters get categorized help to define water hierarchies, by which their users are similarly indexed.

These categories also afford assumptions about the waters typed within them, most particularly—and consequentially—the waters classified for drinking. A 2012 study of 433 households in rural areas of the Artibonite Department found that 64.1% of respondents regarded their drinking-water source to be "safe as is" (Patrick et al. 2013, 649). Among private kiosk users, however, the proportion was much higher: 95.3% considered the RO water they were drinking to be safe (Patrick et al. 2013, 649). Yet, in a 2013 assessment of water sold from 1,340 private kiosks in Pòtoprens, researchers established that "approximately 10% may be

periodically contaminated [with *E. coli* bacteria] somewhere between the site of production and the point of sale" (Patrick et al. 2017, 88).[9] A much smaller and more rudimentary water quality analysis I performed in 2019 found that three of the five RO water vendors sampled in Sen Mak and two of the three RO water vendors sampled in the Fifth Section were contaminated at the time of collection.[10] Bottled Blue Heaven water tested in both locations tested negative for coliform bacteria. While not all RO systems may be effectively delivering purified water to consumers, the category of water treated by RO is working to link the waters that are being sold to purity. But how does the process of reverse osmosis itself work—specifically in Haiti?

6.2 - Fragmenting Water: Reverse Osmosis and Membrane Technology

If you follow the water running in the trench outside Dianne's home up the gently sloping avenue lined on one side with tall mapou trees, you'll come to a driveway where water pours out from gutters on either side. The hum of five huge generators, the clanking of machinery, and the sounds of moving waters—sloshing, dripping, packaged—get louder as you make your way up the driveway. At the top is a stretch of warehouses opposite a midcentury style home, between them an unpaved parking lot just wide enough for large trucks to turn. This land belongs to a Saint-Marcois family that goes back generations and, in the 1950s, opened the city's first but relatively short-lived ice and cola factory which served the entire region (Destin 2011, 277). Now, and much to the chagrin of many of these family members, most of the property is being rented out to the owners of Les Industries Kayimit S.A. (IKSA),[11] the company that manufactures Blue Heaven water, ice, and juice (made of powdered drink mix and RO water).

Like many of Haiti's major population centers, Sen Mak is located in an unconsolidated alluvium hydrogeological environment (Adamson et al. 2016, 139). Aquifers in these areas,

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[9] The presence of coliform bacterial or *E. coli* in particular is used as an indicator of fecal contamination in water.
[10] There are more treated water vendors in the Fifth Section than I was able to include in this study. Some sell RO water, but at least one that I know of (sponsored by a U.S. university program) sells water treated by ultrafiltration. Unlike in Mibalè, I only found vendors selling RO water in the town of Sen Mak. In Mibalè and some other parts of Haiti there are also kiosks selling water treated by ultrafiltration. Usually, these micro-enterprises are affiliated with a foreign nongovernmental or faith-based organization.
[11] Kayimit, spelled cayemites in French, is the Haitian Kreyòl word for the star apple fruit endemic to the Antilles. IKSA features this fruit on its logo. In its dual leadership—founded by two cousins—IKSA also gestures to Les Cayemites, the name of a pair of small islands off of the coast of Haiti's southern peninsula.

which cover a quarter of Haiti's territory and contain 75-84% of the country's groundwater reserves, "are generally shallow, easily drilled, provide good groundwater potential, and have desirable water quality. This hydrogeological environment, however, can be vulnerable to groundwater depletion, contamination, and impacts of changes in climate and land use" (Adamson et al. 2016, 143). Two boreholes 80 and 200 feet deep, respectively, below the 1,054 square meter IKSA factory floor pull water from the aquifer into the raucous world of industrialized RO water manufacturing. Above ground, pipes conduct the surging stream into an enormous 30,000-gallon metal tank perched atop a concrete structure near a back corner of the lot. The weight of the water makes it flow by gravity through another conduit toward a subterranean cistern where chlorine is added to the water to keep it decontaminated in storage.

Above this reservoir is a room filled with equipment that comprise the reverse osmosis purification process. Two pumps—one serving as a backup in case the other fails (as was currently the case)—draw water from the cistern and push it through a sediment filter, carbon filter, a semipermeable membrane spiral wound within a pressure vessel, and another carbon filter.[12] At each step, some water passes through as the desired 'permeate' (see Figure 7-6). The water remaining on the other side of the filters and membrane becomes concentrated with impurities and flushed away through a pipe that empties into the gutters that line the driveway, which flow into the roadside trench, which drains into a waste canal, which spills into the sea. Along its course, people use the discarded water in various ways. "There are people who use it to wash their cars and motorcycles," explained Dianne. "Others spray it on the street to keep the dust down. People use this disposed water (dlo jete a) for all kinds of things! This demonstrates how even if water is dirty, people give it importance."

[12] To ensure the highest quality of water, IKSA additionally softens the water and disinfects it using ozonification and UV light treatment processes.

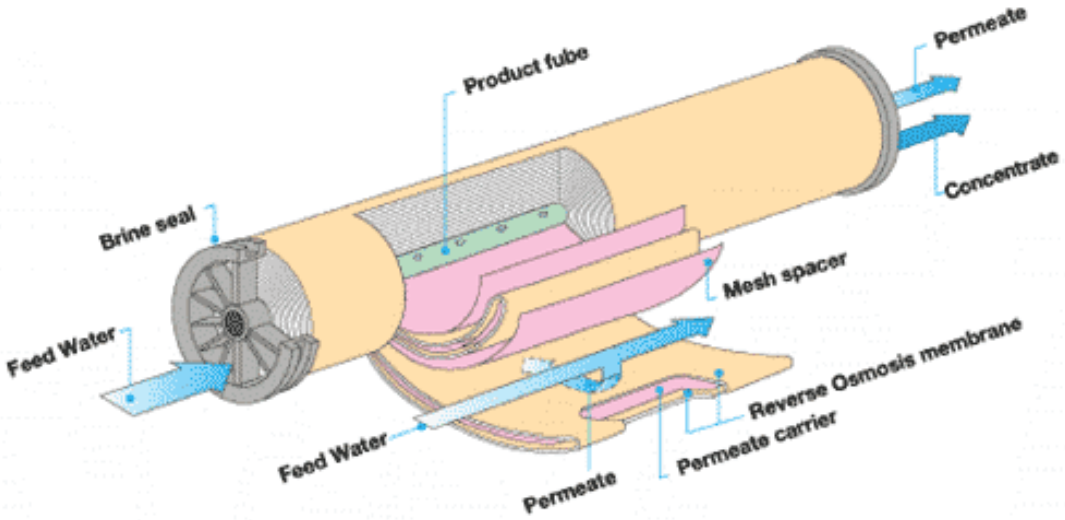

Figure 6-6: A diagram of a reverse osmosis spiral wound membrane within a pressure vessel. Feed water enters and gets separated into purified 'permeate' water and water concentrated with contaminants—the 'concentrate' (Toray Industries, Inc. 2021).

The ways people in Sen Mak, particularly those living downstream from IKSA, utilize the discarded 'concentrate' makes visible the fragmented duality of the RO purification process. Reverse osmosis uses membrane technology to bifurcate raw water into pure and impure streams. However, though mechanically separated, these waters remain in relation to one another, both hydrologically (always part of the same cycle) and through the water ways humans engage them. Both physically and philosophically, pure water cannot exist without its corresponding marked category—impure concentrate. Or, too, its marked efflux—the disposed water (dlo jete a) in the gutter.

As I described earlier, reverse osmosis works by using pressure to force water molecules across a semipermeable membrane, leaving contaminants and any remaining water on the other side to get flushed away. The technique of pressurized filtration was established by H. Bechold in the early 1900s, who coined the term 'ultrafiltration' (1907). But the development of membrane technology wouldn't emerge until decades later. Following the close of World War II, rapidly increasing population growth and agricultural expansion in California were draining the region of its freshwater supply. The University of California and, a few years later, the U.S. Department of the Interior took active interest in researching and developing methods of water desalination. A 1949 report by UCLA scientist Gerald Hassler marked the beginning of reverse membrane research in the country, while Charles Reid launched his study of osmotic membranes

at the University of Florida in 1955—surprisingly, neither group knew about the other's work until 1957 (Glater 1998). These early efforts resulted in RO membranes that showed some promise for desalination but still performed inadequately for economical water production. In 1958, Sidney Loeb and Srinivasa Sourirajan at UCLA embarked on a project which would result in the first practical RO membrane and enter the public domain by 1961 (Glater 1998). With additional innovations in hardware and design, firms and municipalities soon began integrating RO technology into their industrial manufacturing, commercial desalination plants, and drinking-water supply systems (in California especially).

Beginning with the introduction of municipal water chlorination in the United States in 1913, chlorine-tasting water stood for decades as a key indicator of not only purity but also the safety and modernity of public utilities (Manning 2012, 90). An intensifying skepticism toward established government during the late twentieth century and early twenty-first century, however, began to invert this association. An overly chlorinated taste of tap water became the 'taste of infrastructure', the taste of a public utility over which individuals had very little control, and the taste of uncertainty about its true quality. And, as Paul Manning (2012, 89) reminds us, "purity is a matter of taste." The development of membrane technology with the capacity to molecularly purify water provided an alternative well-suited to American consumers:

> The taste of purified waters is a specifically *American* taste, in that it arose in American markets as part of an attempt to imitate the low mineralizaton natural spring waters that Americans (and not Europeans) were already known to prefer. Processes like reverse osmosis, among other things, can be used to reduce mineralization, allowing these waters to achieve a taste similar to the lower mineralization spring waters that [were gaining dominance in] the American market. (Manning 2012, 89)

The first mass-produced reverse osmosis water treatment system arrived in 1967, manufactured by Culligan Water, a leading water softening and bottling company founded in Illinois in 1936. Within years [and something about the timing coinciding with the rice market], Culligan would introduce this technology into Haiti.

6.3 - History of RO Water in Haiti: The Caribbean Bottling Company and Eau Immaculée

A market in purified water commodities began emerging in Haiti in the 1970s (Guy 2004). Among the first corporations was the Caribbean Bottling Company S.A., established in 1973 by the U.S.-based company Culligan, which bottles RO drinking-water under the Culligan

name. Around the same time, during the 1970s and 1980s, a number of major population centers across Haiti were installing municipal water systems: in 1971, Mibalè, for instance, inaugurated a network of pipes carrying water directly from a huge mountain spring to individual homes. Limited to cities and towns, however, this infrastructure failed to reach many Haitians.[13] Yet for those for whom it did, this piped water provided—even if intermittently—an important source of drinking-water. Culligan water, however, was in a class of its own. Unaffordable to the vast majority of the population, purchasing purified water was considered not only a luxury but also a distinct status symbol—with Culligan, dripping as it was with modern American signification, at the top. Unmatched by competitors (of which there were few at the time), the Culligan brand became synonymous with all treated water, regardless of their methods of purification: "dlo kouligan" started referring to any filtered, chlorinated, or RO water, whether bottled or unbottled. It is only more recently, with the surge in RO water products and brands like Blue Heaven, that "dlo kouligan" has started to regain its distinction.

Today, the Caribbean Bottling Company (CBC) operates on four acres of land in Pòtoprens, where it extracts water from a 250-foot-deep well and processes it in two water treatment facilities (Michel 2014). CBC uses a variety of methods to purify its water—chlorination, filtration, softeners, reverse osmosis, ozonification, and UV light—before it is packaged in 20oz, 1.5L, or five-gallon bottles produced on-site (Caribbean Bottling Company 2019). Emphasized on its website, CBC seeks to protect consumers against practices of counterfeiting by securing its Culligan bottles with inscribed seals and embossed caps, signifiers not just of dependability but also of purity. A broken seal or mismatched cap would indicate tampering, such as the replacement of a bottle's contents with untreated water yet sold at Culligan prices. In this way, protecting consumers against potentially dangerous drinking-water also works to preserve Culligan's place in the market. These added measures safeguard both the brand and the water inside it from tampering, and, by doing so, promote an orderly marketplace in which wealthy enough 'rational' actors can make informed decisions about purchasing water that's (marketed as) best for their health. It's not simply that capitalism and biopolitics are linked, but that they are conditioned by the same forces underpinning modernity and, therefore,

[13] While the share of Haiti's population with access to improved or piped water has grown since the 1970s, rapid urbanization and decaying infrastructure has placed significant strain on these systems. In 2015, the figure stood at only 58% (World Bank 2018).

coloniality: both progress and disparity, both order and hierarchy, both manipulation and resistance.

With bottled Culligan water priced higher than the majority of Haitians could (and can) afford, entrepreneurs around the country attempted to make RO membrane technology accessible to their communities through different means. Around the corner from IKSA and several blocks up the road is an RO water business, Eau Immaculée. Founded in 2004, Eau Immaculée was established during a pivotal year of fragmentation in Haiti: that year marked a coup d'état which ousted President Jean-Bertrand Aristide during his second term, and the initiation of the United Nations Stabilization Mission in Haiti (MINUSTAH) several months later. Today, its waters intermingle with those of Blue Heaven, both in the RO water market and in the gutters of Sen Mak. In the front wall of the Eau Immaculée compound are two pipes that discharge the discarded concentrate streams from the RO systems within. Throughout the day, drivers stop to rinse their motorcycles and neighbors come to collect water for household tasks. Rather than selling water by the pre-filled bottle, Eau Immaculée maintains a small fleet of water trucks that supply vendors like Dianne's cousin with RO water to re-sell.

"The company started little by little, at first just with a small machine that produced six gallons a minute," explained Jean-Claude, the Administrative Director who has been with the company for more than a decade. He continued,

> The owner of the business is like a brother to me. Eau Immaculée was at first just this small house we're sitting in. It grew because of his vision to bring treated water to the entire Artibonite. Today, we have five wells and two reverse osmosis systems: one that treats 30 gallons a minute and another that produces 11 gallons a minute. Around the city we have many distributors [who buy the water wholesale and then resell it].[14] On average, a distributor can store 1200 gallons, which can last a day, a week, it all depends on the market in that neighborhood and how often people come to refill their water jugs. There's one I know which sells 800 gallons of water each day. More people are preferring to buy water these days because of the cholera epidemic. They'd rather drink treated water than get their water from a spring or pipe. Health is the greatest vision of treated water. Our vision is for the masses, for lower class people who don't have the luxury of affording Culligan or Blue Heaven water prices.

In the wake of cholera, Eau Immaculée has thrived in Haiti's fragmented drinking-water-world because, in part, of its composite manufacturing process and decentralized water kiosk structure. Glissant's concept of 'shoreline thinking', situated in the specificity of the Caribbean context, orients us to the capacity for future-making after arrival and out of catastrophic loss. From a drowned past remains not only the predicament of living in precarity, but also the imperative to

[14] It's important to note that Jean-Claude's company doesn't just distribute RO water to city vendors, but also now to several in the Fifth Section as well, including the one used by Dianne's aunt.

survive the protracted pathologies of coloniality. Yet trauma, Glissant insists, is neither cosmology nor future determinant. “Rather, shoreline thinking that begins with pain and its fragments makes a world possible, though only possible through the creative work of Relation” (Drabinski 2019, 98). Though shaped by the turmoil of 2004, Eau Immaculée water did not originate in it. The same can be said of other RO water businesses proliferating throughout the country after cholera. Contact and connections among water, people, technologies, and ideas saturated Eau Immaculée’s creation and sustain its success in the market—more so than the veritable purity of the water its vast network of vendors re-sell. RO water works in Haiti because it is a product of fragment work, produced both on the basis of and with fragmentation.

6.4 - Blue Heaven

While the Caribbean Bottling Company and Eau Immaculée are just two examples of RO water businesses that were manufacturing and distributing purified water in Haiti prior to 2010, the RO water market during this time rarely consisted of more than one or two enterprises in each major city (besides Pòtoprens, where the market has remained relatively more robust). In a population where most people live under substantial financial constraints, the price of RO water products played a significant role in limiting their consumption. But, as I demonstrated in Chapter 2, preference and abitye-ness—or embodied human-water relation—also contributed to people’s drinking-water ways involving municipal or environmental sources. The 2010 cholera outbreak, however, ruptured longstanding relations between humans and the waters they drink in an already fragmented drinking-water-world.

Soon after I arrived in Sen Mak in March 2019, I organized a meeting with the heads of the IKSA corporation. Richard, the co-founder and president of IKSA, met me in the office he shared with his cousin (and co-founder) and younger brother, the marketing director, above the bottling factory. All three had spent time living and working in the Dominican Republic and Pòtoprens before moving back to their hometown of Sen Mak shortly before starting the company. All three were dressed in pressed blue or white shirts emblazoned with the Blue Heaven logo. We spoke over the din and bustle from the floor below, where I would later see Richard actively engaged in directing the flow of pallets and truckloads filled with bottled water.

Throughout the rest of the year as I'd visit and observe at Blue Heaven, Richard often seemed to somehow be in multiple places at once around the facility, fully invested in the workings of his business. During our conversation, Richard explained,

> Culligan used to be the only company selling sealed bottled water in Sen Mak. There were also private kiosks selling treated water, but they sell water that isn't as good of quality as Culligan. There are many steps along that process than can contaminate their water: from the way they transport the water and distribute it to the kiosks, to the way that the kiosk owners take care of their water tanks. So, we asked ourselves, couldn't it be possible to make water in the same way as Culligan and with the same standard? And that's what we did. When we did our study of the market, we found that we could sell water more competitively. When we started production in 2015, we were able to sell five gallon jugs for 30 gourdes; Culligan sold them at 40 gourdes. Now we sell them for 40 gourdes, and Culligan for 50 gourdes. Establishing our business outside of Pòtoprens allows us to provide a much needed product locally and more affordably, which has also helped us to secure the market here in the Artibonite. The water market has expanded all across Haiti because of the complex effects of the cholera epidemic. Everyone was impacted by cholera, and everyone learned about the importance of clean water. Water is a need, but water can also cause a lot of devastation. For a long time, people would use river water and spring water. But with the [cholera] disaster, people can't use that water anymore.
>
> When cholera started, people didn't want the kiosk water nor could they afford Culligan water, but they were forced to buy that water [to avoid getting sick]. We created an alternative: Blue Heaven, the brand name of our purified water. For our two wells we pay the government one million gourdes [about US$10,500] in tax each year. When we started, the Ministry of Commerce came to inspect the installation of the equipment and take water samples. But water is not really regulated in Haiti. Still, we test our own water each month in two different laboratories. We are proud of our local production in Sen Mak. We Haitians have cultivated an idea in our heads that we're not capable of achieving good things. Through IKSA's success, everyone in the country knows us, and they can see that Haitians can do a good thing for ourselves. I think that our company and what we're doing in the province [i.e., outside of Pòtoprens] is a great accomplishment, and we're very proud.

Motivated by profit, a kind of Haitian national pride, and a moral desire to increase access to safe drinking-water, ISKA's founders created a product meant to provide high-quality RO water more affordably to the local population. Establishing and promoting itself as a modern Haitian business, IKSA imbues its water with affective pride and desire, crafting a connection between ideas, values, and objects.

After our conversation, Richard introduced me to Bernard, the facilities manager at Blue Heaven, for a tour of the plant. Walking me through each step of the reverse osmosis system I described earlier, Bernard pointed out the bifurcated, dual streams of RO concentrate and permeate. We followed the pipe of purified water into the next room—the main floor, filled with assembly lines—where it pours into two 10,000 gallon bright metal silos. From these, the water passes through additional UV lights for disinfection before it enters a network of tubes traversing the facility overhead and along the walls, which carry water to machines that squirt it into plastic vessels and sachets or transfigure it into ice and juice. Teams of Blue Heaven workers, heads donning light blue gauzy bouffant caps, transport crates of ice and bottles of various sizes across

the factory or stand at their stations along hissing, clanking, dripping assembly lines.[15] Many periodically fill reusable water bottles with fresh Blue Heaven ice to sip on throughout their shifts.

"The biggest challenge we face," said Bernard, "is figuring out how to store all of the water we pump! We run the machines 24 hours a day with employees working in eight-hour shifts, and still, we have more water than we can keep up with in production. We're looking to expand, but it's difficult to secure the land because there's disagreement with the family that owns it." At IKSA, RO water constantly moves—pulled from the aquifer, squeezed through a membrane, and conducted into packaging or exceeding its manufactured containment. Inside the factory cramped with machinery, workers, and piles of plastic bags and bottles, leaking water collects in small channels carved into the concrete floor leading to the discharge gutters that run alongside the facility. At the main entrance, a small open-air platform serves as the distribution site for Blue Heaven products stacked within several coolers and two large storerooms opposite the loading dock. But these bags and bottles don't stay still for too long. A constant stream of people arrives on motorcycles, pick-ups, and large trucks specially fitted to carry dozens of five-gallon jugs to gather Blue Heaven water for themselves, for vending, or for sharing. At certain times of day and especially on hotter ones, a line of customers stretches beyond the shade of the platform awning, accentuating both the demand and desire for cool water and safe hydration—and their outpacing of production. By 2017, the company had generated over $500,000 in sales in a single quarter—up from $60,000 in the one previous (PADF 2017).

[15] IKSA employs about 500 people in part-time positions split into several shifts each day. At the time of my fieldwork, workers were getting paid 400 gourdes (approximately US$4) per shift.

Figure 6-7: An IKSA company truck used to distribute Blue Heaven water (Nonor 2019).

6.5 - Making Water: Container Technologies and the Semiotics of Pure Water

Beyond the IKSA plant, its RO waters (and brand) continue to circulate. Company trucks deliver large blue jugs to grocery stores, hotels, and other distributors across the Lower Artibonite Valley and coastline, while private vehicles supply smaller vendors such as rural motorcycle repair shops like the one to which Emmanuel rides his bicycle. Two different sizes of sachets and two different sizes of water bottles get sold wholesale. These products are what are known as "fast moving consumer goods," or non-durable packaged goods that are sold quicky and at a relatively low cost. While grocery stores almost exclusively stock bottles, scores of individual vendors peddle both bottles and sachets from ice chests and buckets—the latter, carried atop people's heads, being the more mobile. Easier to transport, easier to keep cool, quicker to drink, and cheaper to sell (with each costing about $0.25-50, although this price is steadily increasing), sachets, though priced relatively higher per ounce, are the most readily consumed RO product by the poorer sectors of the population across rural and urban areas. During our water diary study, Mardochée and I found families in one remote, dusty village in the Fifth Section exclusively drinking sachet RO water that they purchase in bulk. "Ever since

cholera, it's gotten easier to access treated water," an older man told us. "And sachet water is better to drink than the water that comes by truck."

Figure 6-8: A water sachet in the Fifth Section. Photo by author, 2017.

Without a functioning municipal waste disposal system, discarded plastic of fast moving RO products accumulate in Sen Mak. Instead, empty bottles and desiccated sachets float in the discharge water flowing from IKSA—in a way, reuniting the bifurcated streams of reverse osmosis. Rains sweep remaining litter on the ground into garbage canals that empty into the sea. Bottles and bags of RO water become participants in both the fragmented waste infrastructure and water supply networks. RO water works in Haiti because it becomes actualized as ordinary and routine, normalized as a feature of everyday drinking—and disposal—for an increasing proportion of Haitians.

Figure 6-9: A drainage canal in Sen Mak. Photo by Dianne, 2019, used with permission.

The authors of *Plastic Water* argue that bottled water not only becomes "*re*qualified from [a fast moving consumer good] to an essential component in daily survival and household practices, [but] it also helps define new water hierarchies, in which different sources of water are used for different purposes" (Hawkins et al. 2015, xx). In just one of many examples, the man quoted above emphasizes how sachet water is "better to drink" than trucked water. The proliferation of RO water products in the wake of cholera works to cast purity as a defining feature of water hierarchies: when it comes to hydration, manufactured, prefilled, sealed bottled RO water (with Culligan at the top) is better than kiosk RO water which is better than pipe, well, or spring water which is better than river or canal water. At the same time, when and where RO water saturates the category of water-for-drinking in Haiti, other waters once normally consumed get assigned instead to water-for-household-tasks. Water ways, Hauser argues (2017, 242), are "charged with the politics of everyday life." The objects that contain different types of water for different needs—drinking, cooking, washing, etc.—also make types of water and change the relationship between water and people.

The rapid expansion in the production and consumption of sealed RO water I've detailed thus far warrants closer inspection into how these objects, and not just the water within them, appeal to and operate within a situated semiotics of purity. Bottles and sachets are packaged and branded in such a way to imbue them with locally significant symbolic value which enhances

their worth and, thus, expand the RO market. Recognizing that multiple signs, physical properties, and qualities—combined in the Peircean term 'qualisigns'—are "bundled into a single thing" (Keane 2003, 202), I limit my focus here to just a brief discussion of ways that sealed RO water products in Haiti, specifically handheld sachets and bottles, work to signify a desirable 'purity'.

At the Blue Heaven plant, small polyethylene terephthalate test-tube-looking 'preforms' sourced from China move through a machine where puffs of scorching hot air stretch them in a mold, forming clear plastic bottles.[16] Workers collect the empty vessels and feed them into a longer assembly line that fills each one with RO water (or drink-mix juice), seals them with a blue bottle cap, encircles them with a blue label, and binds them with plastic in packages of a dozen or more. On the other side of a wall, in the center of the factory, sit a row of about seven women on low wooden stools in front of a row of ten tall metal sachet machines; three are out of commission. Two technicians (both men) stand at the ready to make sure the equipment runs smoothly and stays stocked with rolls of polyethylene plastic film from the Dominican Republic printed with the company label. The transparent film is fed into the machine and heat sealed around a squirt of RO water, no more than 300 mL. As the sachets slide down short chutes and gather in baskets, the women collect 30-60 of them—depending on their volume—into large plastic bags that pile in front of them. Directly opposite these workers is the five-gallon jug cleaning, sanitizing, refilling, and sealing assembly line. Not only do these large containers engage users in different projects, they also comprise a smaller portion of the RO water market. Instead, I'll be attending more to the handheld bottles and sachets more popularly consumed, despite their higher price per volume—indeed, life is more expensive for the poor.

[16] In an interesting but hardly random historical synchronicity, polyethylene terephthalate (PET) bottles were invented at a DuPont laboratory in 1973 (Hawkins et al. 2015, 9).

Figure 6-10: An employee gathers and bags Blue Heaven sachets while a technician services a sachet-making machine behind her. This row of machines is located in the additional warehouse at the back of the IKSA compound. Photo by author, 2019.

Included somewhere on almost all sachets and bottles is a description of the process(es) used to treat the water they contain: reverse osmosis, ultrafiltration, ozonification, UV light, or all at the same time. In addition to the brand's name, contact phone number(s), and location of the business is its logo and a slogan. Haitian RO companies will choose to label their brand in Kreyòl, French, or English, with each language conjuring specific affiliations and aspirations. IKSA's Blue Heaven, for example, immediately links it to the modernity and prosperity of the United States and other English-speaking world powers. Against a white and light blue watery background, the words "Blue Heaven" appear frozen, dripping with icicles, above the tagline "pure water." On other marketing materials, the Blue Heaven logo is accompanied by the company's motto, here in French, "Artibonite, une autre image!" and, sometimes, a very light-skinned woman drinking from a bottle. The IKSA marketing director let me know that the depiction of 'image' is intentional: "In Haiti, people think that lighter skin is more beautiful," he said, "so, we use that to get their attention and to sell more product." Other RO water companies include motifs such as water droplets or tropical seascapes of waves and palm trees. The images

and words imprinted on the labels of RO water products do more than literally signal their quality; they also invite consumers to associate them with recognizable and desirable symbols of purity. The replicated images of a brand "function as token-level indexicals (each instance of brand is existentially associated with one instance of a product)," guaranteeing, or suggesting, to consumers that the water in each bottle and sachet will be the same quality as every other of the same brand (Manning 2010, 40).

Figure 6-11: Examples of Blue Heaven marketing materials (Blue Heaven, 2018).

If RO water works by requalifying categories and hierarchies of water—and thus helps to create a market of its worth—we can also consider how its plastic containment "*re*-sources" the water held within. The origins of water within Blue Heaven products, for instance, are in the factory rather than below ground. Elaborating on Zoë Sofia's (2000) essay on container technologies, Hawkins et al. suggest:

> the [plastic bottle] becomes the source of what it holds or preserves. It isn't simply performing a status function because containing is an action in itself; the dynamic capacity of the container is to both hold and *re*-source. […] In the same way that the bottle was designed to be easily handled, with its curvaceous form adapted to the hand grip and to portability, it also allowed consumers to feel they had access to their own personal water supply. The bottle reframed water as an individual resource, helping to transform an environmental and often public resource into a personal possession. (2015, 23)

In Haiti, bottles and sachets have been central to rendering RO water in a serialized form and making it perform like a commodity. The material aspects of RO water containers offer critical qualisigns indexing purity. Transparent sachets and bottles of water allow consumers to see completely through the clear water they hold, while the blue and white coloring that often adorns them invoke pristine sea and sky. The single-use plastic itself indicates the products' modernity, fungibility, and temporality. Opened or tarnished items immediately call into question the

possibility of their contamination; the only pure water within each manufactured bottle and sachet is that with which it came. Being able to consume this water just once and discard the emptied containers signals a boundedness often associated with modernity, keeping the body safe and jettisoning waste.[17]

While it is safe to say that Blue Heaven water is reliably purified, the same might not always be true of smaller, less equipped, or tenuously maintained enterprises. And yet, their sachet products still readily circulate in the RO water market.[18] Before they're opened, sealed containers like bottles and sachets signal purity and afford their possession. This became especially salient in the midst of the Haiti cholera epidemic when water became the primary mediator of disease transmission, fear, and loss. In his seminal work on the semiotics of bottled water, particularly in countries where most of the population has access to clean potable water, Richard Wilk (2006, 310) examines the common assumption that "if nature is dangerous, technology makes it safe. By generic reverse osmosis water is 'pure' because it has passed through a machine," The labor and equipment involved in RO manufacturing add to the natural qualities of raw water certain practical and symbolic qualities, including the distinction between sealed and unsealed products. RO water contained by plastic redefines nature as an asset invested with economic value while simultaneously serving as a reminder that, without water or with contaminated water, people cannot exist. Each bottle and sachet of RO water carries not only the life-sustaining significance of water in general but also the power of technology—and that of those who are wielding it—to protect consumers from the danger of cholera and other contagions.

The thin plastic of handheld RO water products, however, also make them susceptible to qualisigns of impurity: most notably, warm temperature. One day as I waited in the back of a pick-up truck share taxi traveling from Sen Mak northward, I watched a young boy sitting across from me go to take a sip of water from the mostly full Blue Heaven bottle he was holding. But

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[17] In many 'modern' countries, there is the assumption that trash disappears once it is disposed, safely sequestered away from both bodies and the waters they drink. Of course, with garbage buried in landfills or redirected to poorer settings, this is far from the case. As in Haiti, streams bifurcated into waste and consumption stay inseparable everywhere.

[18] That is, until word gets back to the business owner—whether verbally or translated by a drop in sales—that their water seems inadequately treated. I encountered one company facing this very situation in Cap Haitien in 2017: the owner decided to suspend sachet production because his customers had started to complain about the chlorinated taste of the water. He had needed to increase the amount of chlorine added in the water treatment process because his RO machines were no longer functioning effectively.

before it reached his mouth, his mother snatched it away, gripping it to test its temperature. “Dlo sa a cho! This water is hot!” she exclaimed at him. “Don’t you know you can get sick from drinking warm water?” She dumped the contents out next to the truck as she hailed a street vendor selling water sachets out of bucket on his head. “Do you have cold water?” she asked, reaching her arm in to feel several bags. Satisfied, she bought two and, biting off the corners of each sachet, refilled the bottle and handed it back to the child.

The water inside a bottle or sachet can be technically pure, but for many people in Haiti its coolness is just as critical in qualifying that purity. While we can trace the value of cold water to the influence of foreign tastes which expanded in Haiti during and after the U.S. Occupation 1915-1934, or to the development of modern electricity infrastructure allowing for wider access to refrigeration technology, I would argue that its significance is rooted in container technology going back generations. Down the road from Emmanuel and Ti Marie lives one of their close friends, Anthony, who was excited to show me the ancestral kanari that he and his mother use in their home. Kanari are terracotta amphoras of various sizes used to store water; Anthony’s holds a couple gallons at a time. In a dimly lit room in his house, Anthony and his mom keep their kanari under a table, partially buried in the dirt floor:

> This kanari belonged to the grandmother of my maternal grandmother. Not everyone around here has one because they say they no longer need this kind of thing anymore, but many people will come to our house just for a drink. A long time ago, you couldn’t enter a house without seeing a kanari inside. Ours has stayed in our family because it’s been used for so long. My mother and I get our water from the river. We pass it through the [biosand] filter, and then we take that water and put it in the kanari, which we clean each week. It’s a way to store it. An ancient technology. The water in the kanari becomes something different from the filtered water: it has a different taste, and it becomes cold. Moreover, the water you drink from the kanari can’t make you sick. It purifies the water in its own way.

Figure 6-12: An example of a kanari in Haiti (Lekol lavi a, 2020).

Like all containers, kanari aren't simply passive vessels. Rather, they too craft water in particular ways and, thus, craft both people and their water hierarchies. The porosity of terracotta amphoras enables water to slowly transpire through the walls of the vessel and thus chill the jar through evaporation (much like the way sweat on skin helps to cool the body). The round, elongated shape of kanari affords a continuous circulation of liquid: water layers close to the inner surfaces of the container get cooled and, with this increased density, move downwards, pushing warmer water in the center upwards and out toward the walls where it gets cooled. Though few scientific studies have investigated the purifying effects of terracotta, the material abilities of clay amphoras to keep water chilled, unexposed to sunlight, and in constant motion are crucial to the liquid's safe preservation. Once a widely popular vessel used for drinking-water storage, kanari are now a relatively rare object and technology (although they are still being made). But the properties they impart on water persist as meaningful, desirable, and interrelated qualities: namely, coolness and purity.

As the kanari demonstrate, 'purity' as a stable, fungible property is actually a notion held together by particular constructions and assumptions that are actually contingent on relations of difference, mixture, and fragmentation. The crafting of pure water in Haiti challenges White Western philosophy and its pretention to the universalization of historical experience and efforts to neutralize the geography. Container materials play an active role in both mediating interpretations about and making—for better or worse—the water they hold. Indeed, many Haitians express concern that the plastic of sachets might leach carcinogenic chemicals into water held within them when exposed for too long to sunlight and heat. And in fact, as a number of emerging studies are demonstrating, they do. Researchers have found a variety of microplastics in polyethylene packaged water (sachets) (Anayo, Okpashi, & Onwurah 2018) and the toxic chemic element antimony in the water of PET water bottles (Westerhoff et al. 2008) after they've been exposed to extreme conditions. The ways these containers, leaching chemicals and microplastics, craft the waters within them bear on the physiological 'crafting' of people. And as sachet and bottled water consumption grows worldwide, it's a crafting, an exposure, that disproportionately burdens the marginalized and the poor.

Conclusion: Reverse Osmosis Downstream

The 2010 cholera outbreak in Haiti corresponded with another radical osmotic disruption: a massive expansion in the country's RO water market. Just as Haiti's situated specificity shaped the unfolding of the epidemic, the particular historical, regional, and cultural context of RO water production and consumption have also informed the dynamics of membrane technology implementation. I began this dissertation by tracing why and how an increasing number of Haitians are consuming reverse osmosis water. In the subsequent chapters, following the waters complicated by pathogenic *V. cholerae* has brought us full circle to examine how RO water—and the fragmentations, semiotics of purity, and creativity that accompany it—not only works in Haiti but is *doing work* on the people drinking it. RO water is thriving in Haiti because it participates in the fragment work central to Antillanité.

Purifying water by reverse osmosis involves a process of fragmentation, splitting raw water into two streams and discarding that which is left concentrated with impurities on one side of the membrane. Rather than getting disappeared down a drain, this stream remains a meaningful part of everyday life in Sen Mak and elsewhere. Bifurcating raw water separates the permeate from the concentrate but in ways that maintain their relationality. The transformation of water from a natural resource into a manufactured product, and purified substance into a serialized commodity is not simply a process of denaturalization. Requalifying and re-sourcing water help create a market based on worth and organized through logics of standardization, such as single-serve parcels and volumetric measurements. A market which works as both a mechanism of (Mintz 1959) and a device for (Callon 1998) organizing value, attachment, and exchange. The proliferation of RO water's multiple liquid and contained streams in the wake of the cholera outbreak have transformed social relations among humans and the waters they use, reorganizing categories of water and their hierarchies—and often unpredictably. These water ways become a means by which Haitians pursue a daily politics of belonging, regeneration, and mutual awareness.

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Chapter 7 Conclusion

Beyond the Membrane

During a 2017 TEDx talk in Port of Spain, Trinidad and Tobago, Caribbean photographer Nadia Huggins shared a quote by Trinidadian artist, writer, and curator, Christopher Cozier: "An island is a place from which people look out." A situated subjectivity. A positionality girded by the sea. "It speaks to this notion of a boundary, or a point at which you feel as if you can't go any further," says Huggins, who was born, grew up, and lives in the Windward Islands. "But it's really that awareness of a shoreline that provokes this idea of our limitations. Who can we become beyond that boundary of a shoreline?"

While embodying, both ontologically and epistemologically, the 'shoreline thinking' of which Glissant (1997) writes, Huggins's question effectively reverses its orientation. Routes of becoming stretch toward the ocean, instead of away from it as a place of (abyssal) beginning. Hers is the submerged shoreline reflected in her photography[138]—an in-between space in which humans, at least, are always already vulnerable. A boundary "at which you don't think you can go any further." Huggins locates in this vulnerability opportunities for reorienting and redefining "our attitudes toward ourselves and our environments." As such, the boundary marks a tension in becoming and possibility, where processes of erosion and accretion are both spatially and temporally in motion and materially and socially intertwined. Beyond the shoreline we lose our footing, we float and we tread and we sink, we hold our breath, we intermingle with species far better equipped to survive underwater than ourselves, and, in ways perhaps unlike in any other setting else on this planet, we are acted upon. The waters hold us, swallow us, sweep us away,

[138] See, in particular, Huggins's series (viewable on her website, https://nadiahuggins.com/work): *Transformations*, *Circa no future*, *Is that a buoy?*, and *Disappearing people*.

and consume us. And if we attempt to consume them, the sea dehydrates us by osmosis—drawing water out of our intestinal cells, and, in so doing, triggering an influx of salt in response.

Following water brings us to another boundary: the membrane. Throughout this dissertation, the membrane has figured as kind of shoreline site of rupture and beginning from which to 'think'. With Glissant, this 'thinking' is not confined to cognitive functions alone. Rather, it invokes a situated, enacted, and poetic 'bringing-into-relation'. The embodied remembrance, imagining, and creation involved in making a world possible for Black life from the fragments of encounter, disruption, and catastrophic loss. In this way, the shoreline provides a fecund location for salvaging possibilities of living what racist structures would prefer to remain 'unthinkable'. Critical inquiry into the lives and lived experiences of descendants of enslaved Africans in the Caribbean, therefore, warrants a reciprocal thinking from the shoreline: an analytical approach of relationality. As Weheliye (2014, 13) writes, linking these modes of shoreline thinking, "relationality provides a productive model for critical inquiry and political action […], because it reveals the global and systemic dimensions of racialized, sexualized, and gendered subjugation, while not losing sight of the many ways political violence has given rise to ongoing practices of freedom within various traditions of the oppressed." In thinking from the membrane, I've attempted to locate and practice shoreline thinking, even more specifically, in the wake of cholera in Haiti and its related 'osmotic disruption', a massive expansion in RO water production and consumption.

Membranes, both visceral and manufactured, afford boundaries at which to appreciate and investigate relationality. Like a shoreline, membranes physically and figuratively mark a within—a place from which to look out. Inward and outward flow across the membrane is mediated by its selective permeability. In the case of osmosis, water moves across in either direction by forces generated either through concentration (of salts) or mechanical pressure. As such, membranes offer a place from which to evaluate the ways forces condition change, both physically and figuratively. In other words, the tension in membranes, like in shorelines, create room for wonder and possibility. Who can we become beyond that boundary of the membrane?

In *Following Water* I've used membrane thinking to help us understand how and why, when osmotic disruptions like a novel cholera epidemic and a rapidly growing RO water market occurred in Haiti, relations shift or persist between people and the waters they drink. Doing so allows us to extend beyond the membrane and into the poetics of osmosis through which we can

notice spaces and sources of vulnerability and reinvention; trace blendings of the human and more-than-human; situate entangled biological and social processes over time; appreciate orientations of desire and visceral awareness; recognize repeated enactments and uneven atmospheric effects of racial capitalism and anti-Blackness both locally and globally; and cultivate an awareness responsive and responsible to the mutual relations that make unthinkable worlds possible. Beyond the membrane, humans become with the waters they drink. What gets poured into people, and what is that into which people pour themselves?

Beyond the membrane, water subjects the guts to what it holds—*V. cholerae*, dissolved solids, PFAS—and the visceral (and semiotic) implications of purity it holds when it doesn't. As recent scientific evidence about the enteric nervous system affirms, 'gut feelings' can indeed begin in the gut (Underwood 2018; Fung & Berghe 2020). Beyond the membranes that 're-source' it, RO water is packaged in plastic whose material containers and contents shape humans' water ways, biologies, environments, and atomsopheres (Brahney et al. 2021). Beyond the membrane, RO water products circulate—more or less actually purified—in markets that configure humans' values, attachments, and exchanges. The directionality of 'following water' into the relational poetics of osmosis begins to drip with hubris. Beyond the membrane, people get drawn into the relational poetics of osmosis *by* water. Indeed, in each of the previous chapters, water itself proved a principle actant, both crafted and crafting: drinking-water that calls for awareness; a river that coordinates events and desires; rice-water that betrays currents of power; diarrhea that disrupts and reinforces social hierarchies; RO water that reorients water ways. Water moves in the world not just "a substance that connects realms of social life" (Orlove & Caton 2010, 401), but one that also fills bodies, actions, processes, and ideas. If water is suspended as vapor in the atmosphere, we might wonder, how too does it hold and precipitate racism?

Water may subject guts to what it holds, but not all guts are subjected in the same way. Shortly after the Haiti cholera outbreak began in October 2010, Dr. David Sack, a leading global health epidemiologist and cholera expert based in the United States, asserted in an interview that "anybody can be at risk [of getting cholera]—it's one that can kill healthy people quickly. We usually think a lot of these diseases will preferentially hit the malnourished or otherwise vulnerable. But cholera is something that can affect anybody" (Harmon 2010). As cholera raged across Haiti, was *anybody* really vulnerable to catching it? In the interview, Dr. Sack goes on to

explain that there are certain biological factors that can possibly increase someone's risk of becoming ill once exposed to toxigenic *V. cholerae*, including decreased stomach acid production and having type O blood. While these traits may affect an individual's vulnerability to developing cholera symptoms at a physiological level, they in no way exceed the influence of social, economic, and structural factors that place certain bodies at greater risk than others.

Situating biologies challenges the biomedical assumption of a universal body. As Niewöhner and Lock (2018, 692) write, "our permeable skin-bound selves comprise a collection of ecosystems of miniaturised communities that are products of our evolutionary past, more recent historical events, and of social and political contingencies of many kinds." Cast in the plural, however, as Adrienne Rich (1986, 217) reminds us, we must not lose sight of whom we mean when we say "we," lest we perpetuate the disavowal of difference. In Haiti, the circumstances favoring *V. cholerae* exposure and disease transmission tracked most powerfully along fault lines of income and access to safe water and sanitation. But the very fact that pathogenic *V. cholerae* was introduced into Haiti's waterways, as I've argued throughout this thesis, is linked indelibly to the historically, socially, and politically contingent disparities, states of exception, racist environments, and karavàns of coloniality that facilitate(d) its spread. What implications arise, though, from situating the cholera outbreak's rupture in "the wake"—the perpetual state of "slavery's as yet unresolved unfolding" (Sharpe 2016, 14)?

As I shared in the introductory chapter, the Pan American Health Organization declared on January 23, 2020 that "the cholera outbreak in Haiti that began in October 2010, affecting over 800,000 people and killing 9,792, has been stopped in its tracks." Since then, no cases of cholera have been confirmed by laboratory analysis for over a year. At this rate, by January 2022, the epidemic will have been officially eliminated. That disease transmission in the deadliest cholera outbreak in recent history has ground to a halt—by official metrics—in no small way reflects the incredible efforts of Haitian health workers, public health officials, and their international partners. But this register of exceptionalism, whether exceptional disaster or exceptional success, ultimately works to simultaneously "[mask] the negative contribution of the Western powers to the Haitian situation" and restrict "Haiti's integration into a world dominated by Christianity, capitalism, and whiteness" by evading comparison (Trouillot 1990). PAHO doesn't mention, for instance, the everyday practices in which many Haitians engage to safeguard their health and the health of their communities.

In *Following Water*, I've attempted to recuperate what I identify to be a poetic and lateral—though not unproblematic—form of care in the wake of cholera: RO water production for and by Haitians. Black people sustaining Black life in light of preordained death; and perhaps that's why it has remained largely invisible, invalidated, and discounted within the wider realm of public health discourse. My focus on RO is not to romanticize or celebrate the manufacturing of drinking-water. Indeed, situated within systems of capital, companies like IKSA readily exploit not simply the aquifer below Sen Mak but also the labor of their workers, most of whom from what I was told were never given formal contracts of employment. How ordinary, isn't it? And, as I've made the case through this dissertation, worthy of study. The burgeoning RO water market in Haiti reflects the fragment work of creative survival in the material and social ruptures and complications borne of epidemic cholera and, relatedly, of coloniality, racial hierarchies, capital, and the 'stealth revolution' of neoliberal logics. Amid the outbreak, a nascent proliferation of membrane technology worldwide mapped onto local motivations to provide safe and affordable drinking-water to community members as well as the gathering momentum of water commodification promoted in Haiti starting decades before pathogenic *V. cholerae* leaked into its waterways. While it's reasonable to decry the amount of plastic pollution accruing as a result—and many Haitians do—we must also ask why the plastic packaging of water commodities became normalized globally in the first place.

After the End

In late February 2019, I received the message I had been dreading for nine months. "Sonson is dead," several friends wrote to me separately. "He got sick with cholera at the prison and died at the cholera treatment center in Mibalè." They sent photos of his thin body, thinner than I ever remembered, sitting on a wooden cot at the CTC, IV in his tattooed arm, hair shaved (the police had shaved his dreads at the prison), tears welling in his sunken eyes. He died a little less than a month after the supposedly last reported case of cholera in Haiti. No laboratory cultured his stool. No authority confirmed his case. I can only hope that his name was recorded in one of the thick registration books stacked on the nurses' desk at the CTC. But to PAHO, to the UN, to those who had condemned him, he was already dead. To them, the official end of

cholera matters more, while another camp raises concerns in opposition, recognizing that national and international disinvestment from treatment, laboratory, and surveillance infrastructure makes declaring cholera's elimination tenuous at best. On both sides of the debate ring echoes of Haiti's exceptionalism working to perpetuate its subjugation.

I offered to help pay for Sonson's funeral; my brother also chipped in, having met Sonson during a trip to Mibalè with me in 2018. Several days later, more photos arrived. This time of Sonson dressed in a black suit, eyes closed, laying in a modest casket at his wake. I grieved for my friend from thousands of miles away, raged at the unfairness of his passing, seethed at the institutions that killed and then discounted him in his death. I still pour out water for him, remembering that he—then in prison and now in Guinin—is also thirsty.

Even with Sonson buried, whether or not the epidemic is over, its own wake continues. The catastrophic loss, the precarities of rupture, the collective trauma, and the disasters of coloniality, racial capitalism, and racist environments that recurred in cholera continue to unfold in the lives of Black people worldwide. As Christina Sharpe (2016, 20) asks, "How do we memorialize an event that is still ongoing?"

> Have you come to die in this wreckage or to see for yourself
> The lushness of a place built upon salt? Have you come to
> see
> The extent of this blood poured down your paths:
> whiteness
> Where at times nothing grows but bursts of inebriated light. And I
> Will remove from your eyes the taste of darkness made safe, so in
> the end
> You mourn this blood, this place, this corpse.
>
> Édouard Glissant, excerpt from "Carthage" (2005 [1994], 112)

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