

Abstract

This dissertation investigates future climate rhetorics of Belize through a variety of methods in order to mediate the various conceptions of the future professed in climate policy, experiential phenomenology, and acoustic ecologies of agroecology. Chapter one considers the values embedded in climate change policy documents, specifically the Nation Communications documents composed by Belize's various ministries since the country signed to the Paris Agreement in 2016. Using the People's Agreement of Cochamba as an alternative lens, the chapter explores how people-centered, as opposed to market-centered, attunements informing climate policy can potentially lead to a more just, equitable future that does not rely on technocratic knowledge and the maintenance of colonial relations. Chapter two delves into a case study undertaken by the researcher at the Trio Farms Cacao Association's cacao agroforestry concession to glean how the farmers working in this system conceive of changes in their labors as a result of increased temperatures, increased rainfall volatility, and increased incidents of natural disasters, proposing the 'rhetoric of hope' to discuss the futures projected by the farmers in spite of the industry's bleak outlook. Chapter three builds from the case study through a sonic rhetoric performance writing experiment using passive acoustic monitoring (PAM) devices deployed in the concession to discuss audible perceptions of biodiversity and harmony in order to demonstrate mediations rhetoricians can provide to discussions about the role of human 'ear ring' amid the rise in machine 'listening.' The fourth chapter uses the insights of the previous chapters to develop a narrative in the method of what Aja Martinez's terms 'counter story' in order to conceive of alternate futures wherein Belizeans might alter their political trajectory towards equity and wellbeing during a time of extreme heating events and collapsed global

supply chains. The dissertation then concludes by discussing insights about the methods used in the dissertation that might be improved for repeatability as well as how aspects of the researcher's life as an environmental activist have informed the work herein.

‘Future Climate Rhetorics of Belize’
A Counter-Apocalyptic Inquiry into
Belize’s Possible, Probable, and Preferable Futures

by

André Habet

B.A., University of Houston, 2012

M.A., Oregon State University, 2015

Dissertation

Submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy in
Composition & Cultural Rhetoric.

Syracuse University
December 2022

Copyright© 2022 André Habet

All rights reserved

Acknowledgements

To begin, thank you to everyone in the networks of people who facilitated my ability to complete the field work for this project in the midst of the Covid-19 Pandemic in 2020, especially all the frontline health workers who continue to risk their health to care for many.

Thanks to the people at Ya'axché Conservation Trust for connecting me with the Trio Farms Cacao Grower's Association. Thanks to my collaborators Mr. Manuel Tuc and Mr. Bell Rash for their time, insights and permission to deploy the passive acoustic monitoring devices in their cacao plots. Thanks to Mr. Rash's son for providing me transportation several times to the concession from the village. Thanks to all of the gas station attendants who continued to work amid the pandemic. Thanks to my Tio David, and Abuelo Salvador Habet and Abuela Marta Habet who lent me their cars on several occasions to travel the 121 miles to Trio Farms village once the buses stopped running.

Thanks to the designers of the Audio Moth passive acoustic monitoring device who graciously answered my questions about its utility for this project, and to the workers that manufactured the devices in China as well as those involved in the shipping networks that made them available to me in Belize, including the people at Belize Freight Limited and the unionized stevedores at the Port of Belize.

Thanks to Diego Coelho who helped me with the R coding necessary for chapter three.

Thanks to the employees at the National Climate Change Office for their time providing background on the National Communications documents. It's not easy to project the future, and I appreciate what you've been able to do in the face of limited resources.

Thanks to the Graduate School at Syracuse University for providing me with a Graduate Research Fellowship that helped fund my research. Thanks to the Composition and Cultural Rhetoric PhD program for providing me two years of work post-fellowship during which most of this project was completed.

Thanks to Sam and Luz at Corkers and to the baristas and Wings and Feathers, and Formosa Cafe for the space-time where much of the writing for this project occurred.

Thanks to my friends Edward Garza, Jairo Razo, Quince Banner, Corinna Rosendahl, April Martinez, Miriam Loh, Christopher DeShields, Melina Melhado, Don Hoong Cho, Laura McCaughey, Elicia Habet, Jewell Bohlinger, James Mejia and Diomne Habet for their kindness and friendship throughout the course of this project. I hope to be a more chill person now, but no promises.

Thanks to all the poets, storytellers and filmmakers whose work continues to inspire me to think more deeply and fully. Thanks to all the dancers, freaks and ravers with whom I've traded sweat and lifeblood.

Thanks to all the activists, unionists, and organizers fighting in Belize, Syracuse, and internationally for an equitable future, as well as the journalists recording their stories. I truly believe that with internationalist intersectional solidarity we will achieve a better future for all. We must.

Thanks to all the trees that provide shade to people and cacao and homes to many other animals. In Belize, the country motto is 'Sub Umbra Floreo', translated to 'Under the Tree We Flourish.' Although originally a colonial-era reference to the protection provided to this land by

British empire, me and many others have retaken it to be about our relationship to the flora of this land, and the rest and care we all will flourish under.

Thanks to the scholars and educators in Belize who laid the path for this work to follow.

Thanks to my committee members Aja Martínéz, Genevieve Garcia de Mueller, Patrick W. Berry, and Timur Hammond for their grace in engaging with my work thoughtfully and rigorously.

Thanks to my doctoral cohort Bene, Noah and Alex. I was extremely fortunate to share my time at Syracuse with a group of people as brilliant, kind and delightful as you.

Thanks to my cousin and film collaborator Carlo Habet for the opportunities to work in a medium I love, and encouraging my artistic pursuits.

Thanks to my companion animals Waldo, El Niño, Trinity, Arianna, Roasalia, and Shakira who gave my life structure and quiet joy in a time lacking both. Grateful to share a little home with you furred and feathered ones.

Thanks to my Father, Dr. Jorge Habet, who provided me financial support to pursue a humanities education in spite of his misgivings because he understood my enthusiasm and commitment.

Thanks to my brothers-in-law, Chris Bowen and Allistair Scott, for the opportunities to share insights and moments of relaxation.

Thanks to my sisters Stephany Bowen and Gabriella Scott for always keeping me in check, and for allowing me to be more of myself than almost any other people. I am eternally grateful and humbled to be your brother.

Thank you to my niblings Theodore, Scarlett, Maximilian and Allistair Jr. So much of this work was motivated by wanting to conceive of a better future for you.

Thanks to Eileen Schell, my dissertation chair, who encouraged me to take this project in its various trajectories, and believed in this work in all the instances when I was ready to give up. I will forever appreciate our conversations about labor, climate anxiety and grief, and all that can yet be saved.

Thanks to my Mom Dr. Marta Habet who supported me from day one and has loved and lifted me through everything. The world that would've been without you is not one I ever want to imagine.

Lastly, thanks to all those who these acknowledgements did not include by name. There are so many whose labors are relegated to the background without whom this project could not be conceived. I appreciate all the energy put, directly or not, into making me move each and every day.

Table of Contents

Abstract	
Title Page	page I
Copyright Page	page II
Acknowledgements	page IV
Table of Contents	page VIII
List of Illustrative Materials	page IX
Introduction: ‘A New Heat’: Narrowing Horizons In A Warming World	page 1
Chapter 1: ‘The Future Already Written’: The Climate Imaginaries of Policy Documents	page 24
Chapter 2: Cacao Agroforestry and Rhetorics of Hope: A Micro Case Study in the Maya Golden Landscape	page 53
Chapter 3: Sounding Out for Harmony in the Agroforest: The Role of Human Earing In The Era of Machine-Listening	page 73
Chapter 4: ‘Cool Down’ A Belizean [Counter]apocalypse Future	page 95
Conclusion: Extending Climate Research Into the Public Sphere	page 128
Appendix	page 144
Works Cited	page 149
Vita	page 174

List of Illustrative Materials

Figure 1: A map illustrating the location of the Trio Farms
Cacao Grower's Association's Concession————— page 54

Figure 2: A map of the concession including
the boundaries of the various farmers' plots—————page 55

Figure 3: The Audio Moth Configuration App with
Recording setts configured for project————— page 74

Chart 1: A line chart illustrating the acoustic complexity of each recording
across the eighteen day recording period at Tut's cacao plot, location 1—————page 80

Figure 4: Figure 4: An illustration from Hancock and Bezold's 1994
paper 'Possible Futures Preferable Futures' depicting how the present
extends towards 'possible' , 'plausible' , 'probable' and 'preferable' futures.———page 96

Introduction: ‘A New Heat’: Narrowing Horizons In A Warming World

‘This da wa new heat’, my Father said after I moved back to Belize in 2019, a year and a half after I last visited home. Ten since I first left the Jewel. We were standing in my mom’s kitchen late in the day I arrived, the dining room air conditioning humming nearby as my dad grabbed the front of his collar and tugged at it a few times to cool the space between. It was a heat unprecedented for May, a time of year that in my childhood gently marked the transition to summer, providing a month’s interim before the summer heat pronounced the start of the hurricane season in June. The heat of that 2019 May day was such that under direct sunlight the layer just under my outer skin’s surface felt as though it was being cooked to medium-rare, smoke of the body bleeding in with the humidity. I felt the heat he was referring to the instant I deboarded the plane that brought me back home. I’d been learning more actively about global warming since starting my PhD in 2016 and reading Rosaleen Duffy’s *A Trip Too Far*, three months prior to the U.S. election that took Trump to the presidential office where he proceeded to dismantle any momentum the U.S. federal government had gained in enacting broader climate change mitigation policy, best encapsulated in his deregulation campaign of the Environmental Protection Agency and withdrawing the United States from the Paris Agreement.

My uptake of contemporary environmental discourse demonstrated how environmental degradation intersected with capitalist extraction projects and abusive labor practices. Learning about all this unsettled my intentions for pursuing post-bacc education in the humanities. Suddenly, the study of composition seemed to me what others had long felt it was: a dilettantish exercise that was not in keeping with the problems of the world. The impact of this

environmental education on my professional pursuits catalyzed a time of personal despair regarding the most probable future, and my position within it. Scholarly areas of interests that previously held priority, comics authorship and the globalization of U.S. composition pedagogy did not correspond with the literacies I felt the most pressing need to develop. I refer to this period not in a bid for sympathy, but because it is that affective quality of climate change consciousness-raising¹ that scholars like Kari Norgaard argues perpetuates continued climate change denial in parts of the world whose own reckoning are not yet as direly felt as frontline communities in other, more vulnerable regions (*Living in Denial*). To my mind, Belize's vulnerability to rising seas, increasing regularity of hurricanes, and volatile rainfall patterns inevitably led to the country's own brand of apocalyptic tragedy with little means of prevention or mitigation. My personal distance from the site of my home after years away for institutional learning enlarged the magnitude of that impending disaster much in the same way that Lovecraft's mythos expanded in horror due to its ambiguous descriptions.² Returning to Belize to confront with my family such unprecedented shifts in life became more psychically feasible than maintaining the denial or ignorance that geographical distance fostered. My move intended to displace the unknown and sudden apocalypse of my mind with an embodied, and banal understanding of global warming's impact on having a viable life in Belize.

My repatriation was also motivated by the increased visibility of global south movement work from collectives such as the indigenous peasant farmer 'The Campesinos' movement and

¹ Arguably, any shifts in consciousness produces such resistance without support and time.

² Not coincidentally, Donna Haraway and others has taken to renaming the anthropocene as the Chthulucene after Lovecraft's most infamous Old God, Cthulhu due to the manner in which it signifies a reforming of the world into something formerly unknowable (Haraway 2016)

global agriculture and climate resilience networks such as Regeneration, 365, and Extinction Rebellion. Additionally, anti-capitalist experiments such as the Argentinian bartering movement, anti-capitalist orientations such as Bolivia's *buen vivir*, the Zapatista concept of pluriversality as well as mutual aid networks induced a desire to learn about any such existing communities in Belize. Returning, I wanted to glean how such collectives have formed in Belize in resistance to hegemonic modes of production that were deleterious to the environment and its workers. I also wanted to participate in them as a means of personal survival and reenvisioning how a life lived in greater accordance with the non-human world might appear in this part of the world as feasible and desirable, an aspect of the project's motives that I came to understand differently over the course of the fieldwork.

All that to say that I understood that what my dad was saying that May day wasn't hyperbole. This 'new' heat would be one of the embodied phenomena that global warming would require us Belizeans to adapt to, and though my family that evening and for the time-being has been able able to secure temperature stress relief through energy-intensive climate control technologies, others swelter away in homes, some made of sheets of zinc or other heat-conductive materials, just a few miles from the one I grew up in.

In addition to considering climate change's direct impact on human living conditions, I also sought to better understand how climate change may impact food systems. These systems of food production and distribution rely on a notion of seasonal predictability that climate disruption undermines, increasingly putting farmers of all scales in a state of desperation regarding their future. Nationally, farming in Belize has been divided according to scale with large farmers, as is typical elsewhere in the world, producing crops intended for exportation to

other regions where global north institutions regulate prices nominally with the interest of protecting food producers from more dramatic market fluctuations, but in practice often removing industrial agricultural corporation's need to better inform pricing to reflect the labor needed and the environmental degradation brought on by processing those crops, such as Belize Sugar Industries (BSI) refineries, which have consistently been blamed for pollution of the New River ("DOE Tells ASR/BSI to Quit Dumping Spoilt Molasses In Ponds", "Worrying Fish Kill in Orange Walk", "BSI Struggling with DOE's Demands"). The industrial agricultural companies have already been impacted by climate change's effects in the form of hurricanes destroying viable crops, and volatile rainfall limiting the productive capacity in recent years. Organizations like BSI have been able to secure climate change mitigation and adaptation funding through international financing that seeks to maintain the mechanisms of industrial agriculture and its ability to generate the foreign exchange needed to pay international debts. Meanwhile, small farms in Belize as elsewhere (Shiva, *Who Really Feeds The World?*) produce the majority of food consumed by humans locally, and yet are not envisioned as stakeholders whose understanding of shifts in climate should inform national climate change policy.

It took me a year to reacclimate to the mangrove ecology on the Central Belize coast, getting accustomed to my shirt dampening with little exertion, my face and hair always bearing a layer of oil, and growing tired after only a few minutes outdoors in direct sunlight. My Abuelo bought the tract my mom's house occupies in 1990 with the intent of developing it into a residential area for him and his wife's home, his seven children's families, and possibly even some of his grandchildren's eventual families. It now features six homes occupied by my

extended paternal family while the rest remains in various states of terraforming for human occupation, including a lot I received a few years ago on which currently resides a new growth of mangrove. The complete tract was an ambitious project with the intention of offering my paternal Abuelo's lineage housing security, both in terms of the ability to have a home without concern of defaulting on individual loans for securing land to dwell on as well as secure in its remoteness from other people residing in Belize City, strangers assumed to pose a threat to the financial capital that my paternal extended family has accrued through their own capitalist enterprises. My paternal Abuelo lacked either form of housing security as a youth growing up in Benque Viejo del Carmen, a town that borders Guatemala where his mother immigrated from in the early 20th century as a child. At the time of the lot's purchase, mangrove covered the entire area from the Caribbean Sea's coast to what's now the George Price Highway. To make it habitable for concrete homes, the preferred construction material for long-term settler dwellings in the country, the mangrove had to be cut then required at least six loads of clay earth to fill the territory as an initial foundation. Any large and heavy infrastructure requires a foundation composed of concrete piles driven deep into the earth until it hits harder terrain to prevent the structure from sinking in the marsh territory. This place, still thought of as the centerpiece of my Abuelo's legacy, is now under environmental threat, a mere twenty-five years since my family first moved in.

My immediate family (mother, father, two sisters, and myself) moved in shortly after my second sister was born in 1995. For a time we were the only people around for at least a mile and the mangrove encroached on all sides that limited outsiders' knowledge of our occupation, making evident our trespasses in formerly unperturbed areas. When my uncle's family moved

into their own home across the street two years later, my cousin Bryan and I passed entire summer days outside looking for small crabs to cage and torture, romping through the mangrove, and playing in hills of exploded and pulverized mountains of various grades, brought in and piled for future uncles' homes. We regularly plotted our escape from the area that would soon resemble a small suburb. I had a Sega then a Nintendo 64, but still we continued our time outside, retreating indoors more often for snacks than for a reprieve from the heat. At night I slept in my room, the one furthest away from the sea, under a comforter, surrounded by four concrete walls, and was cooled by the air circulating from two windows and a ceiling fan whose gentle wobble lulled me to sleep as I gazed above me at a neon green solar system.

Before climate change became the more commonly used term, global warming was the terminology under which anthropogenic impact on the planet's climate cycles was referred. I grew up in the 90's when global warming in the public discourses I was familiar with³ largely referred to in terms of the o-zone layer's depletion as a result of the abuse of various chemicals that hindered its ability to shield beings on Earth from the more harmful solar and other celestial rays. Even then the course of that global issue seemed to be on its way to some form of resolution through the Montreal Protocol first ratified in 1987 to limit the use of products deemed most contributory to ozone depletion. Greenhouse gas emissions weren't a part of that conversation, and the notion that much life on Earth was already at significant risk of the consequences of extraction projects would have sounded extremely alarmist. As part of Belize's then growing upper middle class, I was nurtured to believe that I was on a path towards even

³ US national network media outlets (NBC, CNN), two Belize television stations (Channel 5, Channel 7), a BBC radio affiliate available due to occupying British Royal Airforce personnel, less than five local radio stations (KREM, LOVE, WAVE), and national newspapers (*The Reporter*, *Amandala*, *The Belize Times*)

greater socio-economic comfort and prestige than my parents. Recalling that state of mind, and the conditions in which that emerged, makes it easier for me to empathize with those who seek continuous socio-economic class mobility as the means to defend themselves against the worst of the world's issues that are becoming increasingly inescapable. More importantly, it also compels me to reckon with the privilege of only more recently coming into an understanding of human's shared fate with the non-human world, an apocalyptic vision that indigenous communities the world over and in the region have long been privy to after seeing their world razed by settler-colonial governments and the ongoing ways in which environmental racism facilitates the continued harm of BIPOC communities in Belize and elsewhere.

Recently I've caved and started to use my air-conditioning during my daily workouts when the weather hovers around 95 degrees Fahrenheit, humidity leaving one constantly dewy. Incidentally, an acquaintance working remotely since the pandemic hit told me that he didn't mind the change, but that he missed one thing about the office: its air-conditioning. With each use the juxtaposition of the energy-intensive room and its external environment has only gotten more jarring. I exit my room and feel my skin pricked by the heat, humidity invading my insides at the encounter. I shut the door to seal in the already-dissipating cool air.

I am one of the lucky ones. Socio-economic class privilege facilitated my ability to pursue Western higher education outside Belize. This put me in the small group of Belizeans who have jobs requiring minimal manual labor and therefore less cause to exert myself physically during the day beyond my own preferences. My awareness of this privilege, coupled with my work in global warming on farmers, has increased my sensitivity to signifiers of a shifting

climate, particularly the conditions that make human life tolerable in Belize, the mitigation of flooding and droughts, access to habitable land, and concerns about heat. For instance, prefabricated homes are increasingly made of zinc and given a veneer of wood, possessing little ventilation. On days exceeding 90 degrees Fahrenheit, these structures often become uninhabitable as the zinc magnifies the heat, the very walls burning on contact, and forcing their residents outside to wait out the hottest hours. This desire to expand the sensorial information I could interpret within climate change analysis propelled me towards acoustic ecological work. I began to ask how those in frontline communities articulated and discussed global warming, how changes in their acoustic ecology were interpreted, and where they sought expertise from institutions for the purposes of climate change mitigation and adaptation strategies. With my rhetorical training, I was interested in knowing what literacies facilitated the uptake of such strategies, and how climate change discourse circulated between frontline communities who confronted daily the obstacles of global warming and national policy-making institutions.

Climate Change Research in Rhetoric and Composition

Composition and rhetoric in the past three decades have taken a more earnest interest in how places beyond institutional classrooms can become sites of study for those in the discipline, and how rhetorics operate in those spaces and inform students' compositional labor. In particular, work examining the ecology of writing has started to move away from its earlier metaphorical application to considerations as to how human and non-human interdependence disrupt traditional understandings of writers operating within a vacuum (Dobrin and Weisser, "Introduction"). It is from this ecological discourse, as well as those regarding indigenous sovereignty, that discussions of global warming have been occurring (Davis and Todd, Watts).

Rhetoricians and composition instructors are now recognizing the need to articulate analytical frameworks that attend to changes occurring on an unprecedented geological scale due to human activities, activities that vary dramatically among socio-economic class, communities, and nation-states, as well as the climate imaginary in which those rhetorics operate.

Environmentalists, climatologists, along with farmers, and fisherfolk, regard the grand acceleration in the planet's warming as a marker of a new geological epoch most commonly referred to as the Anthropocene. When atmospheric chemist Paul Crutze coined the term Anthropocene, one Marxist strain ascribed the start of the Anthropocene, popularly referred to as 'the golden spike,' to the invention of the steam engine in 1784 (Mirzoeff 19). However, there remains significant contestation to the actual start of this epoch, a date with significant political consequences as each date carries its own array of critiques and support about capitalism, Western imperialism, white supremacy, reliance on patriarchal petrochemical energy, indigenous genocide, and/or food sovereignty. Since Crutze coined the term, a wide range of dates have been offered extending from the invention of agriculture to the arrival of the Europeans on Turtle Island in 1610 and to the mid 20th century, the date used by the International Climate Group "due to the fact that so many measurable anthropogenic changes began at that moment" (Davis and Todd 74). Whatever the working date, most groups agree that what defines the anthropocene is "a time interval marked by rapid but profound and far-reaching change to the Earth's geology, currently driven by various forms of human impact" (Smith 2).

Publications in rhetoric explicitly concerning global warming usually focus on integrating ecological and sustainable thinking into the composition classroom (Owens, *Composition and Sustainability*) or focus on the rhetorics employed in a relatively clearly defined instance of

environmental activism (*Text + Field, Participatory Critical Rhetoric*). Michelle Comstock and Mary E. Hocks, on the other hand, have completed substantive rhetorical analysis focused on the manner in which global warming is attended to sonically by sonic artists ('The Sounds of Climate Change') and composing soundscapes as a case study in a composition course to foreground the labor of composing ('Composing for Sound'). Thomas Rickert's *Ambient Rhetoric* considers climate change on an affective level in one of its later chapters, exploring how climate change represents a misattunement between human and the more-than-human world. Rickert's book makes a strong case that rhetoricians are well-suited for analyses of global warming communications and its impact on human's ability to dwell. Philip Eubanks' *The Troubled Rhetoric and Communication of Climate Change: The Argumentative Situation*, released in 2015, is considered the first book-length treatment of climate change by a rhetoric scholar. In it, Eubanks examines the discourse around climate change in the U.S., particularly its vitriolic affect and how the discourse is shaped by factors that constrain the ability to respond to the phenomenon. Eubanks' text functions as an entrypoint into climate change for rhetoric scholars, but is limited by its U.S. orientation and its concern with largely alphabetic textual documents. Building on Eubanks' work, Lauren Cagle and Carl Herndl more recently analyzed a Reddit discussion forum concerning climate change. This investigation yielded insights into how such forums can be a site for deliberative democracy on the subject of climate change with the potential of shifting denialist's orientations.

One of the limitations facing rhetoricians in making interventions in global warming research has been the scale at which such research is most typically conducted, often assessing hectares of territory or entire global networks of air and ocean currents and animal migration,

requiring extensive funding, large teams atypical to humanities projects, and specialized technical knowledge. Another constraint has been the lack of humanities-specific methods that extend beyond the study of alphabetic texts, or that analyze global warming documents used by organizations and nation-states involved in dictating global warming policy. As a result, most projects concerning rainforest ecologies and global warming mitigation are taken on by collaborative teams of biologists, ecologists, and conservationists, using methods still not typically cultivated in humanist training and often illegible without extensive scientific literacies. My project extends and complicates the work on climate change that rhetoric scholars have attempted through a rhetorical reading of global warming policy pertaining to Belize and a site-based acoustic study of a Q'eqchi Maya community's agricultural practices in Belize.

The Q'eqchi' Maya of Belize: Their Fight for Communal Land Sovereignty

My project is designed to occur with the collaboration of Belizean farmers and their support systems in Trio Farms, a village in Belize's Toledo district, mostly populated by people of the Q'eqchi' Maya ethnic group reliant on agriculture for their subsistence and monetary income. Contemporary Maya groups in Belize are typically listed as the Yucatec, Mopan, and Q'eqchi', each of which are communities that mostly recently migrated to different parts of Belize from neighboring former European colonies often displaced from their territories by settler-colonizers. The Q'eqchi' Maya, a group that returned to Belize in the late 19th century after being driven out of Guatemala, have gained international attention for their legal campaign to officially acquire rights to lands they've occupied for at least 100 years. They have repeatedly been denied the ability to own land in Southern Belize, in part due to their semi nomadic migration pattern. Richard Wilk, one of the most prominent global north ethnographers of the

Belize Maya argued in the original publication of *Household Ecology* that he found no evidence of the Q'eqchi' Maya or their supposed ancestral group the Manche Chol (Wilk, 'Preface') living in Southern Belize prior to the 19th century. Wilk's book was then regularly cited to argue against giving the Maya territory based on previous ancestral occupation.

The most populous group at the time of *Household Ecology*'s initial publication were black Creole, descendants of West African slaves and the British colonizers, who considered themselves the inheritors of Belize following the displacement of the ancient, 'mythical' Maya and the departure of Baymen following the depletion of the Belize logwood industry. In the preface to *Household Ecology*'s second edition, published a decade after its original release, Wilk expresses his regret regarding the ways his argument was taken up as a means to deny Q'eqchi' Maya the rights to occupy and farm territory. Villages such as Conejo and Santa Cruz, which are fairly isolated and populated primarily by Maya and Central American mestizx people, were among those whose occupancy was put in jeopardy after the national government started to grant logging concessions to areas overlapping with their territory (Anaya). Prior to these concessions, the various Maya communities lived in Southern Belize under the auspices of living on 'reservations' though these territories labeled reservations could quickly change status without due notice.

It is during the period from 1997 to 2007 that the Belize Maya Movement was at its most active, working in conjunction with a representative from the University of Arizona's College of Law Indigenous service (Wainwright, Jiang, and Liu). In 2001, Prime Minister Said Musa created a 10-point agreement with the Maya, outlining several policies he would enact to benefit the communities represented in the Toledo Alcalde Association. However, Musa and his

administration failed to uphold the agreement outside of ending the rate of logging concessions they were granting at the time. Santa Cruz and Conejo residents rallied at the House of Representatives in Belize's capital in 2007 to present their lawsuit. After an extended legal battle, the Belize Supreme Court decided in the villagers' favor later that year, granting them land in Southern Belize. This decision marked the first instance that a country's law was made in reference to the United Nations Rights to Indigenous Nations. The ruling however did not result in any policy action, and soon after one of the Maya Movement's most visible leaders Julian Cho died under mysterious circumstances (Wainwright and Bryan), the Movement diminished shortly after. Discussing the cause of the Maya Movement's inactivity since 2007, Wainwright, Jiang and Liu argue that the legal strategy employed by the movement reduced opportunities for members, especially women, to engage. The legal strategy's preference towards technocratic knowledge resulted in little remaining for most folks to do.

One issue the Maya continue to face is how the national government regularly uses them as a scapegoat when discussing deforestation occurring in southern Belize. About this, the GOB has accused the Maya of employing slash 'n burn techniques that they state quickly deplete the land's nutrients. Joel Wainwright (2009), using satellite imagery, illustrates the falsity of this accusation, remarking on deforestation's most obvious culprit being companies provided extraction concessions by the national government, decisions often done with little to no consultation from those communities most directly impacted.

Like other indigenous groups, the pre-Classic Maya have been romanticized within the national narrative of Belize yet their contemporary counterparts continue to be treated as an unwanted presence (Medina). The Belizean government considers them disruptive to economic

development with their ‘backwards ways’ despite several of their communities being highly instructive to other agricultural communities, such as the Mennonites, in farming techniques and literacies that best corresponded with Belize’s tropical climate (Trapasso). In part then, this project takes as one of its goals a taxonomizing of those literacies as a contribution towards a revisionist history of the country that recognizes their long standing connection to Belize’s territories, especially as it relates to preservation of the foodways they have established and maintained in the face of displacement.

Description of Acoustic Ecology Field Site and Text for Analysis

My dissertation project takes as its main field site the Southern rainforest of Belize where a community of farmers collectively known as the Trio Farms Cacao Growers Association (TFCGA), working with the advice of the NGO Ya'axche Conservation Trust, has developed a tract of land into a community concession where they are growing cacao using agroforestry methods. In collaboration with these two groups, my project examines the ways that human and non-human activity work within these spaces as a means of both forest regeneration and a source of sustainable income for a marginalized ethnic community whose stewardship over rainforest territories in Belize has come to be seen as an integral aspect of climate change mitigation, the forest sequestering carbon that would otherwise contribute to global warming’s acceleration.

The data of my research project examines the rhetorics of global warming as it relates to this community at two tiers: 1) an analysis of National Communications assembled by Belize’s National Climate Change Office in accordance with UN requirements for developing countries seeking to acquire funding to advance climate change mitigation projects, and 2) audio recordings and interviews taken at the concession using the recently developed Audio Moth

passive recorders (Hill) and a Tascam DR-05 handheld recorder. By engaging in this dual methodology, my goal is to reckon with the congruities and discrepancies between the way the Belizean government articulates global warming to an international audience and the manner in which an indigenous farming community phenomenologically experience global warming's impact on their, and the surrounding ecologies, lifeways and how they project global warming's forthcoming impact. This latter component of special significance as shifts in rainfall have resulted in the extension of cacao production from a six month growth period to year-round. The final chapter of the dissertation then uses the policy analysis and case study as a springboard to envision two futures where people in Belize City, my hometown, cope within a warming world. Both narratives exist at the same time and place with the major change being a reconfiguration of society due to radical policy changes that foreground equitable well-being, sustainability, and temporal flexibility.

This project employs three avenues to explore the rhetoric's of Belize's climate imaginary. The first combines analyses of traditional alphabetic texts, specifically global warming documents composed by state and intra-state organizations regarding Belize and the Caribbean and the Central American geographic region, both of which Belize belongs to as a member of CARICOM and Central America Integration Systems. The latter method involves a sonic component intended to account for species richness and species diversity in Belizean succession forest as well as serve a critique of the efficacy of field recordings as a tool for forest conservation and global warming action.

In the case of tropical rainforest, several studies conducted in the past twenty years used chronosequence as a method for estimating species diversity and species richness through a

sampling of various floral species. Chronosequence “provide a cost-effective and rapid method of investigating forest changes over time, but the critical, and often untested assumption is that sites of different ages represent points along a predictable continuum.” (Letcher & Chazdon 613). In other words, chronosequencing assumes a particular ontological perspective on temporality that relies on the emergence of predictable patterns. Chronosequencing is also limited by its use of relatively small plots, focus on individual floral species, and lack comparable data to old-growth forest (Norden et al 613). Chazdon, one of the most frequently cited biologists studying successional tropical rainforests, has more recently employed another method intending to compensate for these gaps in chronosequencing through the use of passive acoustic monitoring (Letcher & Chazdon 613). This project therefore borrows from Chazdon and others’ use of passive acoustic monitoring as a tool to assess biodiversity.

Though I’ve been able to glean an understanding of the tropical rainforest ecological discourse in global north scientific publications (Chazdon; Nigh), it was also apparent that in order to make credible contributions, my methods should take advantage of my rhetorical training and the liberties of knowingly working outside of the scientific method. My use of field recordings is not unprecedented (See: Ahern, Paine, Jacob Smith, and Hocks & Comstock), and is intended to be not only a medium of study but also a critique of the medium itself as I engage with arguments from a variety of perspectives with regard to the uses and limits of field recordings and the manner in which they mediate acoustic ecologies. As an additional goal of this project then, I want to provide some means by which rhetoricians and other humanities scholars may replicate, remix, and deploy my field recording methodology for use in other interdisciplinary ecological projects.

This project also critiques global warming projections documents, identifying the global warming imaginary that emerges from those documents. Of special interest in those readings is determining the relationship between global warming rhetorics and state attitudes towards indigenous land sovereignty, in this case focusing on the Q'eqchi' Maya of Belize's Toledo district. From initial readings, The United Nations Framework for Climate Change Convention (UNFCCC) and National Communications documents of participating nation-states in the Caribbean and Central America often view climate change in respect to developmental projects; however, the question of development pursued is how to maintain and increase current economic growth rather than what their future development can otherwise be oriented towards.

My project uses these to complementary effect in order to present a more robust and layered analysis. Most of the global warming documents are composed by international organizations such as the United Nations or by Belizean governmental organizations whose main audiences are the aforementioned international organizations with little to no direct input from food producers, indigenous or otherwise. These documents therefore provide an impression of how state agencies fold global warming mitigation and adaptation into existing hegemonic developmental rhetorics that consequently limit the extent to which these adaptations can facilitate broader systemic change.

In accordance with decolonial scholarship by Robin Wall Kimmerer, and Zoë Todd, this project redefines qualities of credible data, especially as Western scientific methods work to suppress, co-opt, and depoliticize indigenous contributions to agricultural systems ('Climate Smart' What is it Good For?', Taylor). The field recordings and audio interviews are a means of centering farmers and the more-than-human collectives that work in corroboration with them

without requiring extensive additional labor, or familiarity with literacies that may be exclusionary, including to non-English speakers whose contributions to movement work have previously seen a decrease as state-sanctioned strategies, including legal recourse, for seeking sovereignty are used (Wainwright 2021). The use of counterstory narratives is also a method to access imaginaries not typically deemed credible in US humanities scholarship. I am interested in the Trio Cacao Farmers' Associations use of agroforestry techniques that produce certified organic cacao with little use of petroleum-powered tools, or pesticides, using agroforestry techniques such as inga alley cropping. My project thereby deconstructs the rhetoricity of these activities' sonic representations through field recordings, and examines the context that allow particular notions of healthy rainforest tending to flourish, and the politics those meanings align with.

This project offers a model for small-scale, short-term projects that sound rhetoricians can engage in that are complementary to more extensive projects completed by ecologists employing large-scale bioacoustic strategies. Specifically, my project works in collaboration with farmers that cultivate cacao plots in a concession with project managerial assistance by Ya'axché Conservation Trust, an NGO working to integrate agroforestry techniques into Belize's indigenous Maya communities. Founded in 2005, Ya'axché, staffed largely by people native to Southern Belize, has worked alongside indigenous farmers to simultaneously provide alternative agricultural income to prevalent destructive monocultures; and conserving rainforest territory.

At present, I am working on a multi-tier project using Audio Moth recorders, a low-cost passive acoustic monitoring device designed by Open Acoustic Devices (Hill), placed around two plots recording audio twice a day for four weeks. The goal of these recordings was two-fold:

to code for fauna presence indicative of biodiversity in the area; and record potential incursions by unwanted fauna such as cattle belonging to neighboring farmers and anthropogenic sound indicative of poaching or logging (e.g., gunshots, or chainsaw sounds). An additional component of this project involves a series of interviews with the farmers I'm collaborating with over the aforementioned recording period, getting a phenomenological impression of their labor under present climate and technical conditions. For instance, the technique known as inga alley cropping has anecdotally made farm labor more sustainable due to the shade provided by the plant.

From August 2020 to October 2020, I conducted the entirety of the audio recordings. Following completion of this recording period, I coded the audio using the R programming package 'vegan' to assess them according to nine acoustic indices. Additional earing⁴ analysis of the audio considers the impact that anthropogenic sound has on more-than-human sonic communication in the concession.

Given the field work involved in this rhetoric project in a relatively isolated community, the completion of this project relied on personal funding, in addition to a summer research fellowship. Between visits to the field site, I worked on initial analysis of the Belizean National Communication documents following a broader contextualizing analysis of the National Communication documents produced by other Anglo-Caribbean countries. These documents are most often organized as strategic assessment documents, determining the various areas of carbon emissions, describing stakeholders, assessing rates of success in policy implementation since the

⁴ Refers to hearing with the ear sense organ (reference). Term coined by Steph Ceraso.

previous installment, and recommending new policies that might be taken by the respective countries' national government and private industry.

Initial assessment of these documents shows that for the majority of Anglo-Caribbean countries, addressing climate change runs contrary to capitalist-oriented development goals. There is an overall debilitation occurring due to the incongruity between accumulating capital, and the fundamental restructuring of government bureaucracies and infrastructure that effective climate change mitigation and adaptation require. These documents are useful indicators as to the global warming imaginary in which these various government representatives operate, providing insight into what aspects of a nation's society and economy are considered intrinsic and which are adaptable. They can provide rhetoricians and climatologists with a more concrete sense of the political and social possibilities most probable and the present likelihood of global warming futures most desirable as it concerns greater equity and sovereignty on behalf of the region's indigenous communities.

This project makes several necessary interventions in how people conceive of climate policy. First, it considers how climate policy functions similar to other narrative tools about the future, projecting one of many possible futures but with an assumed objectivity. This is covered largely in chapter 1 wherein Belize's National Communications are analyzed with regard to their enmeshment in existing capitalist narratives of economic wellbeing as well as in chapter 4 where the genre of counter story is used to highlight the probable, but not inevitable, future of these policy documents alongside a less likely, but more desirable future based on Hancock and Bezold's work in health policy. Together, these chapters intend to illustrate that what appears as seemingly objective assessments and recommendations about carbon emissions are actually a set

of decisions designed around preserving particular global and local class relations and relationships between humans and other animals. In offering another possible narrative through counter story, the project highlights that both policy and counter story exist as devices hoping to manifest particular futures.

In chapters 2 and 3 this project also considers the perception of time as enshrined in Belize's current climate policy in reference to the time of farm labor conducted by the cacao growers as well as the time that lapses within the more-than-human world of the cacao concession. By doing this, the project demonstrates that policy's tendency to conceive of the issues of climate change as a problem to be addressed in one possible future does not address already present issues in labor and infrastructure development, a disorientation that has and will continue to result in misapplied limited funds. Temporality is also considered in chapter 4 to demonstrate that a fixed perception of the future limits the degree and manner of interventions taken in the present. Disrupting such fixity is a key objective of this project.

The absence of labor's toll in policy is also of importance to this project. In recommendations for mitigation and adaptation, nothing is stated about the increased difficulty of work in a warmer, more humid world. Both the case study in chapter two, and the counter story of chapter four take special interest in this facet, discussing how labor can be addressed through changes in infrastructure that in some cases addresses labor concerns, such as the use of forest canopies as shade structures. In other cases those attempts may create new problems such as with the counter story's imagined cool suits, which consume significant energy to cool the wearer while expelling extreme heat to those surrounding. Connected to this concern with labor then is an interest in expanding not only the stakeholders who influence climate policy, but also

the sensorial means by which policy writers gather data. Chapter 3's focus on the aural sphere offers one such example of an expansion, showing that a limited perception of a harmonious natural landscape by laypeople can lead to faulty assumptions as to how to address the interconnected issues of biodiversity loss and climate change.

Additionally, the project offers a critique of policy's systemization of interwoven and complex more than human systems to distinct and often arbitrary boundaries for the sake of capitalist appraisal, reducing policy's ability to conduct necessary holistic change.

Dissertation Layout

The first chapter 'The Future Already Written: The Climate Imaginaries of Policy Documents' considers the composition of Belize's three National Communications documents. These documents, developed according to the United Nations Framework Convention on Climate Change and later in accordance to the Paris Agreement, categorize the country's climate emissions according to the most substantive emission sectors, providing recommendations for how each sector might curb its emissions. In the case of this project, the National Communications are used to discuss how operating within the UNFCCC and the Paris Agreement aid and/or constrain the potential climate imaginaries of the country. Opening with a preface on the difficulty of limiting the expansion of cruise tourism in the country, the chapter moves through an explanation of the National Communications document before using the People's Agreement of Cochamba, composed in 2010, as an alternate framework through which to envision another future for Belize's climate adaptation and mitigation.

Chapter 2: Cacao Agroforestry and Rhetorics of Hope: A Micro Case Study describes the fieldwork done as part of this project at the Trio Farms Cacao Grower's Association's agroforestry concession, which resides within the Maya Golden Landscape in the southern Belize district of Toledo from August to October 2020. There, I visited two cacao farmers, Isabel Rash and Manuel Tut, amid the global COVID-19 pandemic and discussed with them their perception of global warming and its impact on their labor. The chapter provides an overview of the fieldwork, analysis from the interviews, and concludes with the concept of the rhetoric of hope, a set of strategies used by the farmers to persist in their labor to continue farming despite growing concerns that changes to the environment were already adversely affecting both their ability to work and the environment of the concession.

Using audio recorded with passive audio monitoring (PAM) devices called Audio Moth's at the concession, Chapter 3 Sounding Out for Harmony in the Agroforest: The Role of Human Earing In The Era of Machine-Listening describes how a performance writing method I developed based on bioacoustic research. First, I provide an overview of what the field of rhetoric has explored in the sonic realm then I transition to a discussion about how bioacousticians have developed a method using PAM and machine listening to assess biodiversity. I then describe the performance writing method I developed and share samples of it produced in response to outlier session recordings made at the concession concluding with some insights provided by the process and suggestions for its future application.

Chapter 4 'Cool Down': A Belizean [Counter]apocalypse Future is largely comprised of a piece of narrative speculative fiction I developed based on the work of Laurie Gris, Joanna Zylnska, speculative fiction, and largely on Aja Martinez's development in counterstory. Using

climate projections from the National Communications, chapter 2's case study insights, and the Hancock and Bezold 'Probable, Possible, Preferable Future' model, the alternate universes story set in the near Belize feature illuminates how differences in climate policy even within the national scope of Belize can provide more or less liberatory and empowering possibilities for the future survivability and 'buen vivir' of Belizeans.

The dissertation ends with Conclusion: Extending Climate Research Into the Public Sphere where I address some of the gaps in the research as well as recommendations for its future trajectories. I also discuss work outside of my scholarship that's played a vital role in informing how I approached the dissertation and how it is shaping the works I've decided to pursue next.

Chapter 1: ‘The Future Already Written’: The Climate Imaginaries of Policy Documents

I open this chapter on the coast of Belize City, far from the rainforest of the Maya Northern Reserve, where four port development cases are in progress. Their multi-site nature (the ports and the surrounding waterways which extend far beyond the purported control of the EIA), allow them to serve as a useful case study for why infrastructural development and climate change serve as examples of Timothy Morton’s hyperobject. Like Morton’s hyperobject, infrastructural development projects and climate change’s actual effects are difficult to discern because they are “entities of such vast temporal and spatial dimensions that they defeat traditional ideas about what a thing is in the first place” (Morton). They extend beyond what’s readily knowable at any singular site and occur across a difficult to discern expanse of time that limits the extent of perceivable impact. And like the hyperobject, it’s difficult to distinguish between changes at one fixed site and time, and its contributions to broader changes in environmental activity. To study climate change requires understanding this general uncertainty, and therefore a desire to shift through scales.

A multi-scalar analysis recognizes the falsity of various binaries, such as local and global, space and place, human and environment, allowing kaleidoscopic shifts in perspectives to generate fruitful tensions. For instance, the port projects discussed over the next few pages from one perspective occur in fixed spaces along Belize City’s coast, each requiring significant dredging that would need to be disposed of. The dredge disposal plan for the Waterloo Port Expansion project describes placing a portion of the sediments beyond the reef, what the Environmental Impact Assessment (EIA) refers to as the far shore, which would after some time

begin to settle to the sea bed with relatively little detrimental impact to the environment.

However, the greater portion of the dredged material is intended for disposal within the reef, an action the EIA prepared by Nextera Consulting states would be mitigated by monitoring the impact on the marine ecosystems during the dredging process, halting operations should the rate of harm exceed self-imposed thresholds (Herrera 371). What the EIA underplays however is the current's influence on sediment's rate at which it settles. The current at the proposed 'near shore' site would extend the duration the sediments creating turbid conditions in the water, increasing the likelihood of their impact. Here then is an example of shifting through geographic scales, recognizing that political will—more so than ecological reality—facilitates the demarcation of a boundary of limiting harm. After describing the port development projects' environmental impact assessment process and its impacts on Belize's coastal ecologies, this chapter proceeds to a closer rhetorical examination of the National Communication documents created by the Belizean government to comply with United Nations Framework Convention for Climate Change (UNFCCC) and how it is similarly constrained by a political will that abides by global north, capitalist, anti-indigenous interests.

How A Cruise Port Comes to Pass

The 2021 Facebook post stated that the public consultation for the port expansion project would be on the upcoming Thursday. It was Monday. The post was made by Marine Conservation, a Facebook page run by an anonymous entity and speculated by some to be managed by the Feinstein family, owners of the Stake Bank island, which was also posed for port development. Marine Conservation shared the details for the consultation from the Belize Press Office's Facebook page, which typically circulated updates related to the national government of

Belize. In accord with the EIA process, environmental public consultations hosted by the Department of the Environment are also supposed to be circulated via newspapers at least two weeks prior to the scheduled event.

From the posts' comments people expressed a mixture of shock at the project's revival for those already familiar with the project history, disappointment with the newly elected government for having prioritized the project over the compounded crises of Covid-19, nationwide flooding due to Hurricanes Eta and Iota earlier in November, and an unprecedented debt crisis, resignation that this government would prioritize the profits of oligarchs over the poor and the environment and an overwhelming determination to disrupt the further development of this project by first attending the virulent consultation on November 26.

The Waterloo Port Expansion project is a proposed development that would considerably expand the size, use, and docking capacity of the existing marine shipping port in the Port Loyola constituency of Belize City. The expansion was initially proposed in 2005, but shortly after becoming privatized, the port's owner went into arrears and the project was shelved for years even after getting a new owner. 2012 brought the project back into consideration and the environmental impact assessment was initiated, costing 'millions of dollars' according to Nextera Consulting group's spokesperson the night of the consultation. The EIA claims to have involved assessments of the potential impact of the required dredging on the reef system as well as the dredging site. There was also interest in the potential impact of the new infrastructure on Port Loyola's residents the EIA refers to as "one of the most impoverished and most deprived constituency within Belize City" (Herrera, XXIX).

The public consultation was originally slated in 2020 for an in-person meeting following an earlier consultation with stakeholder NGOs who unanimously opposed the project. It was postponed, according to one Department of the Environment (DoE) employee, due to the port's stevedores' strike occurring at the time, garnering considerable public attention for its disruption of shipping activity then gaining further recognition for the police brutality exhibited in response, which escalated to tear-gassing and beatings of stevedores captured on film and circulated by local media ('Tensions running'). The United Democratic Party-run government, according to the DoE employee, didn't want the present scrutiny of the port to attract criticism to the expansion project, and was therefore rejected by the UDP-managed Cabinet. Its revival in November 2020 coincided with the recent election of the People's United Party, who won in what was proclaimed a blue tsunami ('A Blue Tsunami, 26-5'), winning all but 5 seats in the House of Representatives, a significant turn following three 5-year terms of UDP-government. The blue tsunami employed the slogan 'Everybody Fi Win' and the port expansion project was one among various announcements that already had some Belizeans questioning whether that would be true.

With the public consultation three days away I shifted some of my labor towards researching similar development projects. First though I looked into the Port's primary stakeholder and the major investor behind Waterloo, Michael Ashcroft. Ashcroft, born in England and a dual citizen of England and Belize, is infamous in Belize for having had a stake at one point or another in various Belizean utility companies since the early 90's. During the 15 year UDP period, the government forcibly removed his stake in Belize Telemedia Limited, the largest telecommunications provider in the country. With the aid of PUP-affiliated lawyers, he successfully sued the government of Belize for damages. To some, Ashcroft was emblematic of

Belize's ruinous relationship with foreign investors while others viewed him as evidence of Belize still in the throes of a colonial mentality, requiring tethers to England to get anything done. Not much was readily available about Ashcroft's personal or financial history. One profile claims he made his initial fortune from a few resale investments in the late 80's (Management Today). What is factual, though, is that he once held a political position in England, which brought scrutiny to his tax status due to his failure to disclose tax documents and his dual citizenship status.

I then looked into the impact of dredging projects in marine environments similar to Belize's, namely Australia, later learning of parallels the project shared with the Port of Miami cruise development. The research brought to focus various studies showing that even when dredged, runoff was supposedly contained with nets or other devices, lighter sediments could remain suspended and drift on currents a long distance from their point of origin (Cunning). In the case of reef systems, sediment suspension can cause various issues. Some sediments could cover and sicken certain coral species. Suspended sediments could block sunlight, preventing photosynthesis among the algae and reef with no new larvae produced as a result. Another avenue of research I investigated was legislative means that communities pursued to protect marine environments, learning about successes such as those in New Zealand wherein personhood rights were extended to the Whanganui River (Warne). I then investigated the status of the cruise tourism industry, especially since the COVID pandemic had suspended operations for several cruise companies including Carnival and Norweigan, the company that the port had arranged to receive visitors from. Norweigan Cruise Line has taken a 60% hit to its share value since the first lockdowns commenced in March 2020, recovering 5% in November following

confirmation of likely vaccine availability in spring 2021 (Feuer). Norweigan, as a result of its continued suspension of activity, raised 2 billion USD to ensure its survival through May 2021 (Sebastian). Since then, cruise lines have further extended their suspensions to April 2021.

Meanwhile, the disappearance of cruise tourism has resulted in a resurgence of activity for coastal communities who have been adversely impacted by the pollution and congestion brought on by cruise tourism, using the absence of cruise ships to internationally organize against them (Glenza). This information confirmed my skepticism regarding the industry's presumed viability into the next few years since the economic necessity of the project had been trumpeted in the EIA as making the ecological risk worthwhile. Not only was this unlikely due to their impact on turbidity, but also because the next decade would require massive emissions global reductions that would ideally not provide means for the fossil fuel-dependent luxury ships to continue operating without cost-prohibitive renewable energy retrofittings likely not possible at the scale needed for cruise liners. Instead, cruise lines have opted to adapt scrubbers that remove some sulfur from their heavy sulfur fuels, therefore extending cruise lines' dependence on a form of fossil fuel being abandoned by other shipping vessels (Dolven and Harris). I compiled the research into a Google Drive folder that I shared on my Facebook account, and by the Marine Conservation page after sharing it with them. I also included an independent report produced by three civic/coastal engineers on Nextera's EIA, which critiqued the proposal for the impact on coast and reef systems as well as the lack of an appropriate plan to manage waste and mitigate air pollution at the port itself (Garcia et al).

So far what followed from that consultation publicly has been minimal. Two weeks after the consultation, eleven NGO's sent a public letter to the central government, specifically

opposing the dredge material dumping on the near and offshore on November 27. Later that day, the Prime Minister contacted the director of Oceana Belize, one of the letter's signatories. In the email, he said that the project had not yet been approved and would be taken through the remainder of the EIA process ('Waterloo Port Expansion').

Since then, Oceana Belize released a series of 8 infographics on their opposition to the port expansion and has circulated a petition providing the broader public an opportunity to state their position on the project. The Minister of the Blue Economy and Civil Aviation Andre Perez released a statement voicing concern for the potential impact of the proposed project ('Waterloo Port Expansion'). Then in late January 2021, the Belize Port Authority (BPA) announced that it would be conducting a four month review, with Cabinet approval, into how they would coordinate the various proposed cruise developments, suspending all port projects during the process ('Belize Port'). However on February 2, the National Environmental Assessment Committee (NEAC) meeting for the Port of Magic was held. Unlike typical NEAC meeting outcomes, the one concerning the Port of Magic was not disclosed to the public. When I called and asked personally what the results were, I was told that they would not be shared until the end of the four month review, per Cabinet's request. BPA later refused a request for a PDF of the open letter where BPA's chair requested the review period. . The Port of Belize Cruise Port & Cargo Expansion project hosted a second public consultation in September 1, 2022 with no further updates on the NEAC meeting. As of October 2022, the National Port Policy has yet to move beyond its first draft.

From Environmental Impact Assessment To National Communications

Perhaps for the difficulty in sorting through these various facets in a way alphanumerically communicable, rhetoric as a field has refrained from taking up much discussion of climate change through environmental policy. Rhetoric, however, is well-equipped to analyze environmental justice issues, as it is methodologically positioned to investigate the narratives about climate change that individuals (working as authors of state documents) circulate. By all legal processes, the port expansion project is developing within the bound of state justice with data gathered, reports produced, procedures followed, including the public consultations and no decision has been made. Yet, when considered beyond the confines of state justice, it becomes increasingly clear that there are only a handful of people involved in the process who determine the project's outcome, Cabinet, NEAC members, and the Prime Minister. Even NEAC, the committee selected for the EIA, can only advise on whether the project is ultimately approved by the Cabinet. In essence, the Cabinet, appointed by the Prime Minister and composed of members of their political party, gets to decide the outcome of the EIA. Therefore if the project proves more advantageous to the PM politically and/or financially than the possible public, they can exert their influence on Cabinet to pass forth any project, environmental consequences be damned. The EIA process gives the veneer of democratic environmental decision-making while in reality facilitating an authoritarian process by which decisions can be made regardless of cost to frontline communities and the more-than-human world.

Like the EIA, the National Communication documents, produced most recently by the National Climate Change Office, function on various levels. On its surface, the NC's compile data related to national carbon emissions across industries summarizing changes made in each industry to meet the country's national commitment to the 2015 Paris Agreement under the

UNFCCC (Barakat et al). Prior to that, the National Communications document functioned as a greenhouse inventory document with no explicit goal to curb those emissions but rather to consider its climate vulnerabilities. The National Communications also describes limitations the sectors face in reducing emissions, concluding with recommendations for each sector. Much of the data of Belize's NC, like other developing countries, relies on off-the-rack climate modeling packages with local data only more recently commencing collection, according to an NCCO representative. Conclusions often cited a lack of infrastructural and financial resources to meet these goals, putting them off to a future after the country has developed sufficiently to afford energy transitions and to prioritize sustainability, often considered in opposition to development.

The National Communications documents, along with the biennial reports, are intended to assess participating country's greenhouse gas (GHG) emissions across sectors in order to determine the necessary mitigation and adaptation strategies a country must take. These measures are vital toward meeting emissions goals outlined by the Kyoto Protocol (1997) and later amended by the Paris Agreement in order to keep warming below 2 degrees Celsius, the temperature at which life becomes exponentially more difficult for human life, especially those in the global south with Belize among those stated to be of greatest risk of loss due to 43% of its population residing in low-lying coastal areas that will become increasingly susceptible to sea level rise, saltwater contamination of water reserves, and storms associated with ocean warming. To keep warming below 2 degrees, the world must reduce emissions by 50% by 2030 and completely by 2050.

Countries that are signed onto the Paris Agreement are required to submit their National Communication documents every few years with biennial reports occurring the two years

between every National communication (e.g. Belize's third national communication was published in 2016, and the following biennial report in 2018). The Paris Agreement maintains a distinction between Annex and non-annex countries, and a country's categorization in one or the other determines the extent of detailed reporting required by the participating country. Annexed countries are typically global north 'developed' nation states and non-annex countries are 'developing' nation states. Belize, as a non-annex country, does not have to provide as detailed information regarding its GHG inventory as it is assumed that the country lacks the local technical expertise, infrastructure and capacity to do so. An example of this is Belize's sea rise projections, which rely on data projections created from 'plug and play' software rather than locally aggregated data.

National Communication documents are submitted to the UNFCCC, and then reviewed by two different processes determined by whether a country is an annex or non-annex state. Non-annex states' NC's are reviewed in a workshop environment by experts from annex and non-annex countries where feedback is provided. Under the Paris Agreement, participating countries cannot be punished for failure to meet their emissions targets. This non-punitive approach intends to encourage transparency by participating countries. However, it has also provided a means for countries to regularly fail short of their emissions targets when GHG does not take into consideration carbon credits, or the fact that developed nations have outsourced their GHG by placing their industries in historically low GHG countries.

In order to produce the National Communication, participating non-annex countries like Belize can access funding from the United Nations Development Programme (UNDP) and the Global Environment Fund (GEF). The GEF on its own offers up to \$500,000 USD for each

National Communication. These funds, in addition to those made available by the reporting government, are then meant to be used to carry out the various GHG inventory assessments across the country's various sectors (agriculture, waste management, forestry, transportation, and industry) and determine possible strategies to limit the impact of global warming. In 2011, Belize's United Nations Development Programme (UNDP) office published a report titled 'Enabling Activities for the Preparation of Belize's Third National Communication to the UNFCCC,' outlining the tasks required to complete the eponymous third national communication. A close reading of the proposed budget indicates the extent of vague language that can be used when creating a document to demonstrate the use of funds across the three-year span when the National Communication is in development. Most of the almost \$500,000 USD are divided between local consultants, international consultants, and travel within the country for the purposes of identifying sites. Examining the budget that produces these documents is an important step as it is necessary for a materialist rhetoric to consider how technocratic language can be used to siphon funds intended to improve Belize's climate adaptation and mitigation strategies while simultaneously claiming that more expansive strategies are not possible without further technocratic expertise.

On another level the National Communications functions as a constraint on the political and social dimensions of the country's climate imaginary. Climate imaginary, coined by Timothy W. Luke, refers to the 'conflicting characteristics' of climate change how [it is] mediated, constructed, and rhetorical in its depictions.' Luke's term serves as a way for rhetoricians to investigate not only what climate policy purports to do, but also the network of beliefs and perspectives to which said policy is attuned. In its understanding of the health of marine

ecosystems, the EIA process approaches the environment as a resource whose literal wellbeing must always be measured against potential revenue. Similarly, in its organization, the NC's content does not acknowledge how work flows and the management of capital at present are bound up in capitalist logics. It prioritizes the continuation of industries as they are and limits its attention to how mitigation and adaptation strategies can facilitate improved livelihood for people in the face of greater frequencies of flooding, increased temperatures, greater food insecurity, and increased health risk. The NC is an extension of global north control on the south, an ecofascist enterprise intended to prevent anti-capitalist projects from taking hold. It promises that climate change can be mitigated within capitalism and neocolonial systems, stalling the just transition that can actually provide those needs to people at present.

NC from Another Perspective

In light of these constraints on the state's climate imaginary, the rest of this chapter provides an analysis of the National Communication (NC) document Belize composes every four years as a non-annexed nation signed onto the Paris Agreement for review by other UNFCCC signatories. To do this, I will conduct a comparative analysis coding the NC's alignment with the Paris Agreement guidelines then reexamine the NC through the screen of the People's Agreement of Cochamba's values and recommended actions. The reason for the selection of the People's Agreement is that unlike the UNFCCC and its main international documents, the Copenhagen Accords and the later Paris Agreement, largely steered and authored by global north states with the goal of maintaining their control of global capitalist enterprises, the People's Agreement at

Cochamba centers climate action around a pluralistic constellation of indigenous communities and their allies, the phenomenology of global warming as experienced by the global south and an ontological perspectives that recognizes more-than-human sentience and human interdependence with the more-than-human world. The People's Agreement was composed directly in response to its makers' dissatisfaction with the Copenhagen Accords in 2009, which promised little in terms of radical systemic change in order to mitigate biodiversity loss and the impacts of the climate crisis. It was composed by multiple working groups that united in Bolivia, and its contents were highly contested and similarly constrained by its members' varying stakes in existing relationships between human and nature. For instance, Mueller discusses how the Moralez administration of Bolivia publicly championed indigenous pluralist sovereignty while also situating extractivist activity as its means of future wealth distribution, a position that sat unfavorably with both strains of indigenous organizing and other contributors to the People's Agreement (Ephemera). In other words, though the People's Agreement poses an alternative set of values to the UN's climate change framework policies, it is also a document produced as the result of compromises among a wide variety of stakeholders (Mueller). Its reading requires resisting the impulse to reduce the document to a romanticized idea of international global-south-centered organizing. The goal of this analysis is to determine the priorities of adaptation and mitigation strategies in place and offers alternatives for these strategies if the National Communication operates within the framework of the People's Agreement. This analysis demonstrates how Belize's present personnel and ecologic resources can be used more effectively if indigenous sovereignty, food sovereignty and climate phenomenology in the realms of agriculture and housing were centered in Belize's response plan. With this, I hope to provide a

corrective to global south climate discourse that resists victim narratives and interrogates the degree by which climate denial prevails in the NC to show how Belize state actors are complicit in these acts of denial. The ongoing refusal for the country to take more radical action preserves oligarchical rule of the global south, which deserves reparations in order to enact bolder climate action. In chapter four, I use Aja Martinez's method of counterstory to further extrapolate on these potential futures through a dual narrative exploring two potential futures for Belize. This analysis also explores the notion of how political will manifest in the document to contend the technologic scarcity narrative that underlies much of the inaction around the climate crisis in Belize.

Method

In order to conduct an analysis of the three National Communication (NC) documents produced by Belize's government and climate-related government organizations such as the United Nations Development Programme (UNDP) and the National Climate Change Office (NCCO) (2002, 2011, 2016), what must first be established are the constraints imposed on the document by the reporting requirements outlined by the UNFCCC. Making such a discernment is however a bit elusive due to the vagaries of some of the Paris Agreement's language as well as the peculiarities of the conditions under which it hopes to mitigate warming to 1.5 degrees Celsius (Geden). For instance, Geden's analysis of the Paris Agreement illustrates that 1.5 degree Celsius mitigation relies on significant carbon sequestration by 2030, equivalent to the landmass of India, in order to meet those goals yet as of March 2021 no sequestration projects are in position to meet the scale necessary by 2030, leaving Geden to argue that the agreement's goals are not feasible and must be reexamined. By understanding the requirements of the NC, an

analysis can better distinguish between reporting activity determined by the document's constraints and reporting activity more autonomously dictated by the Belize National Communications' authors and their consulting partners.

To further clarify those distinctions, various other countries' National Communication documents were referred to in order to determine common motifs and baselines. One such example is the National Communications view towards indigenous people. The National Communications reporting requirements don't necessitate a consideration of the impact of global warming on indigenous communities. However, the requirements also don't call for indigenous communities' exclusion from the document. This was evinced by New Zealand's National Communication, which has several sections examining the role of indigenous Māori people in forest stewardship and watershed protection. Once the NC's UNFCCC-determined constraints are outlined, I will then describe three fissures in Belize's NCs' climate imaginary the People's Agreement of Cochamba offers, each corresponding and overlapping with the constraints imposed by the Paris Agreement. To manage the scope of the analysis, I will exclusively focus on the National Communications' sections covering forestry and agriculture, the areas most relevant to the sonic field work covered in other chapters of the dissertation.

Based on initial coding of the Paris Agreement's imaginary, this analysis takes up three major document elements for consideration: technocratic obsession with measurements with no accountability; a reduction of environmental activity to greenhouse gas emissions; and the presumption of settler-colonial capitalist extractivism as a necessary activity for individual and societal well being. What follows is a description of those three elements followed by descriptions of the alternative lenses suggested by the People's Agreement. The discussion

section then explores the ramifications that adapting the People's Agreement lens can potentially have on Belize's ability to mitigate and adapt to the impacts of global warming.

1) Separation of Extractive Activity

In the National Communications, the government separates its carbon emissions according to five sectors: energy, land use/land-use change/forestry, agriculture, waste management, industry processing (First National Communication). Distinctions are made between forests and agriculture regardless of the enmeshment of these spaces at various sites, particularly in the case of agroforestry work, including inga alley farming or cacao growth in shaded forest environments, such as what is practiced by the Trio Farm Cacao Growers' featured in the following two chapters. The effect this has on an analysis of global warming is that it distorts the perspective by which ecological impact is considered. For instance, discussions of expanding agriculture and cattle rearing often exclude their direct impact on deforestation as well as the effects of inputs used to curtail pest invasion of crops on soil, water and species necessary for ecosystem health. Instead, they view agricultural activity as a net good that does not disrupt ecologies.

2) Discourse of Measurements and Transparency

The Paris Agreement also prohibits the enactment of punitive measures against participating countries that fail to meet its emissions targets, arguing in its reporting guidelines that punitive measures would reduce government's transparency regarding its activities (citation needed). A high quality National Communications, in accordance with UNFCCC reporting guidelines, therefore does not have to demonstrate that targets are being met, but simply that measurements have been taken, or hypothesized based on climate models. The failure of most

signatory countries to meet their goals as of 2020 (citation needed) illustrates that prioritizing a discourse of measurements without accountability facilitates the creation of a global warming discourse more concerned with computing greenhouse gas (GHG) emissions according to area of production rather than region of responsibility. This means of assessing a country's GHG contributions is further distorted by a country's ability to outsource its emissions through energy production and manufacturing. For instance, the UK in 2021 reported a decline in its overall GHG emissions, but that decline also correlated with a period of outsourcing manufacturing in addition to decreases in coal-dependent power plants in Wales and England (citation needed). In Belize's case, this unfolds in the area of energy generation wherein a portion of Belize's energy is met by fossil fuel-dependent plants in Mexico. However, because the fuel is burned outside of Belize the fuel counts towards Mexico's GHG and not Belize's.

3) Money Over Everything

This considers the fact that the Paris Agreement positions the climate crisis as a problem that can be effectively addressed by altering existing emissions-generating sectors with new technologies. By positioning the climate crisis in such terms, the Paris Agreement depoliticizes global warming and limits scrutiny of overlapping structures of power that have facilitated fossil-fuel dependence including white supremacy, patriarchy, ableism and settler-colonial relations with the land. For instance, Belize's government does not scrutinize the reliance of input-intensive industrial agriculture, and its detrimental impact on watersheds and soil quality. Rather, it serves to continue agriculture's focus on monocrops such as sugar and banana, merely adapting 'climate smart' measures to meet the harsher conditions induced by the climate crisis, such as

unpredictable rainfall patterns and increased temperatures harmful to plant health, in order to meet GDP growth goals.

In juxtaposition to these constraints, the following categories based on a reading of the People's Agreement of Cochamba will be adapted to analyze how the epistemology present in the NC can be pluralized, and politicized towards an environmental justice orientation through greater attunement with cooperative models of living.

a) Accountability and Community First

Unlike the Paris Agreement, The People's Agreement prioritizes accountability. According to the People's Agreement, countries responsible for the largest amount of GHG emissions should provide reparations (Cibralic). Additionally, the People's Agreement is explicitly concerned with people's well-being and phenomenological experience of global warming. In other words, the People's Agreement explicitly reckons with the fact that the climate crisis poses an existential threat to human ability to shape a just and equitable world, and engage in the various forms of labor necessary for survival. Additionally, the People's Agreement concerns itself with environmental justice as it impacts indigenous, black and global south communities.

b) We Are Nature, Nature is Everything

The People's Agreement does not consider the environment an aspect of material reality humans ought to enact mastery or control over, or even something humans fully comprehend. Rather, the People's Agreement envisions human and more-than-humans as existing in a relational ontology, one in which both work to care for each other. For example, artisanal fisher folks play an important role in ensuring predator fish do not deplete prey fish stocks, which

would in turn lead to the expansion of algae that would reduce the amount of oxygen in regions of open water . The People's Agreement views environmental action not primarily in terms of what humans can extract from the more than human world, but in terms of the relationships humans have with the more than human world.

c) Buen Vivir, the sweet life

The People's Agreement envisions that a just environmental transition can potentially lead to an improved quality of life for all humans. Unlike the Paris Agreement that envisions mitigation and adaptation strategies as decisions that will maintain the current global north hegemony, the People's Agreement invites the world towards a renewal of a pluralistic society that centers human and more than human interdependence and the opportunity to work towards a life that provides greater access to life's pleasures (Hern et al).

Discussion

Between 2002 and 2016, various Belize government and government-affiliated organizations, namely the Ministry of Natural Resources, the Ministry of Agriculture, the United Nations Development Programme and the National Climate Change Committee, composed three National Communications documents for submission to the UNFCCC as a non-annex signatory to the Paris Agreement. Tracking GHG emissions, the document intends to serve as a record that each respective government uses to then develop mitigation and adaptation strategies to the climate crisis.

Yet, when read closely, Belize's National Communications expose a lack of connection between modeling results and recommended policy changes despite the document's centering of a discourse of measurements. For instance, across the second and third NCs, the documents

center modeling software for crop yields as a potential indicator for how crops might respond to a warming world. The projections for the Second National Communication were developed using 'Decision Support System for Agrotechnology Transfer (DSSAT)' and 'CROPWAT' under 1 and 2 degree Celsius warming conditions for beans, rice and maize ('Second National Communication', 48). The results between both modeling projections differed slightly with DSSAT showing lower yield reductions due to its accounting of 'sunshine' hours, a more optimistic outlook according to the Second Communication (50). The Third National Communication repeats the projection, yet limits its use to the more optimistic DSSAT, and also exclusively projects yields for sugar (86) with no rationale provided for CROPWAT's discontinued use. In both cases, the yield projections are not again mentioned in the Communications' sections covering mitigation and adaptation measures to show any degree of use. It's also notable that sugar persists as the only crop whose modelling was repeated since it was noted in the first National Communication that while other crops may be limited in yields due to global warming, sugar had the potential to still thrive in a warmer world as a C4 crop, 'a crop with the potential to benefit from carbon fertilization' (First National Communications, 43). Since that classification however, more recent research indicates that carbon fertilization has been dramatically reduced in recent years due to a lack of complementary elements, such as nitrogen, that would allow the plant to use the excess sugar produced through photosynthesis (Wang et al). The use of yield modeling software in the Communication therefore seems to be more about the collection of optimistic data projection for inclusion in the Communication document than it does with developing crop-specific programs that use yield projections to guide the prioritization of food needed to sustain life.

A fixation with scapegoating can be seen in the three National Communications documents by how responsibility for GHG emissions are assigned. In the first National Communication, the land use/land change sector was cited as accounting for 69% of all greenhouse gas emissions produced in Belize in the form of forest clearance and soil cultivation for agriculture ('First National Communications' 15). Deforestation, falling under the land use sector, underwent considerable increases from the 1980's to 1990's with 22,230 acres cleared for agriculture in the late 80's and 61,750 acres cleared for agriculture by the late 1990's ('First National Communications' 39). There is 70% natural vegetation cover up to 1991 in the First National Communications data. By the Second National Communication, the official vegetation cover becomes 69% of total forest area, with one frontline community member citing 61% as a more accurate percentage ('Second National Communications', 20). By this time, Belize's rate of annual deforestation had increased to 2.3 % vs 1.2% elsewhere in Central America. (Second National Communications, 21) with 80% of what is lost broadleaf forest (Second National Communications) Increases in emissions from land change continue to rise by the publication of the Third National Communications (50) in part due to the reclassification of savannah burning from an agricultural activity to a land use activity after the First National Communication classified it as the most significant emitting activity (20). It is the National Communications' specific concern with the classification of savannah burning that's telling insofar as the communities mentioned in reference to it. Starting with the first National Communication, the Mestizo and Maya communities are specifically cited as the practitioners of milpa, a mode of farming corn and other crops that makes use of fire for soil regeneration (20) with 37% of all farmed land deploying this system (40). The use of this farming system, which has undergone

changes due to pressures to adapt it to industrial monoculture models, is most often considered the culprit of much savannah burning. These communities are again cited in reference to savannah burning in the Second National Communications (20). Yet, since the Third National Communications' publication Landsat studies conducted by Joel Wainwright et al have demonstrated that fires produced during the practice of milpa do not account for the dramatic increases in deforestation Belize has experienced over the past thirty years (Wainwright et al). Instead, Wainwright et al argues that such scapegoating is emblematic of a pattern of engagement the state of Belize has had with the Maya communities of Belize in spite of the fact that those very communities, as is the case globally among indigenous communities, have been leaders in forest stewardship throughout Belize's history (citation needed). Insight from the National Communications itself however shows other more likely culprits. For instance, from 1988 to 2004 livestock in Belize almost doubled from 7,459 to 13,020 (2nd National Comms). A doubling of livestock would require an expansion of available land for housing and feeding, yet the National Communications does not establish a link between the agriculture and land use sector in this instance perhaps due to who they consult with in the process of producing these documents.

Part of the issue is that the UNFCCC reporting guidelines do not require addressing the political and environmental justice issues bound up with the climate crisis despite its implicit endorsement of certain practices that have proven harmful for frontline communities, such as forest conservation that displaces indigenous communities from access to their territories. For instance, in addressing the issue of agricultural production under increased temperatures and shifts in rainfall patterns, the National Communications endorses the greater use of input

intensive agriculture both through genetic configuration of existing cultivars (Second National Communications 52) and expanding the use of pesticides (Third National Communications, 42). Due to the National Communications specific focus on GHG emissions, the documents are able to exclude analysis of how these technocratic industrial agricultural responses to greater food precarity cause harm to communities. For instance, the sugar industry and its major processors ASRI and BSI in Northern Belize have long been considered by frontline river communities the organizations responsible for the river's pollution, an observation supported by the increase in annual pollution whenever the processing plants begin to process in April (citation needed). Yet, these companies have been able to avoid culpability with the Department of the Environment arguably due to the significance the industry plays in the country's ability to secure foreign currency, sugar accounting for 30% of agricultural land (Second National Communication) as well as having stakeholders with political clout.

That leads to the issue of authorship of the National Communications. As previously stated, the authoring organization of the National Communications has changed with every new installment. Yet, the expertise on display remains fairly consistent. In each case, the the foreword to the National Communication is composed by a Cabinet Minister appointed to a portfolio connected with one of the GHG sectors covered by the National Communications, the first by John Briceño, current prime minister of Belize elected in November 2020 to a five year term and former Minister of Natural Resources, the Environment, Commerce and Industry, the second by Gaspar Vega, Deputy Prime Minister and Minister of Natural Resources and the Environment and the third the by Omar Figuera, Minister of State, Ministry of Agriculture, Fisheries, Forestry, the Environment and Sustainable Development. The editorship, contributors, and

consulting partners to the document represent a limited perspective on the environment. From its first iteration, the project steering committee is limited to technocrats that largely engage in environmental administrative work or managerial positions related to the five sectors (19). The Second National Communication agricultural data evinces a focus solely with industrial agriculture and livestock producers as experts, including the Belize Livestock and Poultry Producers' Association, 2 major fertilizer importers, formulators and distributors, Wetland rice farmers/producers, Buffalo farm ex-manager, ground white lime and dolomite producers (31) despite repeated reference to the fact that 75% of agriculture is done by small farmers with less than ten acres of territory, who neither individually or organized along cooperatives or association are represented here.

The issue of author and contributor involvement to the National Communications documents is indicative of trends in climate policy that exists at multiple tiers. At the international level, the Intergovernmental Panel on Climate Change (IPCC) has received criticism for its exclusion of global south and indigenous authors (Ford et al) in its reports as well as a continued exclusion of women. In the case of global south and indigenous exclusion, this is due to ongoing epistemological valuations on the part of global governing bodies on climate change. Technocratic experience concerned with measurements and modelling are viewed as universal while situated traditional ecological knowledge of indigenous peoples are often viewed as one with minimal applicability or relevance outside of the local geographies in which those knowledges are applied in everyday practices. Therefore the Belize National Communications, while not following a specific guideline from the Paris Agreement with regard

to the knowledge it deems valuable, is following the norms established by global climate policy institutions.

That concern with measurements is also due to an implicit ontological understanding of the environment that the National Communication perpetuates based on the basic premise of the National Communications documents. Namely, the Paris Agreement and the National Communication, while acknowledging the existential threat the climate crisis poses to all living things, operates on an assumption that adaptation within the five sectors for which it tracks emissions can be adjusted in sufficient increments to minimize their contributions (citation needed). In almost every instance where recommendations are made, those suggestions require the importation of materials and technical expertise from global north countries in order to maintain existing global supply chains that provide the United States, Canada the U.K. and Europe with cheap, year-round goods, minimizing the inconvenience to global north countries' consumption patterns. There is an assumption herein that to maintain these supply chains, and therefore continue to acquire foreign capital, is ultimately the most sound way for Belize to mitigate and adapt to the climate crisis despite growing evidence that economic growth carbon pathways only would increase the degree of decarbonization that would be necessary to prevent climate change scenarios of 3 degrees Centigrade rise and above. The proposed future goes as follows: Belize currently makes foreign capital from selling sugar on the international market that it then uses to pay its loans to international financial institutions. The climate crisis threatens to make it more difficult to grow sugar cane due to increased temperature, changes in rainfall, and greater susceptibility to pests that thrive in a warming world. In order to continue paying off these loans in a warming world, Belize will have to find ways to improve crop resiliency so that

it can continue to pay off its loans, which would only be compounded unless funds were provided in the form of climate reparations.

While there are repeated calls to a lack of funding to address mitigation and adaptation concerns, the Belize National Communications never invoke the notion of climate reparations as part of a global mitigation strategy. Climate reparations is the notion that countries that have caused the greatest amount of emissions, and ecological destabilization, would be made accountable to ensuring that the global majority has access to resources necessary to decentralize energy systems, secure food systems, and end U.S. military presence. That's why a turn to the People's Agreement of Cochamba can help to illuminate the mind-forged manacles by which the National Communications operates.

Another Way to Perceive Success

One of the most evident ontological differences between the Paris Agreement and the People's Agreement at Cochamba is that the former upholds the Western notion of separation between humans and the more than human world while the latter insists that such separations are only a relatively recent invention that has facilitated existing ecological destruction. Applying the People's Agreement's ontology to the National Communications shifts its climate imaginary dramatically, reinforcing that the Paris Agreement does not work towards a just environmental transition and that greater equity is possible through a holistic understanding of climate accountability.

One of the most significant reenvisioning of the National Communications that the People's Agreement of Cochamba facilitates is the means by which global south countries like Belize are able to access climate mitigation and adaptation technologies. While the National

Communications under the Paris Agreement guidelines attempts to do this by maintaining existing supply chain relations between Belize and global north countries that import their goods, the People's Agreement of Cochamba proposes that 'developed' countries most responsible for emissions foot the bill on a just energy transition for developing countries in five points (People's Agreement of Cochamba). The repercussions of these modes of climate reparations for the agricultural sector would translate to an ability to potentially lessen the country's economic dependence on input-intensive cash crops while using funds to create more resilient and decentralized food sovereignty networks (Altieri and Toledo, Thiemann). In fact the People's Agreement specifically cites agribusiness as one of the principal causes of climate change "through its social, economic, and cultural model of global capitalist production and its logic of producing food for the market and not to fulfill the right to proper nutrition". In practice, this would involve degrowth of cash crops for export, the purchase and distribution of irrigation technology, desalination infrastructure to compensate for aquifer salination that will continue to occur as sea levels rise, shade technology and non-proprietary seeds to adapt to rising heat and humidity. The world the People's Agreement of Cochamba opens would be one in which climate vulnerable countries no longer have to make concessions in the form of economic deregulation in order to access money from international financing institutions because developed countries would 'assume adaptation debt related to the impacts of climate change on developing countries (People's Agreement of Cochamba). It would also lessen the need to devote resources to climate change crop modeling, which as the earlier analysis of sugar cane climate modeling shows, are not objectively selected for inclusion, but instead to cast a potentially unrealistic future that

would not require a more drastic overhaul of the present agricultural system through the use of technology that's not yet available (McLaren and Markusson).

An epistemic reenvisioning facilitated by the People's Agreement is the overall collapse of colonial taxonomies and boundaries. While at present the National Communication is divided by the five previously described sectors, the People's Agreement encourages means of climate mitigation and adaptation less concerned with measurements than with harmony between humans and the more than human world, albeit a harmony whose maintenance would be its own struggle. For instance, the UNFCCC's REDD (Reducing Emissions from Deforestation and Forest Degradation) program and its various iterations are specifically called out by the People's Agreement for "violating the sovereignty of peoples and their right to prior free and informed consent as well as the sovereignty of national States, the customs of Peoples, and the Rights of Nature." The repercussions for abandoning REDD as the shared globalized means of forest management are that settler-colonial government governments could give protected forested areas back to the area's indigenous communities, an act that has been argued would be one of the simplest and most effective means of conserving forests (Kaimowitz) while also working towards restitution for centuries of displacement and genocide.

The reconsideration of Eurocentric boundaries are also at the fore of the People's Agreement. Namely, the People's Agreement calls for a recognition of a shared atmosphere that has been unjustly altered by a global minority, endangering the lives and ecosystems of global majority peoples. The significance of such an epistemic shift is that it foregrounds that the present anthropogenic epoch has not been equally caused or felt, and that therefore the call to decrease emissions by 50% by 2030 and 100% by 2050 across all signatory countries no longer

complies. As previously stated, such climate reparations would also therefore involve contextualized timelines for decarbonization as well as a reckoning with the manner in which neoliberal global north interests have facilitated much of the extraction and emissions in the global south through agribusiness, land use schemes, and industrial labor outsourcing.

Lastly, the People's Agreement brings the ontological perspective of *buen vivir*, 'the sweet life'. What that means is that the People's Agreement envisions a state of being for humans and our non-human kin that centers all beings as valued members of communities deserving of the right to many basics that the climate crisis endangers such as food, water, housing, health and leisure. *Buen vivir* therefore opens the possibility for thinking of greenhouse gas emissions not in reference to a country's ability to sustainably produce GDP and grow the economy, but how global greenhouse gas emissions and the resulting warming will make life more difficult for all beings. One example of this is that the National Communications can take greater concern with how various climate pathways would impact farm workers ability to complete their usual labor. Under present technocratic models of climate adaptation, efforts to reduce heat stress for workers has largely involved the use of personal cooling technologies. Yet, present studies of those methods by Chicas et al. demonstrate that such efforts have not been demonstrably effective and also require significant energy.

A People's Agreement approach to this issue would therefore open other possibilities for imagining the conditions under which such labor would be performed. Rather than large-scale farming, farm laborers could be the beneficiaries of communal farmlands where labor can be completed by more beneficiaries at time scales that mitigate the harm caused to any particular individual. One means of operationalizing policy towards this goal is to ratify existing

international agreements such as the 2021 Escazu Agreement, which would prioritize making policy affecting indigenous communities legible to those communities beyond commonly used technocratic documents. Through its ratification, communal farmers can offer their testimony for how their systems have benefited not only their harvests but also worked to mitigate some of the labor and health issues facing industrialized farmers working under the crunch of constant necessary expansion.

The Trio Farm's Cacao Agroforestry Concession case study in the following chapter presents one such example wherein a collaborator shortened their working days from six to four hours on days when the experience of heat and humidity was beyond tolerability. This example points towards how other means of decolonial environmentally just climate mitigation and adaptation methods are already being enacted at the local level, and the potential for this knowledge to rupture technocratic supremacy about who gets a say in what humans do to shape our collective future.

Chapter 2: Cacao Agroforestry and Rhetorics of Hope: A Micro Case Study

As concluded in the previous chapter, global warming policy largely excludes small farmers from its formation. This chapter redresses that exclusion through a series of interviews with two small farmers that manage individual plots within an agroforestry concession. This case study was completed in a concession consisting of 936 acres in the Maya Golden Landscape (MGL), a patchwork of 770,000 acres of land in southern Belize, primarily the Toledo district, under protection by Ya'axche Conservation Trust. Ya'axche functions as a non-profit whose main mission is to protect the Maya Golden Landscape from exploitation while providing assistance to frontline communities in the form of technical training and systems support, such as fire management and ranger patrols.

With assistance from the staff at Ya'axche, I connected with two farmers that managed plots of farmland in the cacao agroforestry concession organized by the Trio Farm Cacao Grower's Association. Each plot was overseen by a different farmer who sometimes received assistance by relatives, namely their children. The plots total ten acres each with the initial goal of planting cacao throughout by the end of 2020 (Beaton). At the time of the case study, no farmer had so far extended their cacao crop throughout their plot and 6 plots had been abandoned. Despite these setbacks to the original plan, the concession has been achieving increased productivity every year since its establishment with projections for them to continue to rise as the remaining plots are planted (Beaton). The concession, in its alignment with Ya'axche's mission, provides an additional barrier to protection for some of the protected areas vulnerable to

poaching and logging by using the farmer's proximity to these spaces as a deterrent to prohibited entry as well as a buffer for unsanctioned activity.

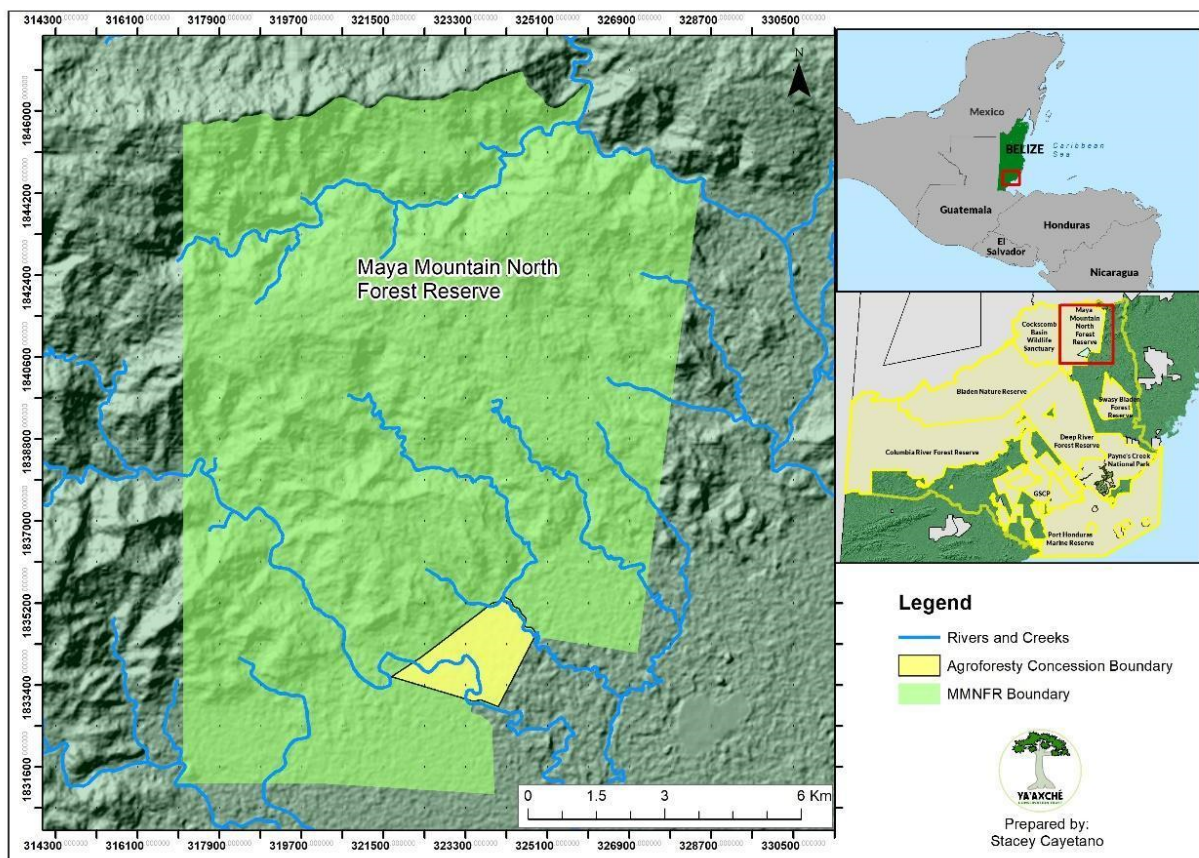


Figure 1. A map illustrating the location of the Trio Farms Cacao Grower's Association's Concession.

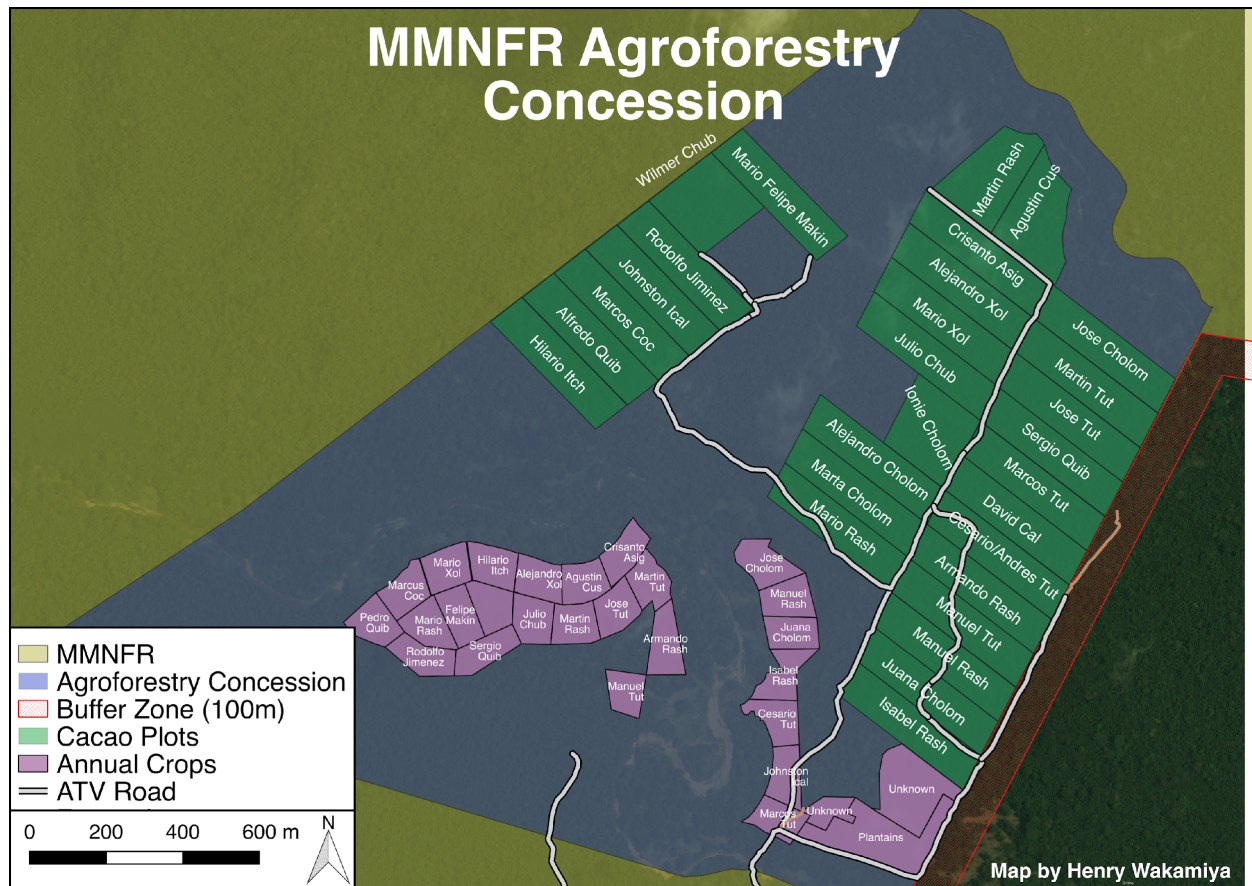


Figure 2. A map of the concession including the boundaries of the various farmers' plots.

Mr. Tut and Mr. Rash, the two farmers, both are of Q'eqchi' Maya heritage and reside at Trio Farms, the village closest to the concession (4.75 miles away or 30 minutes by 4-wheel drive vehicle). While Rash grew up in the area, Tut migrated from the Eastern Guatemalan department of Petén, settling in Trio Farms and making a family. The case study also occurred amid the Covid-19 pandemic during which time Belize closed its land borders with Guatemala and Mexico in March 2020 through to early 2022, a policy that was impeding the concession's ability to sell cacao to companies residing in either country. Also notable about the case study period is that the cacao was still in the process of growing for harvest in November. The previous

year, the concession yielded 6,191 pounds of cacao. Tut, a diligent farmer who visited the concession three to four times a week, had produced the most cacao among all the concession's farmers the previous year and believed he was in a position to do so again. In addition to managing his plot as well as his family milpa, Rash also held the position of chairman in the Trio Cacao Grower's Association. Tut occupied the role of vice-chairman and sold vegetables he also grew.

Over three months from August to October 2020, I visited the concession, checked and backed up my passive audio recording equipment (discussed in greater detail in the following chapter), and interviewed the two farmers when they were available. The preliminary interviews were conducted outside the concession. Follow-up interviews then took place at the respective farmer's plot with the exception of the final interview with Mr. Tut, which took place at his home due to the concession's inaccessibility following several days of heavy rain making the road to the concession impassable by automobile.

What follows synthesizes audio interviews, audio recordings made following the visits, field notes, and field reflections written following each visit along with discussions of climate phenomenology and decolonial climate policy. Just as Baines noted in her study of the significance of ecological heritage to Maya communities, I similarly noticed that "Abstract knowledge without foundation in practice, particularly knowledge related to tradition or heritage, was rarely observed or discussed," (8) which means that much of what my analyses herein about the farmers' sitpoints came from sifting through their responses and contextualizing them in light of other texts. While initially intended to be an objective exploration of how farming systems outside of industrial agriculture monoculture models can inform agriculture and land use policy

as well as understandings of agricultural labor, this case study also served as an exploration of my own identity in relation to my perception of the farmers' as well as a consideration of how academics can deploy our skillsets and resource access as co-conspirators to farmers. A co-conspirator as opposed to an ally, according to Black Lives Matter organizer Alicia Garza who coined the application of the term within anti-racist discourse, is a person who mobilizes in an active manner towards the dismantlement of white supremacy, recognizing one's complicity within it and orienting towards collective action towards its dismantlement. In this project, Tut and Rash did not view themselves as politically in opposition to white supremacy, which meant that my actions in my capacity as co-conspirator largely involved navigating state bureaucracy on behalf of the farmers when able. This was of aid to the farmers since such undertakings can mean taking two days to travel to a bureaucratic center in Belmopan or Belize City with the hopes of quickly resolving things before losing more work days and increasing the cost of such an excursion.

With regard to rhetoric, the case study offers a rendering of climate change discourse by farmers working in an agroforestry system outside of a decidedly technocratic sphere (the extent to which they reside outside industrial monoculture is also discussed). We can glean how the environment and its future are imagined by people whose primary mode of knowing climate change phenomena is experiential rather than the data-driven technocratic positioning offered in the National Communications covered in the previous chapter. In this chapter, I will discuss the rhetoric of hope as a motivating tool utilized by the farmers to persist in their labor in spite of changes to the biosphere caused by climate change, namely increased temperatures resulting in reductions of comfort in labor conditions and plant viability as well as greater variability in

rainfall leading to increased frequency of flooding and periods of drought. This case study hopes to therefore model means of collaborating with people whose experiences of climate change have yet to inform broader climate policy. Such modelling demonstrates the shared rhetorics existent between farmers and government technocrats that can initiate a dialogue that better attends to the needs of small farmers working outside of industrial agriculture.

The Q'eqchi' Maya's Contested Origins and Sovereignty

Before proceeding with the chapter, it's important to first historically contextualize the significance of the concession in light of the Q'eqchi's people's struggle for recognition and sovereignty. One of the three broad categories of Maya recognized in Belize (the Mopan and Yucatec being the other two), the Q'eqchi' people of Belize have had a fraught history in the region. Though it is generally accepted among anthropologists and historians that the Q'eqchi' occupied parts of the Central American region prior to English colonization⁵, their indigeneity to specific territories within Belize is highly contested due to their former semi-nomadic status. Richard Wilk, an American anthropologist, in his efforts to understand the Q'eqchi' people's migration unintentionally supported the notion of their absence in Southern Belize since he was unable to demonstrate conclusive proof of precolonial occupation, or a relationship between present-day Q'eqchi' and the Maya communities that preceded English arrival. Wilk's research has since been weaponized to dispossess the Q'eqchi' of their historical ties to territory in Belize, an act he writes about at length in the preface to the second edition of his book *Household Ecologies*. Additionally, Belize's other ethnic groups also claim indigeneity to the territory now

⁵ namely the Guatemalan highland

called Belize, resulting in a situation in which the government is wary of truly acknowledging in a decolonial manner the indigeneity of any peoples (Medina).

It's within this context that a coalition of Q'eqchi' and Mopan Maya people propelled what is now referred to as the Maya Movement of the 1990's, a grassroots initiative developed by Belize's Maya people residing in Southern Belize who strove for greater rights and protections from the still newly formed government. This movement, represented in various organizations including the Maya Leaders Alliance and the Toledo Alcalde Association, the latter composed of the alcaldes from all Maya villages in the district, wanted to secure land and influence for the Maya in the wake of rapidly developing road infrastructure and extractive logging projects (Wainwright). Following colonization, many Mayan villages resided on what was classified as Crown Lands. Villagers were allowed to live and cultivate these lands but were prohibited from either communal or individual ownership. Led by Julian Cho, the Maya Movement is considered one of the most substantive instances of grassroots organizing in Belize. In its efforts to achieve indigenous recognition by the state⁶, the Movement took on a variety of approaches, including the development of a series of maps of southern Belize intended to establish their precolonial settlement, legal challenges to the state in international courts, and political education among its adherents.

The Movement culminated after Cho's death, widely believed to have been murder despite autopsy reports not acknowledging it, with a Caribbean Court of Justice ruling in 2007 in favor of two Maya villages that sought a change from Crown Land status to communal

⁶ The details of what this looked like were highly contested among the Movement's leaders with some seeking recognition as a separate sovereign state while others sought greater inclusion in policy impacting the Southern districts.

indigenous lands. Despite this ruling, the government since that time has not acknowledged the significance of the ruling with American geographer and Maya Movement ally Joel Wainwright, stating that “the CCJ—and the judiciary more generally—do not have the capacity to force a breakthrough between the Maya communities and those factions of the state that are resisting to change” (Wainwright et al 2). While factions of the Maya Movement persist to present day, Wainwright and others argue that it now exists in a far weaker state absent strong leadership and inter-community arguments regarding what should be their next move. For the Maya in the region, cacao has long held significance in ritual practices. These practices involve the consumption of a cacao drink at various periods throughout the year as a demonstration of gratitude and piety, rarely grown for the purpose of sales beyond the community for processing into chocolate bars or other processed forms of the cacao bean. Since the 1980’s however, Erik Stanley notes that there has been an increased desacrilization of the crop as it became more popular as a cash crop among Mopan Maya (Stanley 14). Such desacrilization “was part of a larger package of modern identity including integration into the cash economy, increasing individual autonomy and the freedom of the constraints from tradition” (Stanley). While Stanley’s anthropological research focused primarily on Mopan Maya communities, a similar process of desacrilization also occurred among the Q’eqchi’ though the particular nuances of that process for them has not met with similar research.

Agroforestry

As explored in the previous chapter, the National Communications of Belize primarily covers monoculture farming and its impacts on local ecosystems. The cacao agroforestry project counters the dominant monoculture paradigm in several ways. Broadly defined, agroforestry is a

system wherein trees and shrubs are grown alongside crops in an imitation of ecological succession comprised of plants beneficial to human needs and helpful to the existing ecology. In other words, agroforestry views non-cash crops not as competition or obstacles for limited resources, but as complements through curation and maintenance. Though often framed under the contemporary label of ‘climate smart’ technology, agroforestry has been practiced around the world by Maya people’s for centuries in systems where “human ingenuity is secondary to the ingenuity and design of nature” (Diemont 1703)

In this case, the cacao agroforestry mostly relies solely on manual labor and few agricultural inputs external to the preestablished plant ecology (e.g. no fires or pesticide use allowed in the concession, and 30% of original canopy must be maintained in all plots). Since the concession is intended as a barrier for the broader MGL territory, the use of pesticides or other potentially harmful inputs in the concession would put species in the MGL at risk, countering its original intent of showing how cash crop farming does not need to occur at the expense of the surrounding ecology as well as how surrounding agricultural work in citrus, banana and cattle pose a threat to the concession. Secondly, the cacao agroforestry project was done as a model to show how cacao could be grown, managed and harvested with little alteration to the existing landscape. That means that felling trees to ease access would undermine the concession’s purpose. Being at the cacao concession, a person unfamiliar with an agroforestry system would have difficulty discerning where the concession ended and the unaltered forest began if they could not identify the cacao trees. Third, the concession was difficult to access by means other than walking due to requiring an extended trek along dirt roads often impassable during the rainy season. To gain access to the concession, drivers have to cross a river followed by a fifteen-

minute hike to the concession. This relative inaccessibility makes the use of heavy equipment impractical even if desired. The river was previously passable by a concrete bridge, which was unmoored from its foundation in July 2020 due to extended heavy rains resulting in flash flooding in the area.

In the case of the cacao concession, the major agroforestry techniques used are natural shade structures through the use of inga alley cropping, pruning, and weeding following initial planting. The *inga edulis* is planted and grows to its full height while also working to fix nitrogen in the soil. What makes inga edulis a suitable shade tree is that it maintains its broad leaves during the dry season, meaning year-round shade for smaller plants. Tut's plot lacked inga edulis because the existing canopy in his plot provided sufficient shade for his cacao plants. This canopy was comprised of old growth trees and none were removed to make room for the cacao trees. On the days I joined Tut on the concession, his work consisted of pruning cacao plants and weeding the surrounding landscape as necessary to stimulate growth and to ensure soil nutrients were going to the plants most vital to the agroforestry system. By the time of the start of the case study, Tut's 'weed' management had become so sophisticated that he had managed to minimize the frequency of weeding over successive cycles.

Over the two months that this project's fieldwork was conducted, I interviewed the two farmers on my visits if they were available. Mr. R. and Mr. T. both work in the concession and maintain milpa closer to their home. Though visits were intended to occur on a bi-monthly basis, they did not happen on that schedule due to difficulty of me regularly accessing transportation able to make the trip to Trio Farms in heavy rains and with poor road conditions. Additionally, Mr. R soon became entirely unavailable, citing off-site work he had been able to secure. His

inability to attend to his cacao plot in the way he would've preferred was a minor source of annoyance for him as 'the bush keeps ongoing, especially with the rain. It's hard to keep up with (August 21 Interview). During my visits, I asked the two men about their experience working at the concession, how they were experiencing the weather, changes in the climate they had recognized over time, and what their desired outcomes were from their labor. I conducted my preliminary interview with the farmers outside the concession and across the river. The interviews that followed were conducted in the farmers' respective plots with exception of the last interview, which I completed at Mr. Tut's house due to flooding that made the concession largely inaccessible in the last two weeks of my study.

One of the recurring themes from these interviews was that the autonomy with which Mr. Rash and Mr. Tut worked provided them significant flexibility with the maintenance of their concession plots. Both farmers began planting and preparing their plots of land in 2015 with the goal of each growing cacao on ten acres of the concession, which was interspersed with various native tree and shrub species. Some of these trees are fruit-bearing and attracted mammals to the concession, resulting in semi-regular encounters between the farmers and animals such as tapirs, howler monkeys, as well as a range of birds.

In general, the farmers characterized summer 2020 as unseasonably warm. Mr. Tut in our third interview shared that he had begun to notice a rise in air temperature and humidity in 2018, saying, 'a person can't endure the heat. All-day, no one can endure that (September 5 Interview). Even in my limited visits of one to two hours at the concession in the morning before the full ferocity of the day hit, the combined air temperature and humidity, along with the physical exertion of moving among uneven terrain, would leave my shirt drenched. Mr. Tut tried to visit

his plot three to four times a week to attend to the cultivation that would provide him the greatest yield at harvest. Mr. Rash and Mr. Tut both visited their concession in the morning, arriving at its entrance around 7 or 8 am.

The concession is most easily accessible through an extended dirt road, which during the rainy season was impassable to many vehicles due to flooding. Mr. Tut regularly rode his fixed-gear bicycle while Mr. Rash used his dirt bike. Though by the time I had met them, the farmers had already become well-acquainted with the journey, I found it a huge point of stress on my visits since I had to coordinate transportation to the concession every time, often being taken by dirt bike by Mr. R.'s son since I typically arrived after Mr. Tut had already left Trio for the day. Mr. Rash visited the concession less frequently due to his commitments with the Trio Farmers Cacao Growers Association. Meanwhile, Mr. Tut was widely recognized in the community for having the biggest yields in the concession. When asked why this was the case, Mr. Tut ascribed it to his more frequent visits to the concession relative to others, an observation supported by Beaton's case study on the concession which found that several farmers struggled to find time to visit their plots. Cacao without regular maintenance, largely involving pruning and weeding of the surrounding area, can still produce a yield (2 pounds for the least productive in 2019). Yet, it's only with regular pruning to stimulate growth and weeding to eliminate competing plants that profitable yields can be made (703 pounds for the most in the same year) (Beaton 11).

Due to global heating, Mr. Tut regularly felt unable to work beyond 1 or 2 pm at the concession. The combined impact of high humidity and high air temperatures made occupying the forested concession unbearable and brought up concerns of adverse health impacts from heat stress, a particularly troubling possibility given the remoteness of the concession and the

infrequency with which other community members visited the concession (during all my field visits, not once was there another farmer working at their concession). What spared Mr. T. the worst of heat related issues was his ability to determine his own end of day, an option unavailable to farmworkers in many places working on yield-based incentive systems. Asked about the difference about working at the concession and working on their milpa (where they grew cabbage, corn, sweet pepper and beans), Mr. T and Mr. R said that the most significant difference was that the concession afforded them some shade while they worked, Mr. T adding that his red beans grown at his mipla required similar constant care to ensure sufficient yields.

At the time in which I was conducting the field work, I found the general optimism of Mr. Tut and Mr Rash's future a comforting thought. Their ability to perceive a future in which their plots could produce enough cacao at a scale to care for their families and uplift their communities from socio-economic precarity existed in stark contrast to my own dystopian visions for the future of agriculture in Belize. On coding the interview transcripts, however, I came to understand the role of their rhetoric of hope differently. Whereas prior I considered this hope to be an invocation of future community resilience in the face of climate catastrophe, its tenor now instead sounds to me like two men in desperate socio-economic circumstances attempting to rationalize the labor and time they are presently inputting to the cacao agroforestry concession. Of the two, Mr. Rash was more conservative in his labor inputs on the farm, sharing in our second interview that he'd been in his plantation "cleaning and chopping under the corn" (September 5 Interview) to ensure the corn harvest did well enough to feed him and his family. This demonstrates the limits of phenomenology as a type of data that can inform climate policy. Though the farmers could speak to changes in labor conditions and crop health as a result of

higher temperature and more variable rainfall, the limits of phenomenology to present temporality makes it less useful as a climate projection tool on its own. The phenomenological experiences might be able to inform changes to labor practices today, but epistemologically they conform to a cyclical notion of climate phenomena that no longer corresponds with the ever-shifting ecological reality. What seems to be occurring can be best described by Sara Ahmed's discussion of relegation, stating "We can think...of the background not simply in terms of what is around what we face, as the dimly perceived, but as produced by acts of relegation: some things are relegated to the background in order to sustain a certain direction; in other words, in order to keep attention on what is faced," and in the case of the farmers', such relegation of climate change reinforces a rhetoric of hope aligned with a destabilized biosphere (31). My argument is that in order to persist in the long-term project of cacao agroforestry that the farmers perform, whether consciously or not, some degree of relegation when it comes to climate change. They observe the separate phenomena caused by the hyperobject (Morton), but are reluctant to categorize them as aspects of a changing biosphere that will likely make cacao farming less productive in the near future. Such relegation is understandable given their limited control on global emissions (arguably, their agroforestry project sequesters more carbon than it produces), and their desire to further develop a stake in a global cash economy.

The rhetoric of hope operating among Mr. Tut and Mr. Rash both enables them to engage with the everyday labor of maintaining their plots and constrains their sense of how the climate crisis may develop and accelerate to impact their work. Changes in rainfall and temperature not only affect the viability of the cacao crops, but the agroforestry system at various levels. For instance, it is in part due to climate change's effect on rainfall patterns that the concession lost

the bridge that connected the concession to the rest of the Trio Farms community. Changing rainfall patterns also are detrimental to the transportation of cacao from the concession as the road linking both becomes impassable during ongoing heavy rain.

My interest in foregrounding this rhetoric of hope is not meant as a critique of the farmer's utilization of it, but rather a critique of the limits such an orientation to the future can have.

While the agroforestry system used by the concession does mitigate harm done to the pre-existing ecologies relative to typical input-intensive monoculture farming, the sale and distribution of cacao must still accord with capitalist globalized commerce. This is also a self-critique of my own attempts in this project to find hope for survival for myself amid an indigenous community with whom I wanted to align my identity with based on indigenous Maya lineage on both sides of my parentage. The hope that this project unconsciously cultivated was one in which I myself would be able to feed from the resilience and modest living of the farmers, a bourgeoisie attempt to reorient my sense of life towards one better aligned with degrowth economics and indigenous buen vivir ontologies. Recognizing that desire within myself following the case study has facilitated an ability to better understand that just as there is no migration to a geographic space free from the impacts of a warming world, there is no community that one can cling to that can guarantee safety or salvation.

Climate Smart

Indigenous agroforestry as practiced by the farmers of the Trio Cacao Grower's Association is not recognized as the central way forward for Belize in its attempts to stave off the impacts of climate change on agriculture. Instead, the Government of Belize like many countries has turned to the promises of 'climate-smart' technologies. The Climate smart technology

framework, though not a stable collection of interventions, refers to ‘the production of win–win outcomes in which all parties benefit’ from alterations to existing systems (Taylor 92),. This involves the application of technologies to maintain or increase present desired outcomes, including “increased food yields, decreased greenhouse gases, and increased climate resilience" (90).

Climate smart technology has been increasingly referenced in the Belize National Communications documents in the form of cover structures, irrigation systems, sophisticated weather and climate forecast systems, and genetically modified crop variants. These technologies are among the many areas that Belize solicits financial assistance via the National Communications, and as discussed in the previous chapter, proponents of climate smart technologies do not interrogate the present agricultural model that involves considerable land and inputs devoted to monoculture for exports. These practices have therefore been taken up by monoculture large-scale farmers in Belize, such as the increased use of covers for banana plantations to maximise their chance of viability. Under the World Bank’s climate smart framework, for instance, an existing sugar plantation would change only as necessary to continue a hopeful upwards trajectory of increased yields through the use of irrigation systems that would lessen reliance on volatile rainfall patterns. This would require the development of extensive irrigation infrastructure and water storage in conjunction with new crop cultivars that possess greater heat tolerance, a contingency already being planned for within the National Communications through experimentation with cultivars under various climate scenarios. By engaging in an epistemological understanding of climate change wherein the worst impacts can be mitigated through climate smart technologies, the GoB, the World Bank, and other influential

financial institutions diminish the need for fostering hope hinged on broader societal shifts that may run contrary to the interests of transnational capital.

What the climate smart framework, as described by the World Bank, ultimately overlooks is the socio-political dimensions involved in food production and consumption, a ‘depoliticised approach to the global food system [that] tends to validate existing policy agendas and minimise questions concerning power, inequality and access (Taylor 89). This is in part due to its vagueness at its conception, seeking to appropriate techniques such as agroforestry, without having to reckon with its role in indigenized land sovereignty or as resistance to monoculture production. Climate smart’s triple win focus also calls into question its viability as its aim of increased yields while decreasing green house gas emissions draws incredulity as the two goals are often at odds given the various ways increased yields are often associated with expansive fossil fuel use. La Via Campesina, an international peasant agrarian group has critiqued climate smart technology for its maintenance of a business-as-usual approach that keeps powerful oligarchical interests as overseers of large agriculture and refrains from critiques from prevailing systems of food production (La Via Campesina 2015).

The issue of consumption is also at the core of La Via Campesina’s critique as they interrogate the accepted flows of food production and consumption which sees peasant farmers making barely livable sums in order to maintain year long global north access to the widest range of crops available. What a discussion of climate smart technology does for this case study is illuminate the politics to which I so readily ascribed the agroforestry concession. By that I am referring to the fact that while the agroforestry concession does feature limited fossil fuel and other potentially harmful inputs for production, it works within existing structures of distribution

and consumption wherein the Trio Cacao Growers' Association (TCGA) members attempt to sell their harvest for the highest available price. Buyers therefore are preferably international companies seeking raw cacao for use in their products who are in a position to pay for a higher price to then have Belizean cacao shipped internationally for processing elsewhere into secondary products sold at greater premiums. The cacao therefore participates in the same routes of food flow of climate-smart monoculture input-intensive crops to which the TCGA avoids wholesale appropriation into. It is necessary to discuss this aspect of the concession because it asks us to take a more holistic view as to the overall impact such a project can have in altering the course of land and food sovereignty when the desired outcomes for participating farmers relies on the TCGA continuing to participate in existing food systems. It asks us to locate sustainable farming not just in the conservation of existing ecologies where farming occurs, but in the networks of land tenure, shipping, international financing and agreements that do not so easily lend themselves to malleability without deeper interrogations into historical inequities and present accountability.

Perceiving the Farm in the Agroforest

Entering the concession, an untrained eye may not recognize the moment the old growth rainforest gives way to the concession's ten acre cacao plots. There's no clear visual marker to demarcate one from the other, and I never became able to discern Mr. Rash's and Mr. Tush's plots from appearance alone, relying on them to tell me where we were at any given moment.

After crossing the river, we trekked through knee high grasses that'd been regularly trampled on by the farmers and the forest rangers who used an entry point across the trail from the concession to access areas of the reserve with little human intervention or infrastructure. The terrain gradually shifted from savannah to rainforest primarily comprised of trees between ten to twenty feet of various species of hardwood trees, including mahogany (*Swietenia macrophylla*), sapodilla (*Manilkara zapota*), and Honduran rosewood (*Dalbergia stevensonii*) as well as various shrubs. There are small ponds throughout the concession around which the ground turns to marsh, further dampening the already humid conditions in the rainforest. The plots themselves are not separated by any barriers such as fences or posts, therefore, recognition of the limits of each farmer's plot's boundaries are up to the discretion and courtesy of neighboring farmers. Though I could not tell either farmer's plot from the trail, time spent at the concession did reveal differences via the concentration and quality of cacao plants. Mr. Tut, who as previously mentioned was the most successful in terms of harvest in 2019, visited the concession more than most of his colleagues and that labor was evident when I noted that his cacao trees extended deeper into the plot than that of his neighbor to the West. Making such discernments wasn't immediately evident however. This was not only due to the aforementioned lack of barriers, but also because the agroforestry system being deployed meant that the cacao trees were not planted in neat rows as one typically envisions when imagining a monoculture system. Instead, cacao trees were planted so as to take advantage of the shade provided by the old growth forest. That meant in some cases two cacao trees would be separated by a mahogany tree, and then a few feet away there could be a row of five that are all benefiting from the shared canopy of trees around twenty feet high. The seemingly haphazard planting of the cacao trees can give the impression

that there is no logic guiding the expansion of the cacao plots, but that overlooks cacao trees' shade needs, which under this configuration lack the need for any additional materials such as tarps that are often been used for shade. What I also recognized after a few visits to the concession was that the cacao trees layout didn't rely on apparent order because there was no application of inputs external to the farm and therefore no need to organize them in order to optimize such applications and reduce input waste. The trees relied entirely on rainwater, nutrition from soil and detritus, and indirect sunlight, and whenever I observed Mr. Tut attending to the cacao trees, pruning them with well-practiced quickness and attentiveness like a hummingbird zips around plants, the whole thing seemed a far cry from what I understood farming to be.

What my time at the concession alerted me to was that I had not sufficiently understood my own rationale for the project I was engaging in. I believed I would be able to better understand the rhetorical barriers that limit the influence of small farmers on national climate policy impacting agriculture, yet that belief was premised on the assumption that there was a tension among the two. Though the Trio Farms concession operated according to different technical and ecological requirements compared to typical monoculture farming, politically it was attuned with national climate policy primarily concerned with an ever-increasing harvest. Ultimately, the distinction I'm best able to make between the rhetorics of hope operating in the agroforestry concession and at the national level is one of community scale.

The farmers develop the cacao farm under conditions stipulated by Ya'axché and in doing so have come to appreciate the financial possibilities it promises their families' futures for those diligent enough to work their land and fortunate enough to be spared the impacts of natural

disasters. The National Communications on the other hand perpetuates a rhetoric of hope to appease its audience that Belize is making sufficient progress in a global project to limit biospheric disruption beyond livable conditions. This difference in scale for whom that hope serves therefore troubles my sense of how the Government of Belize might come to center the needs of Belizeans when one is focused on a survivable future and the other conceives of climate change as primarily a financial issue to be remedied via cash injections. It is from this position that I proceeded with listening and analyzing the many hours of recorded audio from the concession. Through this process discussed in the next chapter, I expanded my sense of how and what to listen for within 'nature', and how the limits of my technical knowledge and perception resulted in a series of experimental listening session intended to rupture my preconception of what is natural and harmonious and what is a disruption to an imagined intact ecology.

Chapter 3: Sounding Out for Harmony in the Agroforest: The Role of Human Earing In The Era of Machine-Listening

In the previous chapter, I introduced the case study I undertook at the Trio Farms Cacao Growers' Association cacao agroforestry concession. Therein I described, based on my first-hand experience of the location and over several interviews, how two farmers perceived their labor in light of a changing climate, which would have detrimental effects on their respective plot's activity, not to mention the terrain's health, with increased temperature, changes in rainfall, and the increased frequency of natural disasters, such as flooding, that had already impacted the concession over the 2020 season. This chapter further expands this case study through a discussion of audio recordings made at the two plots through the use of passive acoustic monitoring (PAM) Audio Moth recorders.

The study of sound attends to a relational space ocularcentric cartesian culture that has disoriented humans from recognizing. It orients the earing human to an aspect of the sensorial world that rhetorical scholarship has considered primarily through the perspective of compositional pedagogy by writers like Krista Ratcliffe, Cynthia Selfe, Michelle Comstock & Mary Hocks, and Steph Ceraso as a means to aid student's facility with critical listening as feminist praxis, and attunement to the more-than-human world. My project contributes to the field of sonic rhetoric by mediating on bio acoustic methods that typically rely on machine listening, and makes a case for the vitality of the subjective human listener. It is through the subjective rhetorical experience of listening to these environments that a listener may gain insights into aspects of climate change that affectively move them, and facilitate dialogue

between people about climate emotions as an initial step to collectively addressing the present crisis.

Audio Moths are designed by the organization Open Acoustic Devices with the idea to

The screenshot shows the 'AudioMoth Configuration App' window. At the top, it displays the time '16:08:34' and date '06/07/2020 UTC'. Below this, device information is listed: Device ID '24F319025D511DC3', Firmware version '1.3.0', and Battery '3.8V'. A timeline from 00:00 to 24:00 is shown with two red vertical bars indicating recording periods: '05:30 - 05:45 (UTC)' and '11:00 - 11:15 (UTC)'. Below the timeline are input fields for 'Start recording:' (11:00) and 'End recording:' (11:15), along with buttons 'Add recording period', 'Remove selected period', and 'Clear all periods'. Further down, there are radio button options for 'Sample rate (kHz)' (8, 16, 32, 48, 96, 192, 256, 384) with '48' selected, and 'Gain' (Low, Med, High) with 'Med' selected. There are also input fields for 'Sleep duration (s):' (5) and 'Recording duration (s):' (10). At the bottom, there are three checked checkboxes: 'Enable LED:', 'Enable low-battery cutoff:', and 'Enable battery level indication:'. A green bar at the very bottom contains the text 'Configure AudioMoth'.

Figure 3: The Audio Moth Configuration App with Recording settings configured for project

create “a low-cost, open-source acoustic monitoring device [for] multiple applications, including automating the search for an elusive insect species, monitoring poaching by gunshot and listening for ultrasonic bat calls” (Open Acoustic Devices, ‘About Us’). The devices allow a relatively easy means of recording audibly perceptible vibrations at programmable intervals. They also have the added benefit of “hav[ing] negligible effect on the environment” (Farina 2) as compared to the disturbance caused by human observers conducting count surveys with the

assumption that they are recovered and properly disposed of when no longer functional. My intention was to make recordings at the agroforestry site to determine if there were any patterns that emerged through the acoustic complexity index (ACI), hypothesized by bioacoustic scientists to demonstrate a relationship between sound and biodiversity (Pieretti et al 2011, Hartigan 2016, Bennoci et al 2022, Bradfer-Lawrence 2019). Bioacoustic scientists perceive the use of sound as a useful indicator of biodiversity because it would dramatically reduce the cost of species assessment studies, which currently rely on professional observers' sightings and record-keeping, a labor-intensive and costly method. Bioacousticians so far are still in early trials with being able to rely solely on assessing biodiversity with ACI because there are still questions as to the degree to which the natural architectural structure of sites impact the diffusion of sound in a space. Acoustic ecologists such as Leah Barclay and Toby Glifford who record soundscapes for artistic or aesthetic purposes view such attempts as futile in the face of dramatic variability of spaces' structure, and an attempt to easily reduce complex acoustic dynamics to statistics that could be used for conservation purposes. They consider such attempts as an "eschewing of listening [that] reflect an epistemic stance, endemic in the sciences that seeks to remove perception from observation" (55b, 'Acoustic Ecology in Unesco Biosphere'). As of this writing, the major studies assessing soundscapes for biodiversity continue to rely on comparing their results with other methods such as trained observer counting. My interest in conducting this experimental chapter is two fold: 1) To combine the methods of bioacousticians with those of acoustic ecologists, and 2) to extend the phenomenological inquiry of the previous chapter to other animals insofar as to how the concession's emergence impacts their presence in the

territory and my own perception of that presence when their sounding is recorded and reproduced in a space absent of its ocular and haptic features.

With regard to my first goal, rhetoric as a field felt like a productive area in which a discussion of how two different sets of specialists working in the same terrain with the same medium conceive of the use of sound. As a rhetorician, I wanted to mediate this discussion by using aspects of both skill sets, deploying passive acoustic monitoring devices, assessing them according to tested acoustic indices as a bioacoustician would and then using that as a basis to engage in a series of listening/writing performances more akin to the work of an acoustic ecologist. Farina categorizes acoustic indices according to three varieties “Intensity indices, which measure sound amplitude, complexity indices that assess levels of complexity by various definitions and formula, and soundscape indices that investigate the importance of geophanies, biophonies, and technophonies” (Farina). For this chapter, I used one acoustic index known as the Acoustic Complexity Index, which “calculates the absolute difference between 2 adjacent values of acoustic amplitude. As more differences occur and more information is contained within the spectrogram, the acoustic environment should be more complex and variable.” (Farina 5).

I also conducted this experiment to test the notion of how the presence of human food cultivation necessarily limited the presence of other animals since the concession did not implement industrial farming techniques known to deter other animals’ presence (Apol et al 2019, Kunc and Schmidt 2019), such as the use of loud machinery, inputs that would be toxic to the animals, and the absence of human-designed deterrents such as traps, poisons or predators. Anthropogenic noise has been demonstrated to have a clear impact on other animals’ ability to communicate, limiting bat’s navigation or the ability for animals to call and respond to potential

mates, though not necessarily always negative as Kunc and Shmidt illustrate in their meta-analysis of noise's impact on other animals ("The effects of Anthropogenic Noise on Animals"). Apol et. al. in a controlled study on the impacts of three different frequencies of noise on animals first outline that other animals "rely on acoustic signals for mate selection, territory, and predator defence, alarm, announcement of food and even declaration of individual identity" (322).

Climate change as a set of phenomena has also impacted the communication between other animals. For instance, male frogs have been observed to begin their mating calls earlier in the year and with more frequency in warmer winters (Mcelwee 2021). Land use change, a major contributor of climate emissions, is regularly cited as one of the leading contributors to biodiversity loss with agriculture as one of the major drivers of land use change (Mcelwee 2021). Biodiversity loss and climate change share a complex dynamic with the increase of the former often exacerbating the effects of the latter and as temperatures increase and climates destabilize, biodiversity receives further detrimental shocks.

In the case of forests' conversion to agriculture, "the natural sink capacity of trees, roots, and soils to absorb anthropogenic CO₂ is altered" (Mcelwee) with the Amazon rainforest one of the most significant examples of such alteration. Additionally "most intensive agricultural systems seek to remove wild species as weeds, predators and other pests that are not compromising production. The immediate effects of intensification of agriculture leads to a decline in avian and pollinator diversity and numbers" (Muluneh 2021). Agroforestry, a form of agriculture regularly recommended as a means of maintaining food security while preserving biodiversity, and as practiced in the concession, offers one strategy that does not position human well-being and more-than-human ecological health in oppositional terms. With a significant

absence of motorized sound or deforestation activity in the concession, I hypothesized that the more-than-human soundscape of the concession would more closely resemble recordings made by acousticians in ‘the wild’ than those recorded in typical industrial agricultural farms. My goal for this experiment was to determine how I ‘eared’ the space of the concession when the recordings were mirrored in the solid drives of the micro SD cards in the Audio Moths then remediated by the audio software Audacity version 3.0.2 on my MacBook Pro (Retina, 13-inch, Early 2015). Earing the audio in addition to having the R program ‘listen’ to it was significant to this work because in the process of earing the audio I am able to orient my listening to the temporal aspect of the recording, a feature that’s lost the machine as it extracts its temporality by transforming it to frequency. Whereas the program processes the audio as quickly as it and the computer processor allow, I listened to fifteen minutes of recorded audio for that same fifteen minutes. Therefore while the program marks instances of varying acoustic complexity represented through the line graph, I attuned my listening to the way the recorded vibrational elements played separately and holistically. Through the process of inserting human subjective listening into the bioacoustic method, I hoped to give complementary insights on what the untrained ear perceived about the concession and the work done there from the soundscapes.

Recorded over the two months of the case study with two recorders at each site plus an additional backup, (recorded for 15 minutes twice a day at both sites with backup recorders in place), the experiment provided 19 hours of audio that I was able to have analyzed in R and then visualized in various plotting charts that helped me pinpoint recordings with noteworthy acoustic properties, referred to henceforth as ‘outlier sessions.’ This was done in order to give me a sampling that I could feasibly listen to that would provide the most variation, and make the work

more manageable in line with the third route of acoustic mediation musicologist Iannis Zannos outlines in his paper ‘Machine Listening to Soundscapes: Playful Discovery of Sound Languages.’ Offering a reconsideration of what listening is as a result of the rise of machine listening to process the terabytes of data recorded by increasingly inexpensive passive acoustic monitoring (PAM) devices, Zannos states that such listening is not an unmediated process on the part of the hard drive and machine listening software, but either a “rearrangement and editing of new data” or “use of data to extract model or hypothesis representing a novel view of phenomena” (Zannos 25). Demonstrating that the human does continue to have a potential role within this workflow, Zannos states that a third route “involves the living human being as part of the reconstruction process through the sensory experience of the data” (25). The method deployed in this chapter also attends to a gap of the use of acoustic indices, namely that “while efficient, indices compress a vast amount of soundscape info into a single number, which increases the risks of missing short duration events” (Hartigan 34). This means that ACI can exempt exceptional sounding events if they’re too short of a duration to register. This experimental chapter therefore is a means to integrate the human listener into this reconstruction process, a collaboration of a kind with the R software, the AudioMoth devices, and the sounding beings and environment of the Trio Farms Cacao Growers Association concession to determine what my listening body, untrained to decipher other animals calls, makes of recordings that have are at the low and high end of relative acoustic complexity.

By outlier session, I mean recordings wherein some audible event took place that resided outside of the statistical norm calculated by the acoustic indices. For instance, when looking at the ‘acoustic complexity’ charts (pictured below), it’s evident that an audio event occurred on

September 11, 2021 that had a higher degree of acoustic complexity than the norm audible at both concession sites while plot 2 experienced an acoustically complex event on September 26 that was not similarly resonant at plot 2. For the purpose of this experiment, I wanted to focus both on recordings that existed on the lowest end of the sample data as well as the ones that exhibited the greatest acoustic complexity.

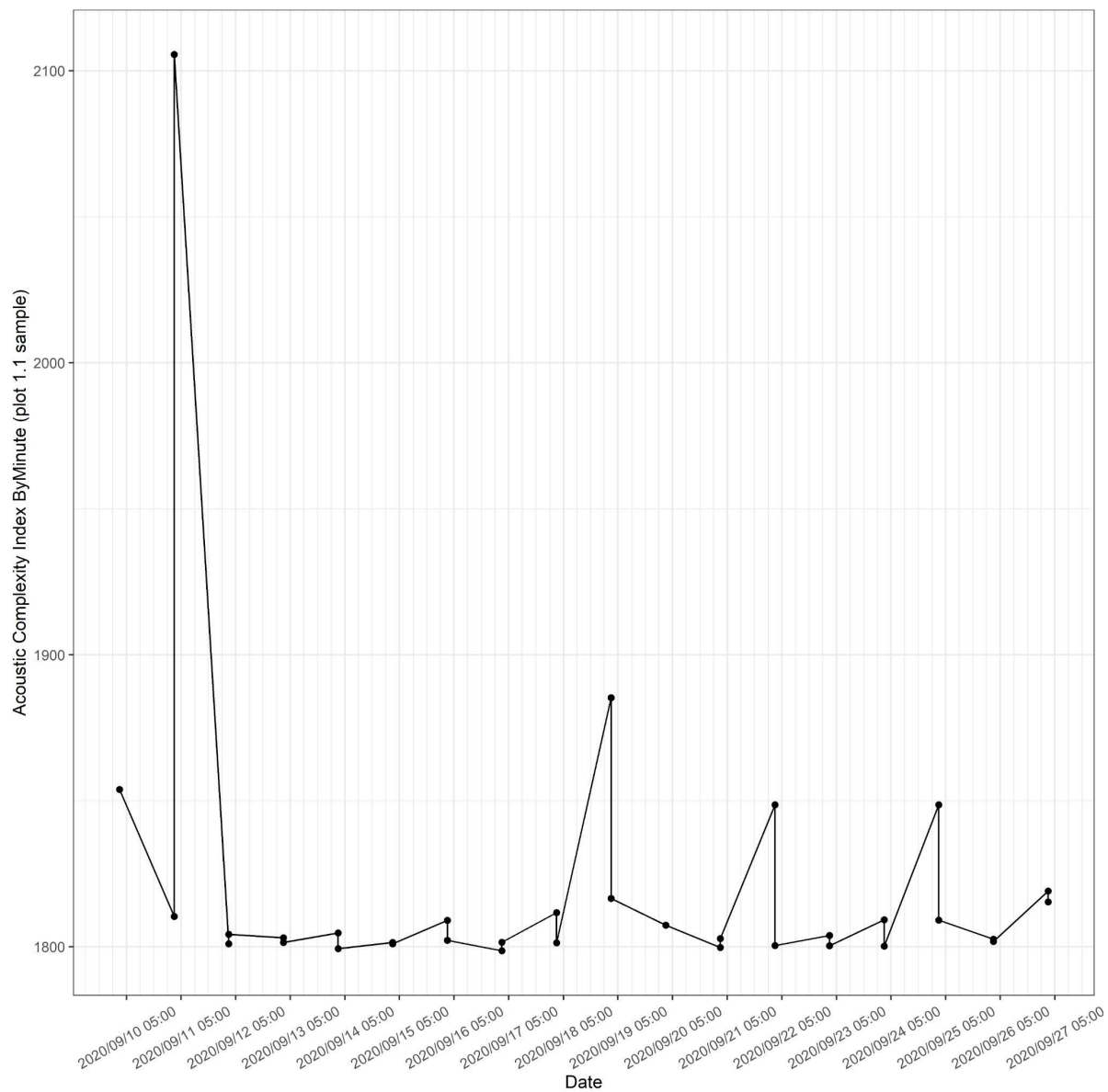


Chart 1: A line chart illustrating the acoustic complexity of each recording across the eighteen day recording period at Tut's cacao plot, location 1.

The statistical significance of these sessions then adds it to the next tier of sessions for which I proceed with the rest of this study. In the case of the September 11 session, I orient myself towards recognizing how I hear a session deemed complex by the R program. I then engaged in these outlier sessions in a series of deep listening sessions inspired by Pauline Oliveros's techniques as well as Dylan Robinson's Hungry Listening ethic to develop a series of performance writing pieces that contemplate my sense of the concession plots' acoustic ecologies as well as broader climate anxieties. What I borrow from Hungry Listening is its ethos that as settlers, we must resist narratives of a place that romanticize or appropriate indigenous ways of knowing or engage in unproductive self-indulgent bouts of personal self-flagellation. That, in part, settlers must learn how to deny themselves access to indigenous knowledge. This chapter's experiment embodies that through an attempt to resist narrativization of sound elements and instead focuses on trying to render the sounding itself, which is not always successful in the excerpted pieces. These performance writing exercises, in line with Laurie Gries' call for developing methodologies for writing that puts us in dwelling with others as a response to the Chthulucene, then provide another layer of text to dwell within as a means of understanding the complications of listening for biodiversity and how my listening self has been oriented toward a particular sense of acoustic well-being based on fictional representations in film, soundscape mixes, and childhood cartoons.

Pauline Oliveros, the composer and sound teacher, coined deep listening over the course of her study of sound, finding that music students often lacked training in how to listen to sound and improvise. Oliveros makes two vital distinctions to describe deep listening: first, she distinguishes the physiological act of hearing wherein vibrations are translated by the ear canal into sound and listening wherein there is an attenuation to a particular vibration. Deep listening then is specifically concerned with ‘listening and discerning effects on the bodymind” (xxiv). Oliveros considers deep listening a meditative practice as it invites practitioners into listening expansively across space and time through various exercises she and others developed. What’s significant about deep listening is its orientation towards subjective listening, foregrounding that vibrations are experienced differently by every bodymind. In other words, deep listening attends to individual perception of sound rather than institutionalizing practitioners to a particular sounding orientation. As a set of meditative practices, deep listening contemplates the attunement between an individual’s bodymind and the vibrations that resonate through it emitted from the more than human world.

What makes this chapter's method notable is that it is based in techniques from acoustic ecology and bio acoustics, which often diverge in their interest in sound. Acoustic ecology considers the affective qualities of sound in a given space. Those engaged in acoustic ecology are often composers or musicians whose labor involves making recordings of a space through the use of microphones and other recording equipment. These insitu recordings involve the active orientation of a microphone towards or away from particular sounds and are intended to invite listeners to dwell in a space that might not be easily accessible geographically or physiologically (ie the use of sensitive hydrophones to record the sound of shrimps chittering in water). Bio

acoustics, a specialized area at the intersections of biology, geography, and physics, considers sound as an array of measurable units (e.g. acoustic interval, acoustic complexity) that can potentially demonstrate something about life for being in a particular space. Like acoustic ecologists, bio acousticians often make sound recordings. However, they rely more often on passive recording devices such as the Audio Moth due to their interest in analyzing large batches of sound for patterns.

My project combines elements of both to generate a series of affectively inclined performance writing exercises. Like bio acousticians, I used passive recorders (the aforementioned Audio Moths) programmed to record twice a day (5:30 am and 11 am) in two locations for a period of a month as heavy rain damaged the devices after that period corrupting some of the data. I then ran these recordings through the Acoustic Complexity Index in the R package called ‘vegan’. Like acoustic ecologists, I listened to these outlier sessions (each session consisted of 15 minutes of continuous audio) and noted their affective qualities in writing, allowing my attention to fixate on sounds as well as taking in the recordings as a whole piece.

Acoustic Complexity is an index developed to “show variations in biological activity w/in sites rather than just species diversity” (Hartigan 4). The rationale for it is that anthropogenic sound, anthrophony, has a more constant variability as opposed to biophony, sounds produced by living things, which tend to be more relatively variable (ii). As designed by Pierretti et al (2011), the R code to determine AC is then able to scan through a recorded piece of audio and look for instances where the sound is more variable and register it as a number. The functioning hypothesis being that instances of greater AC are representative of greater biodiversity acoustic presence. AC functions best as a biodiversity indicator when used on sound where anthrophony

is constant. For this study, AC is a useful acoustic index to use because the concession resides away from most other human activity. The major anthropophony observed by the farmers were the sounds of planes flying overhead, though that was an irregular occurrence that was not stored and reproduced in the recordings, and the sound of combustion engines on the tractor at one of the citrus farms though only audible on rare occasions when the tractors were on the parts of the orange grove nearest to the concession (also not audible on the recordings). My deployment of ACI is unlike Hartigan and Pierretti et al's study's wherein they were focused on the biophony of select species or groups of species. Hartigan used it to detect AC among beluga whales, and Pierretti et al used it to assess bird song. In my case, I knew from my time at the concession that there was potential for the AC to detect a wide array of species' vocalizations from birds, mammals, and insects. AC was also likely to be impacted by geophony due to being in the midst of the rainy season (June 1 to November 30) when intense rainfall was a regular occurrence.

This method is also a response to geographer Michael Gallagher's more expansive definition of field recording, which involves the entire process of "production, circulation, and playback" (560). Field Recordings "represent the vibrations of the world but they also performatively reiterate these vibrations: they are vibrations, oscillations of microphone, diaphragms, electricity, loudspeakers, air and bodies" (561). In other words, for the field recording process to come to its complete end point, playback through a listening body that can attend to the reiterated vibration's temporal aspects are necessary. A machine, such as the R software and the computer hardware used to store and reiterate the vibrations converts those temporal aspects to frequencies. It listens out of linear temporality. The remainder of this chapter is therefore a conclusion of this field recording cycle, including the performance writing pieces

followed by a brief discussion considering whether an ear untrained to distinguish species calls and their possible semiotic meaning can derive harmony or dark ecology from the pieces of audio.

The performance writings have been edited for clarity. Italicized text is a means of rendering the schizophonia of listening to recorded sound in a space that isn't soundproof where the sound of other activity competes with the sound emitted from the personal listening device via Lstn Troubador consumer headphones at 60% volume, the recommended percentage to prevent hearing loss, at an average of 60 decibels (dB).

1.2 (file name 20200911_113400)

Bird and insects. A crisping of the air. Pops as leaves are hit by enlarged water droplets collecting as they fall through the canopy. A new bird song enters and another follows. Further away there's traces of a third. Then a series of chirps. That bird recedes then returns. Its first sounds threatening in their abrupt appearance and departure. A car drives past my house and the neighbors' dogs whine. The day sounds wet but calm. The early guttural sounds of howlers. The howler roars. Its sounds low against the high pitch of the bird. Predator is my impression. The other birds continue their songs. Insect chirp, fluttering perhaps. The howler's roar like a wave, coming in an extended pulsing blast. After some time, the howler's cries lose their potency. Their familiarity is like wind rustling through branches. Then the roar multiplies and each wave is capped by a series of grunts. Birds keep on. With sounds of this sort, you expect some climax but that's thinking of the sounds as conflict, an ever-escalating threat that ends in an attack. It ends without resolution mid-call. I'm back to the neighbor's dogs cries, which also don't seem to end neatly while I'm conscious.

1.1 (file name 20200911_113400)

The cars starting their daily commutes from the culdesac. Bird song that goes in five beats. Meanwhile a screech. What sounds like rains plodding onto greenery. Another animal hoots. A series of short screeches dissipate, returning more softly. Insect chirps. The start of something else. The extent of nothing. It neither soothes nor alarms. Perhaps out of there, the sounds only become matter. The howler may be miles away. Their sounds may not mean a threat. Laced around them are three bird songs and steady insect chirrups that have so far gone without interruption. I first heard howlers at Baboon Sanctuary in Burrell Boom where people traveled to hear them. We were taught not to taunt them with mimicry but did so once the teachers and chaperones retreated to the shade. The howler's cries oscillate in such a way that likely spikes the ACI. I mentally turn the track on the screeches down to listen for other biophonic activity. A sound not heard before like the beating of wings near the recorder. Many animals are simultaneously audible, the howler louder, but the others' cries don't resonate with fear. It's like the howler is on another band of sound. Not literally of course, but the way one ignores the whisper-scream of parents to toddlers knowing that it's not for their ears, a purposeful disorientation. The wind and rain remain steady but light. The howlers multiply, their screeches overlapping. In their presence alone, I cannot imagine myself anything but shudders.

1.2 (file name 20200926_113400)

like water drops falling from a great height onto a hollow platform below. a keeling of a bird and the distant hooting of an owl. This is the sound of nature at rest is the impression, or nature at exhaustion. Proximity just as vital to audibility as sheer magnitude of volume says the

loud buzzing of a flying insect, a thick mosquito with blood drawn. The shuffling between and birds. The waveforms indicate no vacillations and do not visually illustrate the ongoing water drops plodding below. The rain steady sounding like distortions. Then a whinnying far from the mic. Physical contact with the recorder by a fast fluttering bird. Some birds make their presence known in one distinct bleat. I can barely make out a whining. The constant presence of the bug does not inure confidence, a signal of irritants. This is not zen or paradise, more like a doldrum. A presence crunches at the leaves. A gentle hissing followed by a chirp. When the rain alone is audible, I feel myself most there. As the sounds become more complex, the schizophonia becomes more evident. Intrusions that last a moment and recede are the soundmarks that most soothe me among those present in the recording. Sometimes a birdsong gives the impression of movement. If not of flight or scurrying, of a neck jutting back and forth to fluctuate pitch. The truth is there are no narratives to get at here beyond the ones invented to make the passage of time less acute while listening.

1.2 20200910_180000.WAV 1850 ACI

The low crescendo of a bird stuttering out a call. Rain behind then two thuds. A thrilling bird. Unaware how they sound so dynamically without teeth. I imagine a small spider monkey chirping from the sound I just heard though I know they're uncommon in the area given the presence of howlers. When ACI is lowest, you can count on howler's absence in the recordings. Maybe they're there but resting. Not clear how often they sound for mating or to make a territorial claim. All birds seem small on the recording when the microphone picks them up at a lower volume. When steady in the forest, rain sounds like the sea coursing over tide pools. My dog next to me scratching himself. I like the calls that sound like Morse code this one emits, a

string of frequencies that remind me of phone phreaks imitating tones to access lines for free, how one of those phreaks was a young blind teenager who could hack into banks by sounding like a modem dial-up. At the eight minute mark when the hope starts to really kick in that something major will occur that would stir my attention. And yet it's the rain, the occasional bird. One sounds like it's stretching flexible wood in its call. Why does biodiversity have so much greater range? How many animals prefer the silence? If every tier of the food chain were present, would there be sound at all? Isn't silence for other animals, like us, sometimes a means to survive? Perhaps this is also why humans are so eager to outsource this to machines, to statistical programming software able to transmute time to frequencies. There is so much here, but nothing revelatory that would be excerpted or sampled for argument. Without the writing, I'd have little ability to maintain auditory focus. The fan in the room's generated wind filling the gap between headphones and outer ear.

1.2 (20200910_180000.WAV)

Rain that drops as a leaf loses form, plodding below. The desk fan's steady rotation. Bird calls stuttering across the landscape. A different species engaged in a call and response of their own. It all sounds far from the recorders, likely in the canopies far beyond where the recorders were placed, level with my face five foot four inches. The last stray sounds of the day. A drizzle plays throughout, the geophony of rain making contact with bark, branch, and leaf. There is nothing distinct until the singing birds resume. This could pass for peace with howlers absent, earlier cacophony now at a lull. Then a chirrup that may be either bird or primate. And a low sound that zooms through the air. It sounds like a dart flying then dissipating before hitting its target, vibrations unable to maintain cohesion. Leather squelching below me. Cold brew belched.

Dog shaking off the day. Difficulty to focus when the sound lacks dynamism. Would greater complexity impress vibrance or violence? Perhaps the other animals also savor this reprieve from the competing choruses. All seem to lack means to cancel incoming vibrations with metal and shaped plastic. Mouth breath audible, sinus congestion mild yet unignorable. Steady soft rain persists without alteration. It persists across.

2.2 20200925_113400.WAV

Starts with rain on its last legs. An insect chirp. The two sounds on a loop. Leaves buffeted with large drops of water though the rain doesn't change in intensity. As the rain continues, one deep thump seems to plunk onto the recorder. Things remain as they are. The rain like firecrackers on the greenery. The chirping insect's volume increases, either moving closer to the mic or increasing its sound. Then something flies near the mic. For a while, I thought I'd heard a pattern among the chirps, the rain drops and a third faint sound until it all ceased then altered tempo Rain must have its own physics, how it descends through a forest canopy. I cough loud audibly over the skittering. Out from under the canopy, how would the rain sound? Does it conjure audible relief in other animals? What I keep coming back to is the image of one of the farmers when I visited after he was working several hours. His shirt stuck to him with a combination of perspiration, humidity and rain. What would he think of me in my laundered clothes sitting with a fan pointed at my face and torso listening to his land? Within the geophony of rain, two birds hoot then what sounds like a canine. The discomfort of a water drop landing right on the microphone almost makes me remove the headphones. The rain is picking up though it doesn't seem to alter the insect from the start. When something flies near the mic, it makes me feel they'd like to be heard. A croak, either frog or toad though some insects sound that way too I

know. When what I think is a bird makes this sound, I think of attack or approach. Either undesired. I returned to the spectrogram to determine runtime. Occupying the audible space of the forest recreated at alert amplifies my anxiety. What am I missing here? To be there amid this would likely be a lighter misery, but then there is the work necessary. The moving around the brush.

2.2 20200923_113400.WAV

songs that dart. the drops large and going through several tiers on their way down. Maybe a leaf then another. buzz can saw into another person. it gnaws. When we think of harmony in human singing, there is the idea of complementary registers. Harmonious biophony does not exist in that similar manner. None wait their turn or try to match the pitch. the beginnings of a howler call fade beyond their ten-mile range. Rain again on this recording makes me wonder if complexity is due to geophony of recorder placement. The dropping water on leaves gives the algorithm the impression that something robust is afoot. This bird now sounds like a turkey, the way they seem to sometimes imitate dogs barking. There is a bird call that whorls into itself and then drops into the world. None of the sounding animals are loud. Then a hoot comes in to refute me. The desire to anthropomorphize is strong. Even to say this song is a call is only because it sounds like a human friend saying, 'hey! Hey! HEY' through a crowd. And why do overlapping birds of the same species out of synch so often give the impression of conflict?

—

What my performance writing on Acoustic Complexity demonstrates is that greater complexity does not necessarily translate to more diverse, harmonious sound representing a variety of animal sounding activity. In fact, the ACI spiked most often either when howler

monkeys vocalizations overlapped with bird song, or when geophonic sounds became more prominent in the recording as in the case of '20200923_113400.' In that recording, the sound of liquid cascading through the canopy was 'complex' because of the different tones and pitches the drop's contact made throughout its descent.

What was also shown through the AC sessions is that anthrophony was never distinctly audible perhaps due to the persistent geophonic sounds brought on by the rain. During the recording period, rainfall was constant and at times became severe enough to prevent travel to and from the concession, limiting the farmers' working days and my own ability to visit at fixed intervals. Human ear ring to these recordings was the only means to get a more robust understanding of what the index interprets as complex sound. Rarely was there an instance in these recordings where more than three species were audible, and it was even more unlikely that any of these species calls persisted for any duration longer than a few seconds.

Despite my best efforts, I see often in the performance writings aspects that I'd consider both self-indulgent as well as narrativizing. When I mention the farmer's labor despite no audio indicating his presence in the concession at the time of the recording, I nonetheless imagined him in a position of suffering and then myself in a position of comfort, relief. I listened for him not as an autonomous cooperative owner of an impressive and highly productive cacao farm plot, but as someone undertaking suffering despite his own claims that he found the work a far better alternative to many other options, in large part due to his ability to determine when he worked. In the instance I described where his shirt stuck to him from sweat and humidity, he soon after quit his work for the day and returned to his home, perhaps to rest and watch a screen just like I do for much of the day. This short excerpt showed me how the sounding of his labor for me carried

a pitying affect that I have not yet successfully disentangled from my perspective of strenuous agricultural labor.

The final thread that the performance writing demonstrated is that my attention waned when I could not discern a new and distinct sound every few seconds. On the recordings with lowest acoustic complexity, I found myself increasingly switching to the Audacity window playing the recording to check on how much time remained. With those recordings, I noted a greater tendency to narrativize the sounds and infuse them with related musings on sound inspired by my research in order to fix my attention on the sounds at play. Rain as a frequent element in the recordings may have muted the perceptibility of other sounds across recordings, and had a soporific effect on me if not interrupted by other sounds regardless of my level of wakefulness.

Overall, the affective experience of listening to these sound recordings high or low was that the concession sound indifferent to human perception. The two plots at the concessions were seemingly active with a variety of sounding beings. I was intrigued by imaginings that the sounding beings were not only at different ranges from the microphones but also likely at different altitudes from the microphone. For a repetition of this soundscape activity, it would be interesting to create a mix that combined audio from different altitudes secured onto the seem tree or other tall structure.

This exercise demonstrated that acoustic complexity as eared by the machine listening software does not necessarily translate to a dynamic sounding piece of recorded audio. The overwhelming presence of howler monkeys on the recordings with greatest acoustic complexity had a considerable influence on how machine recognized complexity whereas for me the

instances of their sounding felt intense, but minimal in its harmonious dynamism compared to other instances on the recordings when several beings sounded at once at similar volume thresholds. This experience of high acoustic complexity is akin to how Steven R. Hammer describes rhetorical noise as ‘an event that demands increased expenditures of energy from audiences in a given communicative situation’ (‘Writing Dirt, Teaching Noise’). High acoustic complexity was rarely aurally represented as a biophonic orchestra, but was instead more like an industrial noise rock show with ‘irregular frequencies, amplitudes and movements’ (Hammer).

Despite that, my performance writing during sessions of less acoustic complexity had a more listless quality to them, possessing an anxiety about when the next remarkable sounding event would occur that would merit a description or flourish. I found it exceedingly difficult to remain present within the soundscape of lower acoustic complexity pieces, mirroring my more day-to-day struggle of appreciating a given day with the knowledge that biospherically we are always constantly teetering towards tipping points. There was some irony to this too as I had initially come to Pauline Oliveros’s work as a means of integrating her deep listening exercises into my broader meditation practices. I had hoped to improve my appreciation for all that yet remains in the world, and to help me cope with the constancy of anthropogenic noise that had always impeded my focus and soured my demeanor when present. Reflecting on the performance writing, I am struck by the question asked about whether animals prefer the silence. For this project, I relied on the audible performance of other animals to facilitate the content of this chapter. In their absence, I experienced a dual frustration driven by concern that the chapter’s method would not achieve its intended end, and that perhaps I had configured the Audio Moths for inopportune times. Now I better recognize that perhaps the silence for the animals also played

a role in their well-being I wasn't able to better appreciate under the performance context in which I listened to them. Lastly, I was never able to perceive sounds I had heard at the concession when Tut was at work. The rustling of his fingers through the cacao's branches or the zip of the machete against growing grass were relegated outside of the recorder's configurations.

I consider the performance writing exercise as having a great potential application for writing instructors that would like to integrate sound, light coding, and mindfulness exercises into their students' practices. My prior teaching experience with sound involved sound collages composed of anthropogenic sound signifying the functioning and labor at the university, and a shortcoming I found of that project was that students rarely listened to a space for extended periods, but rather hunted for sounds that could be quickly captured and inserted into the edit. The maintenance of sound's temporality in this chapter proves to be one of its greatest assets as a piece of sonic rhetoric instruction. By attending to how we perceive sound in the absence of human speech or preconceived goals for audio capture e.g recording at a time when animals are most likely to migrate in groups across a space, students might gain some access to how they tell stories about how the more than human world vibrationally resonates through the listening body.

In the chapter that follows then, I extend this exploration of preconceptions into the realm of fictional narratives of Belize's ecological futures. Through two parallel future narratives about Belize, the next chapter demonstrates how the stories we tell about the future through present policy constrain and expand the possibilities of the futures we are able to make.

Chapter 4: ‘Cool Down’ A Belizean [Counter]apocalypse Future

The idea for this chapter arose as a response to the discussions on climate imaginaries the previous chapter explored. In chapter 1, my analysis of Belize’s National Communications documents demonstrated how a particular climate imaginary is envisioned by the Paris Agreement’s technocratic management of emissions and their reductions. I applied the People’s Agreement of Cochabamba as an alternative frame to illustrate how new alignments that foreground collectivism, land back, and non-human autonomy might be able to better address climate change mitigation and adaptation without the need to continue opting into transnational extractivism that centers concentrating the wealth of the elite classes here and abroad. In chapter two, I outlined a case study conducted with two cacao farmers at Trio Farms, specifically how they were experiencing and articulating climate change in their labor and how it influenced their hope for the future of cacao agroforestry. In chapter three, I explained the process by which I used passive sound recordings of the cacao concession as a jumping-off point to discuss how humans ‘ear’ the health of rainforest environments, and speculate on the myth of pre-anthropocentric harmonious acoustic ecologies.

In this chapter, I am using an original work of fiction composed for this project to work through two scenarios for Belize. The use of the alternate universe trope is based on health scholars Trevor Hancock and Clement Bezold’s landmark 1994 article “Possible Futures, Preferable Futures.” Based on their experiences of how health institutions project the future, Hancock and Bezold offered four ways that the future might be envisioned. Those are possible (what may happen), plausible (what could happen), probable (what will likely happen), and

preferable (what we want). They argue that “too often our image of the future is the scenario we think will most likely happen [the probable future]” (25b), which then informs the present actions taken. They describe the preferable future as an alternate model, one that is “a liberating and empowering future, especially when it touches our more creative capacities” (25b).

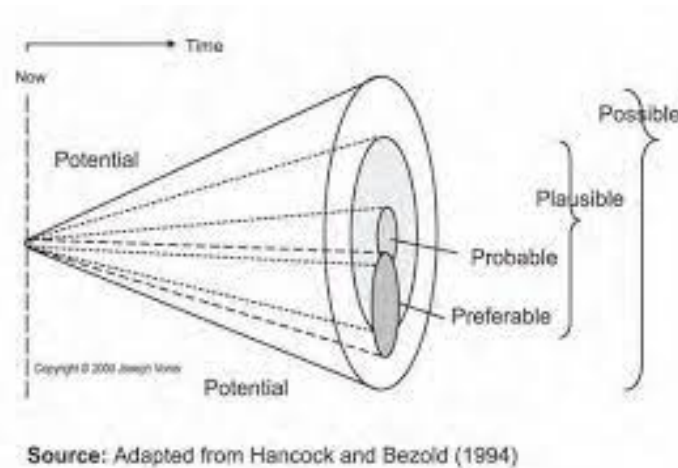


Figure 43: An illustration from Hancock and Bezold’s 1994 paper ‘Possible Futures Preferable Futures’ depicting how the present extends towards ‘possible’, ‘plausible’, ‘probable’ and ‘preferable’ futures.

The story in this chapter explores this concept of probable and preferable futures through the alternative universe trope and gives special attention to Hancock and Bezold’s view of a preferable future that is liberating and empowering. Presenting the same day in the same place in a probable (represented as the ‘/\\ /\\ /\\’ sections in story) and a preferable future (the ‘\\^/\\^/’ sections) intends to demonstrate how present choices might facilitate the emergence of one or the other. While the story presents a potential preferable future, it’s also important to note that the future depicted does not intend to mirror the restrictive properties of hegemonic narratives. It instead follows in the lineage of the Zapatista concept of the Pluriverse, ‘a world in which many

worlds fit.’ The society depicted in ‘Cooldown’'s preferable future isn't the only desirable future possible, but one of the many that will be necessary to facilitate the Great transition, a future that “envisions the decoupling of well-being from growth and consumption, and the cultivation of new values (e.g. solidarity, ethics, community, meaning). It proposes an alternate global vision that replaces industrial capitalism with what they conceptualize as civilizing globalization” (Escobar 142). That civilizing globalization necessitates the reemergence of vernacular cultural mores based in land's materiality and human's phenomenological experience of that terrain and its histories.

Although still atypical for a research-based dissertation, this chapter's content is not without precedent and is a response to Laurie Gries' call for performance writing (as in chapter 3's experimental sound pieces), Aja Martinez's development in rhetoric on counter story, and Joanna Zylińska's call for counterapocalypses. Before proceeding then, I'd like to briefly summarize each of these and how the story that comprises the majority of this chapter functions as a response.

In a call for the application of New Materialist Ontobiography (NMO) to write through the Chthulucene, rhetorical scholar Laurie Gries outlines and exemplifies how rhetoric might benefit from greater engagement with sensorial writing. She argues that NMO “attempts to tap into [co-constituted] rhetoricity to better understand how it is that cospinning bodies are impacted by affect and persuasion through sensorial exposure and sustained experience between self and other” (307). Whereas the previous chapter did this through an exploration of how human ‘earring’ of an acoustic ecological recording can provide affective insights overlooked by

machine learning, this chapter considers the affective experience of living in a world where the wet bulb temperature is frequently exceeded.

This affective exploration is not only my own speculation, but based on the case study's interviews with farmers about how working in warm temperatures for extended hours has impacted the way they engage with work. For instance, the autonomy over their working hours provides the farmers the ability to cease work should they feel they are exceeding their ability to continue enduring the day's weather. While Gries applies NMO as a non-fiction method, its application to future-oriented fiction is also called for as the humanities can deploy its interest in affect to aid readers in familiarizing themselves with altered ways of being in the world. The physical alienation generated by global warming is also highlighted in this story, and reflective of mine and others' experiences navigating the sensation of extended heatwaves and via reports of heatwaves during 2021 and 2022. Of particular interests is the alterations to habits and commerce that these heatwaves have generated, such as the need to reduce working hours to avoid the hottest hours of the day and giving more time to rest (Kumar and Ives, Tunio).

Zylinska's prose and video work on counterapocalypse argue that the hegemonic hold of apocalypses on our future is a result of settler capitalist patriarchs conflating the end of their power on the world order as the end of a habitable world. The dominance of apocalypse in media throughout the late 20th and 21st century, in Zylinska's perspective, are means by which this notion of the future becomes increasingly more certain in our collective imagining, therefore facilitating their placement as the most probable future. These narratives "often rely on apocalyptic tropes straight out of the book of Revelations." (Zylinska, *Exit Man*)." In response to this then, Zylinska's feminist counterapocalypse is an invitation to create works of narrative that

imagine futures where people thrive and live in greater attunement with the environment. A feminist counterapocalypse, in her view, “takes seriously the geopolitical unfoldings on our planet while also rethinking our relations to and with it precisely as relations” (38, *The End of Man*). Similar to Escobar’s pluriverse proposition, Zylinska’s work focuses on the matter of relationality both among humans and with the more-than-human world.

The story in this chapter is one such attempt at rethinking such relations. Specifically, this story meditates on the preeminence of the nuclear family structure, and capitalist views of work as well the potential of collective imagination. Since apocalyptic narratives of Belize remain in short supply with exception to Monica Bryne’s *The Actual Star* (2021), and Tony Rath’s short story ‘This Hell We Live In’ (2022), the first task of this story was to establish a probable future for Belize that remains tethered to US hegemonic relations and the prominence of capitalist extractivism as the means of arranging work. The probable future of ‘Cooldown’ maintains the present trajectory outlined in Chapter 1’s National Communication documents with the Government of Belize designing its climate mitigation plans on technocratic solutions that would potentially be funded by global powers through reparations. The probable future universe of this story assumes (based on ongoing failures at reparations) that such funding never arrived at the necessary scale and that the country slowly deteriorates as the ability to fund public services diminishes and private interests are able to monopolize the country’s remaining labor power as depicted by the remote call center job and the seawall construction.

By establishing this probable future, I am able to use a corresponding preferable future as a space to reimagine relations more attuned to the people power ideology of the People’s Agreement of Cochamba discussed in Chapter 1. What’s vital about the story’s use of the

People's Agreement is that the way forward in the preferable future relies less on technological fixes though a few elements of futurist technology are present, but to illustrate how significant rearrangements in culture can be to altering life for more people. By allowing work to be defined by that which produces the necessities of life for all rather than that which is most profitable, the preferable future's society is able to reconfigure itself to lessen suffering and increase people's ability to thrive in a warmed world that can no longer sustain the impacts of limitless growth.

This chapter is also a response to Aja Martinez's work on counterstory. Emerging from legal scholarship and Critical Race Theory (CRT) from writers like Derrick Bell, counterstory is an example of a "critical race methodology recognizes that the experiential knowledge of people of color is legitimate and critical to understanding racism that is often well-disguised in the rhetoric of normalized structures and practices" (Martinez 3). In her monograph on counterstory, Martinez identifies four modes of counterstory. I claim that 'Cooldown' functions as an example of what Martinez describes as 'Counterstory as Allegory/Fantasy.' Derrick Bell, a major practitioner of this rhetorical mode states that it offers readers a means to "see things in terms of that are less threatening and confrontational" (57, qtd. in *Counterstory*). The alternate universe trope is one such method at mitigating the threat that even the thought of the climate crisis presents to a region that continues to tout '1.5 [C] to Stay Alive' even as that threshold becomes more likely to be exceeded (Geden).

'Cooldown' offers a counter story to the presumed mass death and migration that the climate crisis would trigger in the tropics via its preferable future wherein work has been reconfigured and time for rest and intimacy has grown. Though 'Cooldown' does not feature racialized Belizean people as its central figures, it does consider the ways in which global south|

majority countries like Belize are often exempt from futurist stories and therefore merit the counterstory application from a transnational sitpoint. I remember watching Neil Bloomkamp's *Elysium* in 2013, taking place in a future LA ravaged by extractivism and pollution, and realizing that if LA looked like a large landfill site then Belize likely didn't exist. 'Cooldown' is an attempt at offering both the status quo story of Belize's climate future, apocalypse, and its potential counterstory future that resist submission to the future imposed onto it by global north extractivism and imperialist policies.

Lastly, this chapter has been highly influenced by time shared reading and viewing works of climate fiction. As an origin point, I take Octavia Butler's novel *Kindred* (1979) wherein reconsiderations of relationality and emotion's role in addressing environmental crises play prominent roles. More recent works of reference include comics and prose works such as Inés Estrada's *Alienation* (2019), Lale Albert's *Seasonal Shift* (2020), Olivier Schrauwen's *Parallel Lives* (2018) Sequoia Nagamatsu's *How High We Go in the Dark* (2022), Sim Kern's *Real Sugar is Hard to Find* (2022), and the film *Downsizing* (2017). These works of climate fiction all share a concern with how groups navigate survival in a world transformed by climate change, investigating the feelings of occupying altered ecologies through societal and technological changes. Additionally, several of these stories avoid the doomerism prevalent in many other climate fiction narratives. *Downsizing*, a movie that ends with the likely extinction of humanity as the climate collapses, also argues for passing even the last of a seemingly hopeless existence working with others to reduce pain and suffering for as long as possible, a hospice approach advocated by groups. Nagamatsu, Kern and Schrawuwen's short stories and comics respectively depict a variety of futures where new relations and values have facilitated the continued

successes and even joy among survivors. Lastly, Estrada, Albert and Schrauwen's comics have influenced how 'Cooldown' imagines the sheer amount of time that must be filled in futures where the mundane joys of walking outside or breathing in the fragrance of the world are no longer possible. These stories, in other words, all recognize that living a good life might involve more than having necessary shelter and nutrients, and that to thrive will require a reimagining of what a good life requires.

While a work of fiction, this story does correspond with various climate projections as they would impact Belize. For instance, the increased regularity of heatwaves unsurvivable by humans over the past two years will only increase in the next decade so long as carbon emissions continue. The concept of the cooling center is not based solely on speculation, but is an extension of the current use of public and private climate-controlled spaces, such as libraries, malls, or movie theaters, during times of extreme heat. Additionally, the seawall featured in the story is the result of a Caribbean Community Climate Change Center sea level rise projection and economic analysis regarding the coastal infrastructure that would be necessary to make the former capital livable. Belize City as its setting also has some historical precedent. In 1970, Belize City was the epicenter of Hurricane Hattie's landfall. The storm's devastation was so disconcerting that it resulted in the expansion of the inland Belize district community with the incorporation of villages like Hattieville and the relocation of the colony's capital to the inland town of Belmopan, which remains the capital and the place to which those in Belize City retreat to when a severe incoming storm is projected to make landfall there. I experienced that myself in 1998 when Hurricane Mitch, a category 5 storm, was projected to hit Belize City. My entire extended paternal family retreated to Belmopan for a week. That time the country escaped a direct hit by

the storm due to a last-minute change in trajectory that saw it instead hit our southern neighbors in Honduras, Nicaragua and Guatemala before continuing north through Guatemala.

Taking place in the year 2032, both scenarios exist at a time when global warming has surpassed 2 degrees Celsius warming, disrupting life throughout the world. Both scenarios focus on the occurrences of one family living in a future Belize City. Outside the country, the scenarios both exist in a time of escalating global conflict between China and the United States with Belize exempt from the conflict as a demilitarized zone to be recolonized following the conflict's conclusion.

In the probable scenario, Belize maintains its status quo as far as its relationship to the global north, continuing to provide food, minerals, and labor to their benefit and to local overseers capitalists. In the preferable universe, Belizeans have collectivized and rejected the global north narrative about how a country should envision its development. Since not all aspects of a future Belizean society can adequately be covered in a short story, over several drafts I have refined the themes and issues of greatest concern to the narrative that follows. In the probable scenario, one of Belize's coastal cities Belize City, a low-lying and currently most populous city in the country has been all but decimated through a combination of rising sea levels, storms, salination of groundwater, heatwaves, and collapsing infrastructure over the previous decade. The main character of both scenarios is in his 30's and working to extend the seawall that's been in progress for years as the last line of defense to protect the wealthy remaining coastal communities, which are never depicted. He and his family (a wife and daughter) in both scenarios are faced with an imminently approaching heatwave fatal to most who would experience it. In one scenario, the cooling center is a privatized enterprise whereas in the other it

is a free social service extended to everyone in the city and supported through mutual aid efforts.

What I also wanted to render here across both scenarios is how the presence and absence of the desperation to survive might alter the dynamics of the family. In the probable scenario, the main character never is depicted communicating with anyone as he and his wife's waking life is constrained by the work needed to earn a living and the work needed to keep themselves alive. In the preferable scenario, the role of work has changed, giving more time for recreation and reflection. Note that in both scenarios, the seawall project exists but whereas in the probable scenario the project is conducted by a limited and marginalized workforce, the preferable scenario envisions the project as a citywide communal one taken on in less intensive shifts.

Housing is also of concern in both scenarios. The probable universe depicts how the family has moved away from the matriarch's home due to regular flooding and issues with its inheritance following the matriarch's death. In the preferable scenario, an adaptation fund has allowed the family to continue living in the home through changes to how the space is used (e.g. sealing off the ground floor, integration of nutrient-rich plants in its design). Additionally, the probable scenario imagines the plight of Central American refugees whose only option for housing is to reside on the roofs of larger buildings to escape the rising water, but with increased heat exposure, resulting in mass deaths during heat waves.

What I hope is shown through these contrasting scenarios in a probable and preferable future is that there are still yet multiple routes that can be traversed today for global majority countries like Belize. That the preferable future wouldn't be one absent of conflict or struggle, but that it might give rise to attending to new forms of conflict as decolonizing familial and social arrangements arise. If the probable future is a hyper-individualized apocalypse, the

preferable future is a meditative drama wherein people possess the basic necessary resources and are able to think and feel through a pluriversal and ecologically attuned world.

Cool Down

Another cool down event was approaching. Three days. This one a category seven, meaning we'd have to sell the screen and the last of Mom's appliances just to get us halfway to what we needed for admission. When she died, Mom's pension disappeared into a bureaucratic hellscape. My sister Dil was still fighting it and filling out new sheafs of paperwork every week. What remained of the regional government had AI lawyers churning out new restrictions by the hour, and it was impossible for me to help her between my shifts and helping Elle at home with Lis, so I told her she could keep it all if it ever worked out.

We left Mom's house about a month after her funeral. Me, Elle and Lis. Dil had left a few years before, unable to cope with the regular flooding of the ground floor or Mom's stories about when she first got here from Guatemala: how many blues there were in the sea; the dream she had that inspired her to make a garden on top of a swamp. Elle and I moved when she got pregnant. We weren't interested in having kids. I mean, we were, but end of times seemed like a cruel intro to Earthly living. Then Elle and I couldn't manage to put together money for the abortion. Mom refused to help. Said all new life was a gift especially then and we needed to live with the consequences, a reply that seemed more appropriate if we were teenagers as opposed to in our mid-thirties and barely employed despite holding American master's degrees, albeit in the humanities, which there wasn't much of anything even before we hit 1.5 C warming.

I lost my job at the university two years ago. By which I mean the university closed, and the campus sold off to the last piece of chalk. No one could afford to go even with the tuition

freeze from the last decade and the government kept spending anything it didn't steal on higher sea walls on the north side even though the other half of the city was in about three feet of water during the driest months.

Elle was a linguist. She got fired from the university first when the neurotranslators gave the admin all the reason it needed to get her, the last of the language department, out of there. That day Elle was already up before me, preparing Lis's first day shake while starting her shift for the call corporation she contracted with. I kissed her shoulder and she looked back with her thin smile, daylight temperature already leaving her face in a film of sweat that left my lips moist.

We decided long ago that our cheapest option was to get over ourselves so we skipped showers most days and dabbed at our dampest bits twice a day with wetwipes we tore into quarters, and maybe a third time if we wanted to fool around and pretend that things were like when we were kids, a time when I thought I'd be an archaeologist sorting through ruins rather than living in one.

I opened a can of fermented tilapia and forked out a chunky bit. Poured the liquid into a dish to be boiled later. Then I put it on the plate and minced it. I never could get over the flavor, but Elle said she'd look it up and it was the cheapest thing we could eat daily without developing cancer, so mincing it was. I ate small bites and watched Elle move around the room focused on what she was saying, switching between English, French, Mandarin and Dutch by the minute while I ignored what was going on in my own mouth. The neurotranslators did the job just fine, but rich folx never got over its inability convey regional accents well, so linguists like Elle got a second life with the call centers, and those that used to work there now formed another

unemployed mass scavenging the landfills. Elle made just over the old minimum wage but every week there was news of another Earthsource company closure, leaving the call corporation with a dwindling clientele. Plus, our own energy at home was getting unstable as Mexico's oil reserves started to dwindle, so Elle woke up never certain if she'd be able to login for the day and possibly finally lose her job. We tried not to think past the day.

I worked a twelve-hour shift seven days a week on the wall. I was one of the lucky ones who could get a job once anyone with even a single misdemeanor was barred from government work, and my uncle paid off the cop to get my DUI go off my record. I got paid a dollar for every two bricks I laid and usually ended up only taking home half what I should because the drone inspectors could detect any errors. I mouthed 'I love you' to Elle and she gave me one more smile as I stepped into the airlock and put on my cool suit. It was company property and I'd had to mend it in a few areas since I first got it, but it at least did the trick of making the daytime shifts survivable.

Once outside the house, I double-tapped my thumbs to the heart of my palms, activating the suit with a whir, the only sound often audible besides my breath while working. The cool suits were the only way anyone could manage to work outdoors while the sun was up in the weeks before and after a cool down event. It regulated humidity and temperature inside the suit, expelling the heat and moisture through microscopic vents that made a three feet circumference surrounding anyone within one on impossible to withstand for more than a few seconds. Thankfully, people knew to avoid those of us in cool suits and they likely would even if it weren't physically torturous since many of the Evangelists had convinced them that our unwillingness to endure the heat 'in skin', as they called it, marked us as traitors. That was fine

with me so long as they stayed away because if my suit took any more damage, that would be the end of work and I'd be in debt to Earthsource for its cost.

The walk to and from the seawall construction site took an hour each way. It was the only time I wasn't having to work, fix or take care of something just to make it through another day so I tried to enjoy it as best I could, imagining the streets as they once were, past the old Chetumal Bridge, which was now only crossable if you scooted across the handrail. Easy enough if you're 'in skin' with some welding gloves, but rebar jutting out at random made it a hazard with the cool suit, which folded in places between air cycles as it deflated, making it perfect for catching and tearing. Thankfully the suit was water-sealed so I trudged through the water instead, pulling myself across with a rope. Salt water came in undulating waves at me from the coast.

Belama was one of the swamp neighborhoods where almost everyone who once lived here had fled, even the ones with nowhere to go, and the roofs of their homes had become squatted mostly by refugees who had been turned away at the Mexico state border. The refugees built shacks on the roofs, most of them slanted by buckling foundations that shifted after the early 20's hurricane hat trick of Sigma, Tau and Epsilon. Up there, they cooked and slept at an incline, often nude but for knee pads, gloves and thick, padded underwear to prevent their zinc homes from burning their flesh on contact. After a cool down event, the police would start coming through here as the stench became too strong for even them to ignore. More often than not, they'd trigger their drone supervisors' malfunction feature and toss the bodies right into the swamp but the salt concentration was so high now that most of the bodies stayed afloat and drifted through the streets like a macabre lazy river ride, a thing Lis would never understand, 'Ya, Lis. In USE, they used to have these places where they'd flood all these plastic and concrete

areas with mostly clean water and one of the rides was a fake river where you'd go on a floatie and go round an' round in circles and you'd never see a dead body unless there was a serial killer with water-borne childhood trauma. And back then, we used to think 100 heat was a hot day.'

I was not looking forward to Lis learning to talk, learning what we had brought her into. For now, she had all she needed but that was also because me and Elle got over the dream of ever feeling full again years ago once all the farmed crops died out in the first cat 7 cooldown in '28. Leaving the bulk of our food for Lis came easy following that first encounter with starvation. We even got to know the various sounds our stomachs would make as they emptied and our stomach acids had nothing to roil against.

No one liked to talk about how obsessed we were with gas just a decade ago, an obsession that led to this—me walking in this asshole suit to make a few bucks for the chance to do it all again tomorrow. Today's walk I couldn't flow into the nostalgia, a habit Elle discouraged anyway, as the upcoming cool down event had me in a state of panic only quelled by late day lethargy as I repeatedly crunched the numbers on me and Elle's wages and assets across various possible outcomes, each one just a slightly different shade of fucked. And I knew that Elle was doing the same at home between words with a more precise and grim outcome. If Elle and I both worked as much as we could over the next two days, made no mistakes with our water or food supply, and found a decent buyer for Mom's solar-powered kitchen appliances we may just have enough.

If not, well, we had gone that route a few months before Lis arrived and Elle made me promise not to ask her to do that again as we'd only managed to survive because the vat's crawl space had retained a few inches of shaded water we were able to lie in for a week, taking sips of

grimy chaya juice Elle had been storing for the hypercane months, tips of our fingers grazing at intervals to ensure we were both still there there. Not saying a word until we heard the coast guard klaxons announcing the return of endurable temps.

The last thing we needed then was for me to lose my temper at work again and get docked for misconduct. Unfortunately for me and my family, even in the cool suit, I was prone to righteous rages if provoked and that day would bring out one that would cost me everything.

\\/\|/\|

Another cool down event was approaching. Three days. This one a category seven, meaning we only had another two days to secure the house until the lunar bus picked us up and took us to the neighborhood cooling station. Elle thought it was overly cautious for us to go from the night before and stay an extra night in the station's queen-sized capsule beds, but I liked getting up next to the two of them without any need to rush to the station like we were in an action movie. We were both off from the school that day along with everyone else in the city except for emergency services to shade the house's interior as much as we could since otherwise the intense heat would cook the house, making the home uninhabitable for weeks after the cool down.

Elle kept sleeping while I got up to check on Lis in the adjoining room. She was up in her crib, transfixed on the mural of a coral reef one of my sisters, a former marine biologist, painted for her. It stung to look at it so I usually averted my gaze as best I could when I entered the room, but watching Lis so deeply entranced by the mural drew my eyes back to it for the first time in months. Standing next to Lis's crib, we both watched the mural in silence as if we were in a museum. I scanned over the wall, seeing all the various marine life she'd stuffed into it and

listing them off at a whisper for myself more than Lis since I didn't like her knowing things that would make her sad to know were long dead. 'Red snapper. parrot fish. clown fish. grouper. lion fish. and....' I couldn't remember the name of the last fish in the mural but I'd seen it before on social media back when the rich promised sports fishing would save the sea, a theory that never sat well with me given it was often said as a caption to a photo with a humongous asphyxiated fish surrounded by self-satisfied rich kids. Its long snout made it look hella goofy next to the other fish, and Lis seemed to agree because she started to giggle, pointing a finger at it and cooing delightedly. "Yes, baby girl. That's a big weird fish your Tia painted." When I was a kid, extinction mythologized the dead. Now, extinction made much of life one long grieving process. You had to find lightness anywhere you could if you were gonna have a chance at a decent life. I scooped Lis out of the crib and stepped a little closer to the mural. I hoped that would jumpstart my memory of the blasted large snout fish but nothing came to mind. Cam would know of course, but I was too embarrassed to let her know I'd forgotten one of her preciouses she'd lost in the last decade when the mass sargassum bloom had covered from the mainland coast all the way through to international waters. The bloom choked everything underneath and making the coast putrid for months at a time. And all I was able to remember of that time was that the year before the country had opened a new international airport in the wake of Australia's reef undergoing an extinction level bleaching event. Many of us convinced the same would shortly happen to our reef advised against its construction, and in the wake of the sargassum event, many more people than ever before recognized that if we were going to survive, we'd have to quit deluding ourselves that the government would figure it out. We'd have to out organize the USE-sponsored UPP and put a squash to it all. And wouldn't you know it. We did.

/\ /\ /\

I got to the seawall site and clocked in with one of the drone inspectors. It fluttered in front of me just out of my line of sight, zooming from one place to the next to avoid any possible vandalism. The drone scanned my biometrics through the suit and sent it to the supervising office, which was at the capital Belmopan, supposedly managed by a full human team. Many of us still on the coast suspected it was also automated since we'd never met someone who'd visited the supervising office and were never invited to go on any occasion. Satisfied with its readings, the drone inspector uploaded my section for the day to my cool suit's HUD. It was never anything surprising, essentially telling me to get going again where the day before ended.

The work of building an ever-escalating sea wall was as monotonous as any other repetitive construction job, only this one came with the heightened threat of spontaneous death via boom lifts supported by industrial drones that sounded like jet engines to anyone in skin. Thanks to dramatically fluctuating weather patterns and the global destabilization of the tectonic plates once most of the aquifers had been sucked up, earthquakes had become a thing that affected this part of the world. With the earthquakes came tsunamis, a phenomena turned all the more deadly as the dead coral reef broke off each tremor, embedding chunks of coral into every wave. If you didn't drown in the surf, you'd likely still die getting bludgeoned to death by a sea fan or a dislodged and empty conch shell. What was once our shield had become a never-ending barrage, a reminder of what we'd failed to save.

The other workers and I weren't able to communicate once we clocked in for the day. The cool suits locked off our verbal comms abilities during working hours, and the drone supervisors surveilled us closely to ensure we didn't develop any other means of communicating lest we get

stupid and decide to try and unionize. Not that any of us attempted that anymore. Once the last of the union zealots were disappeared last year, the possibility of collective bargaining or worker's rights disappeared right alongside them. I was ok with that though Elle seemed disappointed that I never came home with word about an underground resistance since she hardly ever left the house once the cool downs started happening more regularly and only my job provided a coolsuit, locked to my biometrics. And though the nights outside were endurable, the people hardly were.

My work looked easy enough from a distance, but once you got up close you'd recognize that I was essentially playing an extended game of Tetris. See, the machine that printed the processed sargassum enzyme into bricks made them to be laid by a secondary brick-laying machine. The problem was that the brick laying machine proved frequently malfunctioned in the concentrated salt air. Once those in Belmopan did the math on maintenance costs of the machine vs human layers, things panned out in our fleshy favor. However, unlike the brick laying machine, which had algorithms in place to help it position the bricks in the right place for durability and material efficacy, we went about it all based on instinct and experience. The 'that looks about right' attitude championed by our forefathers unwilling to ask for advice that we once mocked them for was now how we got food on the table. That's why we were so frequently penalized for imperceptible errors. We were being compared to the og laying machine, a machine that proved incapable of functioning in this climate for more than a week without breaking down.

I didn't give all this much thought anymore. There really wasn't any room for it once the work got going and the clock began ticking on how much I was expected to get done before my twelve hour shift was through if I was hoping to have enough for whatever next cataclysmic

event was sure to come our way. On the boom lift, I again scanned my biometrics, secured myself with the primary and backup carabiner, and hit the ‘return’ switch that would take me to the day’s worksite. The boom lift rocketed at its most fuel efficient flight pattern, meaning a 30 degree angle skyward that would make anyone skydiving vomit up their breakfast if they caught a glimpse of this. With a quick siren burst, the lift paused and the platform leveled off, leaving me six inches east of where I was the day before. I took in a deep breath of filtered air and held it until I started to dizzy, expelling it slowly through my nostrils. Another day making a living amid the apocalypse.



We stayed at Mom’s house after she died even though the housing syndicate offered to rehouse us in one of the Cayo communities. Our students at the university were important to us was the rationale we gave them, and the house worked out just fine after we sealed the ground floor and moved everything up thanks to the coastal adaptation fund. Plus, we got regular bonuses for our willingness to sit tight and teach the remaining Belize coastal community who worked at various jobs and who we also worked alongside during our shifts on the seawall project we’d been developing the past five years. Of course, the last year had shown that things were still getting worse as far as emissions thanks to the proxy wars China and the US maintained in any country but their own. Belize had managed to escape its direct toll because we’d built up our food security even with a third of the country now salted with the rising sea. Both remaining military powers declared us a demilitarized zone, afraid to spoil territory they’d like to occupy once the war was over and a winner was declared.

There was nothing any of us here could do about all that, so we sTutk to what we could manage, helping each other. And at home, we sTutk to what brought us joy, so I expanded my penchant for singing aloud late 2000's emo songs, and Elle hung out alone in her study reading for a few hours a day. And when the three of us were together, it was frequently nauseating for any onlookers. Elle would share her favorite bits from whatever she was reading while I held Lis and listened. Lis would instinctively coo in sync with the moments her Mom was moved by. I was most stunned by the good fortune we were all experiencing in a world heavy with grief. Somehow amid all the pain experienced, we had become the stock image sold with cheap frames that you would never think could exist except we did.

Elle stepped into the room as Lis cooed, ending in a chirrup that reminded me of the cat I used to have as a kid. I opened my arm to make room for her and the three of us embraced, ready to get going on the day's work after some breakfast. 'The usual?' I asked Elle after we separated. 'Sounds good. Not too much for me, ok?' I nodded and handed Lis over who cooed anew at being with her Mom another morning. At the kitchen, I plucked a chocho from the trellis against the window and chopped it up. Half for me, a quarter portion for Elle and an eighth for Lis. From the pantry, I got two bananas we'd bartered for at the center over the weekend. I mashed them up, combining it with a bit of water, some of our plantain flour ration, and a tablespoon of chia seeds soaked in water and honey overnight. Pancakes. Like most families, we sTutk to this staple as we could rely on typically having all it required. Buffets weren't a thing anymore, but neither was starvation. By the time Elle and Lis joined me, I'd already cooked up all the batter into a short stack. We sat at our table for four, Lis now secured in her own chair, each of us with a bowl of chocho in front of us, and the short stack in the middle, which we'd grab and roll with bits of

chocho in each. Elle was feeding Lis the end bit of a pancake when she asked, ‘You think more about when we might get out of here, Luis? This next cooldown forecasted to be almost two weeks. I don’t know how much longer I can do the capsule beds that long’ I looked down at my plate and toyed with my chocho, a fruit I never ate until an agro-adapter suggested we start growing it. ‘Luis?’ Elle repeated.

‘Is it ok if we focus on making it through the heatwave before we get back on that?’

‘Luis, come on. That excuse can’t work for everything, especially if we just gonna keep getting them. What are we going to do, just stop making decisions every time a heatwave comes? We might stay cool each time, but we won’t be living much either.’

Elle was right, and she was gracious enough to not rub it in my face or bring up why I was so hesitant to make the move to Cayo. She knew I knew she knew. Still, I could hear her patience wearing away and knew I’d have to agree to it soon if I didn’t want to disturb the mostly happy home we’d made for ourselves.

At first I thought my reluctance to leave was due to my nostalgia for when I grew up here, in a house and city only slightly resembling their present state. Working with my therapy group on the issue, I learned that layer of reasoning was a nice story I maintained to keep the truth from myself. That I was afraid to no longer own our home, and put ourselves at the whim of the collective despite having championed its causes even before the first cities in the region started to collapse into vacated aquifers. Anyone who opted into being rehoused in the adapted communities out in Cayo agreed to give up individual property rights. At the start of the community project, a national referendum was held by the housing syndicates with the outcome being that it was decided no new housing units made with syndicate funds could be owned by

residents individually. Instead, all housing was owned by all citizens with free lifelong occupational leases provided to collectives of three or more people. Living as Elle, Lis and I did was considered not only out of fashion, but undermining of the collective mission. Our work at the university justified our continued nuclear isolation, but as the storm surge increased out of pace with the seawall project, our sacrifice started to look more like foolish stubbornness to our friends and family.

/\ /\ /\

I remained in a trance-like state for most of the morning, stopping at intervals only to rest my wrists, making circles inwards then outwards, then flicking them up and down. It took a minute away from my shift and the drones would start buzzing if I went over by a second, but it was the only way I could stay precise past the four hour mark. After my second physical therapy break, I crouched and grabbed another of the sargassum bricks, examining its shape, a lopsided parallelogram. I moved it along the portion of the wall I was working on, comparing it to what was already laid, imagining how the shapes might join to maximize strength and minimize material use.

Satisfied with the spot I'd set out for it, I grabbed the trowel and plunged its front half into the bucket of mortar in the lift's center, spreading the trowel along the top of two bricks that made a shallow 'M' and in the crevice between where the new brick would be and the one adjacent to it. The trick of it was getting just enough mortar on that the bricks held without gushing excess at the perimeter. Waste would result in a penalty end of day, and even more now than ever a penalty was not something I could afford. I got it just right, and felt a dull satisfaction at the sight, the 'M' now settled under the pressure of the parallelogram.

Then the drone's klaxon sounded twice in quick succession and the lift shuddered as the drone's computer malfunction worked to restore itself, or at least I hoped that's what it was. I grabbed the hand rail with my free hand and squeezed the trowel for what felt like a minute.

Now still, I took a deep breath of recycled air, trying to move past and get another hour in before I went down for a late lunch when the klaxon sounded again.

The lift drooped to the left as the corresponding drone went silent. With the sudden drop, the trowel leapt from my gloved hand and went up and over the bricks I'd just set down. To have seen it, you would've thought the trowel had sentience and had up and quit this whole mortaring business. I would've laughed if not for the immediate dread that set in.

As bad as a penalty was for wasting materials, it was nothing compared to the penalties you could get for losing company equipment, even for something as seemingly ordinary and mass-produced as a trowel. The company argued that they needed to charge obscene penalties because there was no longer large manufacturers of metal tools anywhere internationally, so they needed to spend a lot searching for all we needed secondhand in the region. Plus, they argued, they needed to charge a bit more to ensure we weren't so careless with company property in the future since we all had to be a bit more cautious with how we used things. I used to stomach their argument, but lately I'd been noticing when walking by my coworker's lifts that all our tools looked pretty identical even after some got worn down or, Gaia forbid, someone lost or stole something.

I knew enough to understand quickly that I had to talk to the onsite supervisor asap and get back to work with a new trowel. Maybe they'd understand since the drone malfunction wasn't my fault and I wouldn't be penalized though I didn't want to bet on it. Either way,

standing around on the lift not working wouldn't bode well as inactivity led to its own penalties. I hit 'home' on the lift's control panel, and it plummeted as the drones slowed until it was 10 feet from the ground, booming to full power then and lifting me off my feet. On the ground, I unhooked the two carabiners and stepped off. My legs ached from the descent as it always did. I shook them off like they were asleep.

The supervisor's trailer was on the other end of the worksite. I started over there on a measured trot, the cool suit's vent almost wheezing as it compensated for the additional heat I was churning out. On my left were lifts at various heights along the sea wall, each manned by a single person in a cool suit doing just as I did, folks only distinguishable by the wear on their suits patched and sealed with whatever material they had on hand. At its lowest the wall was now over ten stories, so that most mornings we were in the dark at ground level but for the drone and cool suits' lights.

I made it to the supervisor trailer and the individual air-conditioned pods we took our lunches at. I walked to the windowed kiosk next to the trailer's door. The secretary drone asked, 'ID?' I replied with my twelve digit ID.

'Thank you. Query or Issue?'

'Issue'

At that, the drone's voice changed at its next question, both harsher yet, somehow, soporific. 'In ten words or less, please describe your issue.'

'Drone malfunction. Trowel lost over seawall. Need replacement ASAP.'

The drone then emitted sounds reminiscent of an old school printer jam as it processed the worthiness of my issue. It then uttered, 'Trowel replacement presently unavailable. Solution:

End of shift. Return tomorrow. Penalty fee to be determined then. Thank you for your service.'

With that, the drone shut down and resumed its standby position.

I knew there was nothing I could do. The secretary drone was programmed to ignore us if it had already attempted to address our issue and anticipated an antagonistic response. Knowing that between the unknown penalty and end of the day's shift there was no chance we'd have what we needed for cooldown, all sense began to seep through the coolsuit, coiled around the evacuating heat.

\\|\\|\\|/

Once breakfast was through, Elle cleaned while I started to prep the house for cooldown. I plopped Lis in a sling, and started with her room as she fiddled with a stim device. I unfurled the tinted cooling screens from their storage box under the western windowsill and fixed them to all the room's windows, securing each with a latch on all four sides, taking the room to a magenta dusk. Then I changed out the lighter curtains for the ones we used during cooldown that passively diffused heat at the cost of natural lighting. They'd gather heat at their center and slowly channel it through to its perimeter, cooling as the air wove through the threads. With that the room was submerged in darkness but for the light coming from the open doorway and the room felt noticeably cooler though nowhere near enough to make the cooldown event liveable.

When Elle grew up, we'd tell her all about how the rich used to hoard coolness at a cost to everyone else. That when the first cooldowns would happen, break-ins were the norm as people became desperate for relief and would find any means to get into the homes of those rich enough to have solar-powered air conditioning units in their panic rooms. The intruders would

tear at the occupants and each other, the heat driving them to madness as their already blistered skin began to cool and they could again breath just before organ failure took hold.

I moved through the remaining rooms, repeating the same few steps to cool our house enough so that it didn't absorb enough heat to warp anything or retain heat that'd still be there on our return after cooldown status was lifted. As I worked, I sang ditties to Lis, already beginning to nod off for her first nap. 'It's going to be hot hot hot, so we try to keep it co-o-o-o-l, US and China are fighting lot, they want the chance to ru-u-u-le.' Through with securing the rooms, I joined Elle at our closet. She had all our important documents in a stack on top of an ottoman and was putting them in large resealable bags, vacuuming out the excess air and inserting it into our safe at the base of our matching coolsuits. 'You done?' she asked without stopping her process. 'Ya, easy peasy.'

'Category 7, Luis. This isn't one to mess around with. Remember what the cat 7 did to Panama City last year?'

'Of course. I was watching the screen with you at the university.'

'And what happened then?'

'Elle, please don't talk to me like one of your students with the leading questions.'

'Play along, ok? It'll make me feel better.'

'Alright, so when the cat 7 hit Panama City last year the heat index was at 175 degrees in the shade for four hours a day for seven days.'

'And?'

I didn't want to reply but I knew she'd coax it out of me sooner than later.

‘And by the end of the seventh day, everyone in the city was dead. Even the billionaires who didn’t count on a cooldown event happening the same time as a hypercane.’

‘See? And the chance of one happening was impossible when we were kids. So the chance that both would happen at the same time, well nobody would bet on that.’

‘You’re right, you’re right. But we have the cooling center, Elle, so what are you worrying about? Be real with me.’

At that, she shut off the screeching vaccum and seemed to mull it over from her crouched position. ‘You think we’re enough to take care of each other, but we’re not. Even when we get to the cooling center, we’re still on our own because of the pandemic protocols limiting our interactions while in that sealed space.’

‘But Elle, that’s not only us. A lot of people in the coast live the same way. They go to school and work then go home to their families and on the cool downs we all get together in the center and gather once or twice with everyone. Surviving isn’t enough for you?’

‘No, and I wish it wasn’t enough for you either. You say other people do it so it’s good enough for us, but Luis, other people don’t have a choice. We do. If they had the chance like us to move into a housing syndicate space, they’d jump on it.’

‘You think we’re too good to live on the coast and do our part with the sea wall?’

‘Don’t get all self-righteous on me now. I know you wouldn’t feel bad about the seawall at all. We both know that that’s just something we’re doing to pass the time, to have some work we can share with everyone still here to give us a bit of hope that maybe we’ll be ok even if things get to 3 degrees celsius warming.’

I swallowed hard as she said that. The possibility of hitting 3C warming had started circulating among the world's remaining grassroots climatologists a year ago, but Elle hadn't given me the impression it was something she was worried about. After I had first heard about it about on the Kremandala podcast, I locked it away to the back of my mind. There was nothing we could do about that if the rest of the world decided to give in to BP Shell, but now that Elle had brought it up I knew it'd be an unignorable possibility that would hover between our future conversations, and decisions. Elle was plotting a course considering two futures and what she was telling me was that it wasn't a given that we'd be together in either.

/\ /\ /\

My first idea was to yank the secretary drone from its charging dock and smashing it until it gave up a trowel. I had just enough sense to recognize the foolishness of that decision, and decided to take a few breaths instead. In and out until my breath ceased coming out in a rage-inflected vibrato. Second idea was to run away from work, away from home and find a roof to scorch on during the cooldown, suicide by sun, but that would be the end for Lis and Elle come next cooldown once Elle's salary couldn't meet the demands of the work. What I settled on then was the third idea that came to mind.

At that, I ran to the on-site dumpster, and started to rummage through it, looking for a piece of metal or wood that could sub in for the trowel in the meantime. I ran my gloved hand across food wrappers my coworkers brought, old components from the drones and lifts and the plastics that washed over the seawall with the larger waves. Still, nothing. Nothing that would allow me to work fast enough to make up the time I'd already wasted without damaging the cool

suit. Panicked, I hoisted myself up and into the dumpster, trying best as I could to avoid all the metal and plastic pieces jutting out at every angle.

I methodically began to course my gloved hands across the dumpster's surface, examining then tossing out whatever seemed like a possible substitute but the closest I'd come halfway into the dumpster was an exterior plate from an retired drone that was rusted through the middle, and would likely result in mortar waste if I did use it. A half hour had passed since I got to the dumpster, so I started to pick up my pace and ignored incoming notifications on my HUD 'suggesting' I leave company property. I began to pick and chuck everything out of the dumpster, knowing I'd have to put it all back in once I was through to avoid another penalty.

Things got stickier and more enmeshed the deeper I got into the dumpster, the heat coagulating disparate pieces of plastic, wood and metal into an anthropogenic compost goop. I picked up an old piece of scaffolding that looked workable until it snapped in three places as I tried to haul its end out of the surrounding gunk.

That's when I saw what I needed poking out from under the rotted scaffolding. Another plate from a drone but this one seemed intact somehow, preserved under layers and layers of waste. I got a grip on it as best I could and pulled but it didn't budge.

I got down to one knee and pulled at it again, and though it was slow, I managed to get it out bit by bit, regripping it at the base after every tug. About eight inches out, I could feel it was almost out, so I got up to my feet and gave it one last pull. And it was out. The momentum sent me hurtling backwards into the side of the dumpster with a clang as the coolsuit's thermal regulator collided into the dumpster.

I sat for a few moments, waiting for a warning from my HUD that I'd crushed the regulator. Nothing came. Lucky. I got up slowly then and as I steadied myself to get out the dumpster, I started to hear a hiss over the omnipresent whine of the coolsuit. Reaching my gloved hand to to what I could reach of the regulator all seemed intact until I touched the back of my right thigh that had suddenly gotten very warm and felt my gloved finger against my skin. Maybe I wouldn't have to get back to work after all.

\\|\\|\\|

The house was ready and our bags were packed for the time we'd be at the cooling center. It was nearing dusk, and the lunar bus would arrive in a few hours. We were further away from it than most so we'd be one of the last pickups they'd make. Lis was nearing the end of a nap and I was doing my best to avoid sharing a room with Elle, knowing that she would need me to say something about my continued hesitancy about moving before leaving.

Moving between rooms, I tried to remember what it felt like growing up here beyond the nostalgia for a time when tomorrow didn't promise to be biospherically worse than today.

Even then, before 2C, before 1.5C, my childhood bedroom would sometimes become intolerably hot if I didn't turn on the air conditioning. When the lights would go out at night and the perspiration started to collect behind our necks, my sisters and I would take a thin sheet and mosquito netting outside.

We'd spread the sheet on the concrete driveway and toss the netting over ourselves, propping it up with whatever was in the garage until it eventually would collapse on us. With the netting against our skin, we'd end up with bites all over but none of us made a move to go back

into the house where the sleepless night typically led to bickering between our parents before Dad moved out.

Under the netting, we'd lie shoulder to shoulder and make up our own constellations if the sky was clear. Blackouts were good for that and by then they were happening weekly so we were close to developing our own cosmology that altered doctrine at every meeting under the netting.

Elle lightly touched me from behind on the shoulder. She knew how easily I entered these reveries when having to make a decision.

'Where are you?' she asked.

'Here,' I said. Her face shone with straining patience at my ambiguity. Avoidant language, my therapy group called it. 'Here, but in the past. When my sisters and I were here together.'

'Ah, I see.' She moved across the kitchen and poured herself some water, downing half to get through what she had to say next.

'Luis, I used to have a home too. A home before this one. We met after it was already gone, but it wasn't a bad home. Just in the wrong place. Not as big as this one. Not as sturdy as this one, but it was what I knew as a kid and we were good there. You don't think I miss that sometimes too?'

'Of course I know you miss it. We all miss how things used to be. Going to caye, eating fresh fish, flying kites during the day in March. All ah it.'

‘Yes, but come on. You weren’t all too much into any of that. I know you don’t like to think of silver linings, but keep in mind how good we have it. How much worse it is all over. How much better it could be if we lived with the housing syndicate with other people.’

‘It wouldn’t be the same, Elle. Here with you and Lis, I feel lucky. With the syndicate, what do we do when we don’t agree with how things are run?’

‘We share our two cents and listen to other people share theirs. It’s not going to be easy. A different kind of struggle. That’s all. Things will keep changing, b. But I need more people to have our back. Me and you, we’re not enough. Lis deserves more. We deserve more.’

One of the things I loved about Elle is that we shared a disdain for ultimatums. This wasn’t that. There’d be more conversations, but that was the day we started to plot our retreat from home. To something new and terrifying, and I daresay, sublime.

/\ /\ /\

I returned to the trailer with the drone plate in hand. Enough time had passed that the secretary drone reactivated as I approached. ‘You have been notified to leave the premises. Please comply.’

Ignoring the drone, I knocked on the trailer door as it repeated its demand. No doubt it was rigged to call the corporation’s security team in a case like this, but the sweat already pooling at my ankles and pits made it easy to ignore. A stroke would be imminent if I didn’t attend to the coolsuit’s hole and I hadn’t brought a repair kit with me seeing as I didn’t anticipate an afternoon dumpster dive. ‘Hello, anyone there? My coolsuit needs immediate repair. Also, I got a tool to resume work so if you can help me out with the suit, I can get back to work.’

I pressed my enclosed head against the trailer door and listened for movement. Nothing on the other end. I ran through my options again. There was no way I could make it back home without the coolsuit until sunset, and even if I did, Elle and I would still not be able to make it back. I could remove the coolsuit and work without it until I couldn't bare it anymore, but the security team would likely arrive by the time I returned to my station and thought of the next brick I had to lay.

I repeated my request for repair again, calibrating my knock to convey polite urgency. With the tear in the suit, the expelled hot air was now heating me up, my own wasted heat returning to me twofold. I could see in the glare of the head covering's window that my face was fast going through shades of red, and at my neck the sweat pooled where the head covering joined the torso.

Then I fell against the door that disappeared from view as my head hit the softest carpet I'd felt in years.

When I regained consciousness, I was shivering. I noted that my coolsuit was still on and seemed to be operational again, the sweat having turned to ice water wherever it had collected. The drone plate was gone. I was back at my station in front of the lift and my HUD said it was already 6 pm, dusk less than an hour away.

I felt for where the tear had been and found it patched up with some of the propriety textile coagulant the corporation had on hand. The suit's HUD indicated that I had five new notifications from the corporation. I winked with my left eye to open them all and was hit by a barrage of penalty notices—lost company property|destruction of company property|theft of company property|security drone harassment|security drone harassment x2|security drone

harassment x3—each one compounding on the other to the point that no amount of bricks layed or valuables sold would make up for it.

I winked my right eye and the notifications all closed. Then I gathered up my supplies and started the long walk home. As I walked past my coworkers whose lifts were still ten storys up, I realized I hadn't seen any of them throughout all this. Undoubtedly they were at it all day just like I would've been. Elle & Lis would make it through this cooldown without me. What else could we have done?

Conclusion: Extending Climate Research into the Public Sphere

At the end of this project, I'm proud of what I accomplished through the course of this project and believe it provides new orientations for how rhetoric can engage in climate change in its many manifestations and realms. This has been a series of experiments with methods I've designed with origins across fields as diverse as health policy, geography, sound studies, bioacoustic, Critical Race Theory, and decolonial studies. While dissertations are often structured in more linear methodological fashion, this project considered different ways rhetoricians can engage in climate studies.

However, that multivalent approach has allowed me to glean several insights about the assumptions of climate policy as a genre and the way that various interventions might fruitfully rupture those assumptions. Chapters 1 and 4 showed that climate policy functioned as another form of narratives about the future, juxtaposing the National Communications documents of Belize with a counter story to show how they highlighted different aspects and scales of survival. The National Communications took a bird's eye perspective of Belize with consideration to its enmeshment within an uneven global capitalist trade network while the counter story 'Cooldown' showed that human survival fractures or heals to various degrees depending on how collective priorities are conceived.

The project also demonstrated an interest in temporality, particularly the line between the present moment and a pluriversal future reliant on decisions made today at the policy and human level. By focusing on sound in chapter 3, and the role of human listening in a time of machine listening, the project made a case for the need to attune humanity to the wellbeing of the more

than human world. In so doing, humans might be able to disrupt the primacy of capitalist time which abides by profit rather than by the wellbeing of humans and the more-than-human world, viewing either's wellbeing not in contradistinction to one another but as necessary parts of a whole global health system.

Lastly, this project showed how climate policy and farmers engaged in relegating climate change's threat to maintain existing systems. In the case of the climate policy authors, that relegation upholds the existing global capitalist relation between Belize and richer countries such as the United States and its former colonizing country the United Kingdom. In the case of the farmers, they relegated the encroaching threat of climate change to aid in mustering the perseverance necessary to persist in the difficult task of regularly maintaining their farm concession. The project therefore illustrated that by putting policy authors in conversation with small farmers and foregrounding the difficulties in farm labor, the two may be better able to affect necessary systemic changes that'll increase Belize's food sovereignty while also properly aiding and incentivizing those workers on the frontlines.

Overall, this project showed that the future is far from fixed along a path towards an apocalyptic or technocratic future, and that there continues to be opportunities for adapting new trajectories.

As one professor told me in my first year of PhD coursework, grad school will deskill you if you let it. My goal here above all was to build out my methods beyond the tried and true alphabetic close reading and textual analysis and into ways of conceiving of the work as a rhetorician that met the complexity of the hyperobject that is climate change with its own multi-

faceted complexity. By doing so, the project attunes to the signal and noise of climate change, offering soundscapes (to further extend the metaphor) of rhetorical methods to listen for the coming future.

At this point then it is useful to return to these methods and discuss gaps that can be addressed in future projects. Chapter one's analysis of the National Communications documents used the Paris Agreement and the People's Agreement of Cochamba as alternate lenses through which to conceive of climate policy. In future iterations, even more fruitful insights can be gained through a more refined coding scheme that would organize information systematically allowing researchers to glean links across the various emitting sectors than what was covered here by the limited focus on agriculture and forestry. My discussion about the problems that arise in delineating agriculture from forestry, and the way those sectors overlap through various activities, are just a hint of what else might be gleaned through a qualitative analysis across the National Communications. As climate finance and the landmark Blue Bond further influence land management and conservation in Belize, there will be much to parse with regard to how extractive ministries rationalize their activities.

I was also very compelled by the authorship of the National Communication documents, in part because of the increased role one of its authorizing individuals, Prime Minister John Briceño, now has. Since his time as Minister of Natural Resources and authorizing agent of the First National Communication, he has been cited by the former Prime Minister Said Musa as the major force barring the Maya Movement of Belize (Wainwright, 'The Maya and the Belize State:1997-2004'). Despite the formation of the Ministry of Human Development, Families, and Indigenous People's under his administration, the ministry has received considerable criticism

for its role in attempting to limit the hard-won collective indigenous sovereignty of the southern Maya communities (Cultural Survival). The framing of indigenous peoples across the National Communication, and the policies they responded to or how various ministry portfolios influenced them can illuminate what motivates the rhetorical aspects of the data featured and suggestions made.

Another study of the National Documents can also benefit by further exploring the implications of the People's Agreement of Cochamba, including analysis of the 11 Working Group statements that emerged alongside the Agreement, and further elaborated on the points made within the Agreement, often with even more radically collective, anti-capitalist language (PWCC). Giving more analytical consideration to the worlds that emerge from such analysis would alert more readers to the 'mind-forged manacles' that even the Paris Agreement has imposed on the climate movement, and apprise those of us institutionalized in Western academia to radical, prosperous futures.

When it came to the case study, the field was significantly impeded by occurring at the peak of the Covid-19 pandemic in Belize. Buses stopped running at one point for months in 2020, necessitating the use of a vehicle to travel on each trip to Trio Farms and adding exponentially to the expenses initially allotted.

With regard to the farmers, and as mentioned in this chapter, the closure of Belize's land borders to mitigate Covid's spread resulted in great uncertainty in the future sales of the year's harvest. Although Trio villagers oversaw their own plots, the dire financial positions Covid left many in required them to work outside the village, including Rash. Rash was no longer able to work his plot or meet me for interviews once work took him outside the village and eventually

his son who gave me a ride to the concession via his dirt bike also became limited in his availability due to the resumption of virtual classes. That then necessitated the use of an all-terrain vehicle for the remaining trips, which proved a costly and logistically difficult substitute.

Amid all this, the rainy season that year saw considerably above-average rainfall, the rain permeating the Audio Moth's containers at times and shorting them severely, limiting the amount of usable data across all recorders for the sake of consistency. Since then, Open Acoustics has designed more rain-resistant devices and containers, which would be a boon for the project in the future.

That said, once I completed the fieldwork and sound study. I realized that the performance writing and audio recordings did not necessitate deployment in such a unique agroecological space to produce results aligned with the method's purpose. In fact, after the project, I redeployed the recorders in my paternal family's internment grounds, which sit next to the George Price Highway. I wanted to record the highway traffic at peak drive time hours to better sense the amount of the anthrophony that even a quarter-mile away drove me to distraction, limiting my ability to engage in work without noise-canceling devices. It made me realize that a more refined version of the method would gather enough audio for coding by an acoustic index, prioritizing access to the devices for security and backup purposes as well as minimizing access costs. It would also work toward dispelling the romantic notion that there are some places more worthy of attention than others.

Lastly, with regard to chapter four, it's important to reiterate the foundation set by Critical Race Scholars and Aja Martinez's counter-story work in rhetoric to which it contributes. I did not include a counter-story chapter in my dissertation proposal, and it didn't occur to me to do so

until months into producing and hosting an environmental podcast on Belize called Mada Fyah. During the initial run of the show, I had several interviews and explored a range of topics regarding Belize and the environment. From that work, it became evident to me that what Belizeans lacked were narratives that did not envision the worst possible scenario of total desperation and annihilation. The dual narratives of that chapter were intended to demonstrate the future imagined in the National Communications published so far was not the sole possible future but an extension of existent policies and relations. Future iterations of this project are likely in the form of a novella as I find ways to link each of the imagined futures to their corresponding political futures through analyzing climate projections, degrowth economics, current decolonial praxis and the Zapatista pluriversal projects multiplying in Mexico and beyond.

I'd also like to use this opportunity to consider how some of the work done outside of scholarship influenced this project. As is evident in chapter one, much of my time as an activist and educator has revolved around the proposed cruise port developments in my hometown Belize City. This involved a considerable amount of research that chapter one's opening barely covers. Suffice it to say it brought me into new networks locally and internationally. Locally, I formed bonds with a few others who had first-hand experience witnessing the impacts the industry had had on their communities, such as the development of Harvest Caye in the South of Belize, which received considerable resistance from frontline communities. It ultimately achieved approval once it had persuaded some of the locals that expatriate environmentalists did not value their economic well-being more so than an environment the port's supporters argued was untethered to their survival. Norwegian Cruiseline, the owner of the

island, assured those of Mango Creek that the community would receive considerable infrastructural development from the island's revenues. So far, none of what was promised has come to pass and community members hired by NCL faced termination during the cruise line's grounding in 2020 and 2021. Much of this history is anecdotal through informal conversations I've been able to have with frontline community members and within the working research group I am a part of. Among this group, we shared resources on cruise lines and tried to trace the various cruise ports in development, which proved difficult as the government of Belize attempted to quietly pass the projects through the EIA process while Covid protocols limited in-person meetings. Of note from these collaborations was an information session I co-facilitated with friend Melina Melhado, who I met while providing mutual aid in the wake of hurricanes Eta and Iota in 2020. My other collaboration has been a series of discussions I hosted with activist and radio host Yaya Marin Coleman of the Kremandala News company and United Black Association for Development (UBAD), the latter of which has been working in the Port Loyola community to educate community members of the cruise port and cargo expansion project. Through these collaborations, I was able to better understand areas of obfuscation that much of the public faces as well as the techniques used by the cruise ports to frame cruising as a net good project. This work was vital to assisting me in being better able to perceive the various actants involved in a single industry closely tied to fossil fuel extraction and carbon emissions as well as how people on the ground were engaging with these developments.

Internationally, I joined the Glocal Cruise Activist Network, an international coalition of frontline activists who experienced a greater understanding of the industry's harm once cruise tourism ceased in the summer of 2020. This temporary cessation of activity allowed for a

dramatic point of contrast for frontline communities to observe the change in the waterways and ecosystems. Studying cruise tourism and the difficulty in locating accountability proved an effective case to better understand the wicked problem that consumerist globalized corporations and their political allies posed to those of us seeking to mitigate the industry's harm. Through work in this group I gained a critical appreciation for the way that international solidarity was a vital element for reversing global capitalism. This was best encapsulated after I presented the port predicament Belize faced and was offered a solidarity action by a comrade in England whose organization was willing to act there to call to account Englishman Michael Ashcroft for his role in enacting harmful environmental action. While we decided against the action because we determined Ashcroft's reputation nor financial stake would be impeded by it, the offer was a demonstration of the variety of solidarity that will need to occur more often across state boundaries should people hope to mitigate the harm of climate change.

I also have devoted time to working with the Gales Point-Manatee village community in its efforts to prevent Vulcan Materials, a US mining corporation, from acquiring a mining license in the nearby karst hills that play an important role in the area's watershed. This campaign remains ongoing in spite of the Minister of Mining Cordel Hyde's public condemnation of the proposal as a neocolonialist project (Amandala 'Deputy PM: Vulcan's efforts to get their own way "reeks of colonialism"' and Cabinet's decision to refuse any mining request (Belize Press Office 'Sept 8, 2022 Cabinet Brief') 7 News, 'Cabinet Says No To Vulcan; Vulcan Says "BRB!"'). Simultaneously, the Mexican government was in the midst of a lawsuit from Vulcan's Mexican subsidiary Calica regarding a mining site they had been operating in since the 1990's, which had been closed by the government due to its impact on the local environment. That case

concluded with the Mexican government owing Calica \$1.5 billion for its losses during the shutdown and a gag order on the Mexican prime minister from any future critiques of Vulcan (Mexico Business News). Meanwhile stateside, a group of GOP Senators wrote to U.S. President Joe Biden on behalf of Vulcan regarding the closure of Mexico's mines, citing their necessity to American infrastructure (United States Senate). In spite of the efforts and commitments from the local community and national government, Vulcan is determined to garner community and political support through jobs, infrastructural projects such as a basketball court, and other incentives. With support from leaders of the United Democratic Party, under whose political administration the purchase of White Ridge Farms was initially proposed, the future fate of the karst hills essential to the region remains in question (Amandala, 'Gales Point village chairman denies LOO's Vulcan claims').

Meanwhile, the community leaders have developed a plan to train members as tour guides in the wake of improvements to the Coastal Highway, which have increased access to the Central Belize region and promise to be a boon for the village and other businesses and communities along the formerly untraversable highway. Additionally, hydrologist Dr. Ed Boles is designing an ecology project at Galen University centered on developing an independent environmental impact assessment with students. These efforts by the community and allies are all being conducted in the hopes of further deepening and expanding those with a stake in the community's well-being as well as the people with the necessary literacies to determine inaccuracies in environmental reports commissioned by the mining company. Their efforts are a testament to emerging futures that resist the narrative that transnational extractivist activity is our best chance of strengthening the country's long-term resilience.

Amid all this, I assisted one of the minority shareholders of the land being purchased by Vulcan who opposed the sale in producing a video documenting the village's experience with Vulcan in 2021. I also offered strategic consultation to the community leadership based on my prior work in grassroots organizing and research into effective anti-mining campaigns. Since then, I came to determine that my efforts and the skills I developed in academia and as an activist could be best applied to environmental journalism.

What my time learning the field of rhetoric and working on this project has facilitated is a clearer sense of complexity in tackling climate change issues that have far-reaching implications, competing interests, and epistemologies. It's demonstrated to me that persuasion with regard to climate justice potentially has the greatest impact when emerging from solutions already being implemented within frontline communities. For instance, in my first article on the proposed Vulcan mine (Amandala, August 27, 2022), I covered a meeting organized by Vulcan in Gales Point wherein the Vulcan representatives oversaw three tents with designated experts to take individual questions. When community members voiced their disinterest in this individualizing format, they overtook one tent with drums and chairs, inviting the Vulcan reps to gather there with them. Ignored, the community played songs for a half hour until resigned to the rep's disinterest and left the grounds. Whereas other press coverage described this as an act of 'controlled chaos', I characterized it as an act of resistance in my piece. I believe that such journalistic interventions, though seemingly slight, are integral to disrupting the power of colonial perceptions of respectability and development to attune others to the preferable futures in utero today.

At the conclusion of this iteration of this project, I better understand how to attune to the multi-sensorial information swirling about and competing for attention. I know that by attending to the world through everyday acts of solidarity, mutual aid, and creativity, we will be better positioned to bring forth a world that centers the well-being of all living things, and recognizes the time of unmitigated growth as an accelerationist nightmare from which we must soon all awaken.

Appendix

Appendix A

Interview Questions for Dissertation, ‘Global Warming Rhetorics and Imaginaries:’ A Sonic and Textual Consideration of Belize’s Ecological Futures’

Interview Questions for IRB Ref # 20-187

First Interview

Background Questions

How long have you been working as a farmer?

What, if any, other lands do you farm?

What have been some of the obstacles you have had to consider over the course of the project?

How predictable has the climate been over the past five years?

How predictable has the weather been the last year?

What animals have the highest concentration at the concession?

What indicators do you use to assess a cacao tree’s health?

On Labor

How many people work on the land regularly?

How many people work on the land during harvest?

In the time since you started farming, what aspects of your work have you felt are the most labor-intensive? Has that changed over time?

How did you learn how to farm cacao?

What aspects of cacao farming techniques have changed since starting?

What techniques have been introduced to you by people outside of Trio Farms Village?

On Acoustic Ecology

Are there any sounds that you connect with the concession? If so, what?

What sources do you rely on to plan planting and harvesting?

Where do you get information on the daily weather forecast?

What animals do you regularly hear at the concession?

What are human-made sounds you hear while at the concession?

What, if any, sounds do you associate with a productive day?

Questions for Interviews 2, 3, 4, and 5

How has the weather felt in the last week?

How were the conditions on the plot in the last week?

How similar to the forecast was the weather for the last week?

What were you working on in the last week?

How much time did you devote to working on the plot?

On average, what time did you arrive at the plot most days?

On average, at what time did you conclude your work at the plot?

How did you feel about your progress in the last week?

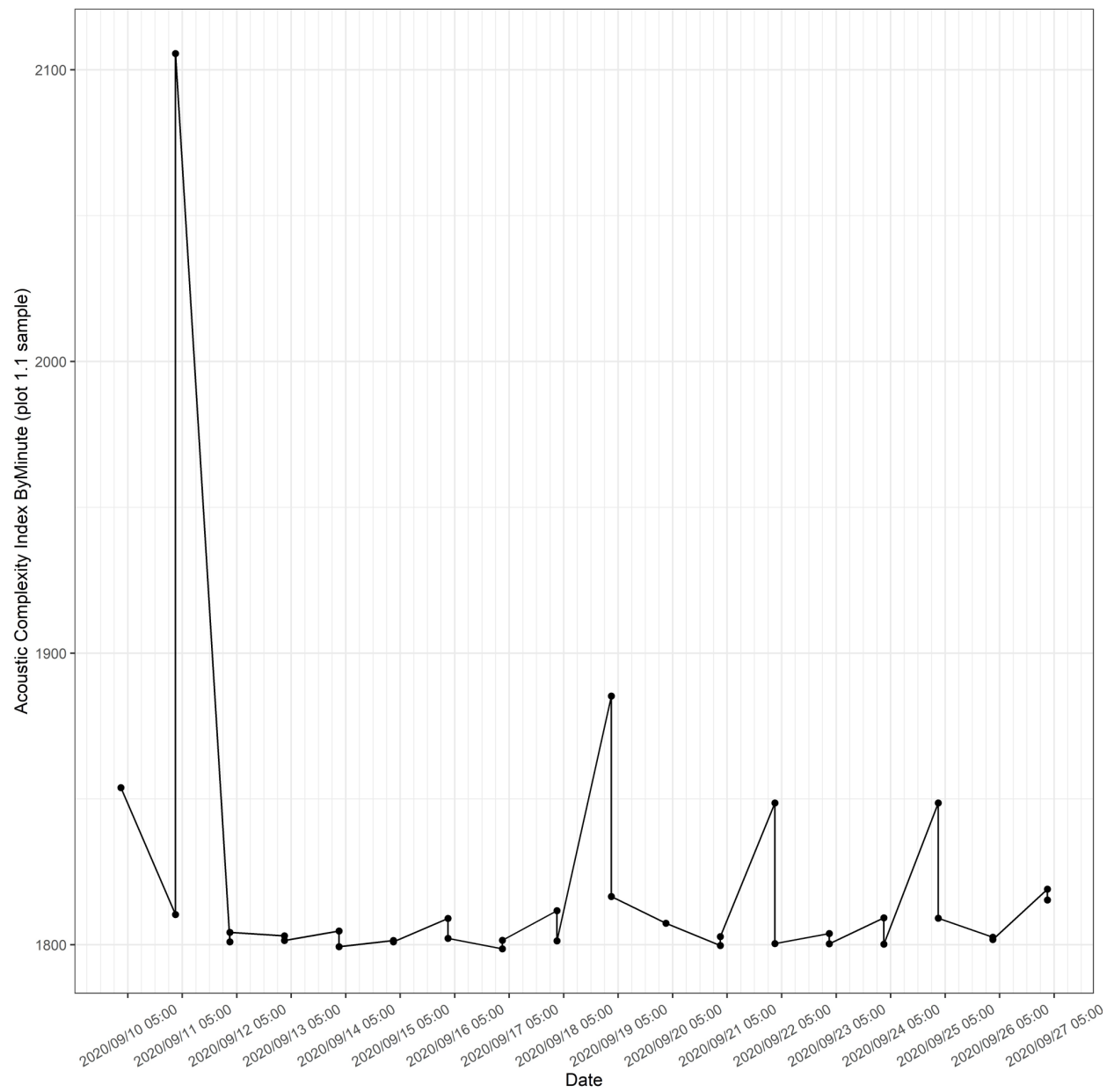
Were there any unexpected issues or obstacles you had to address?

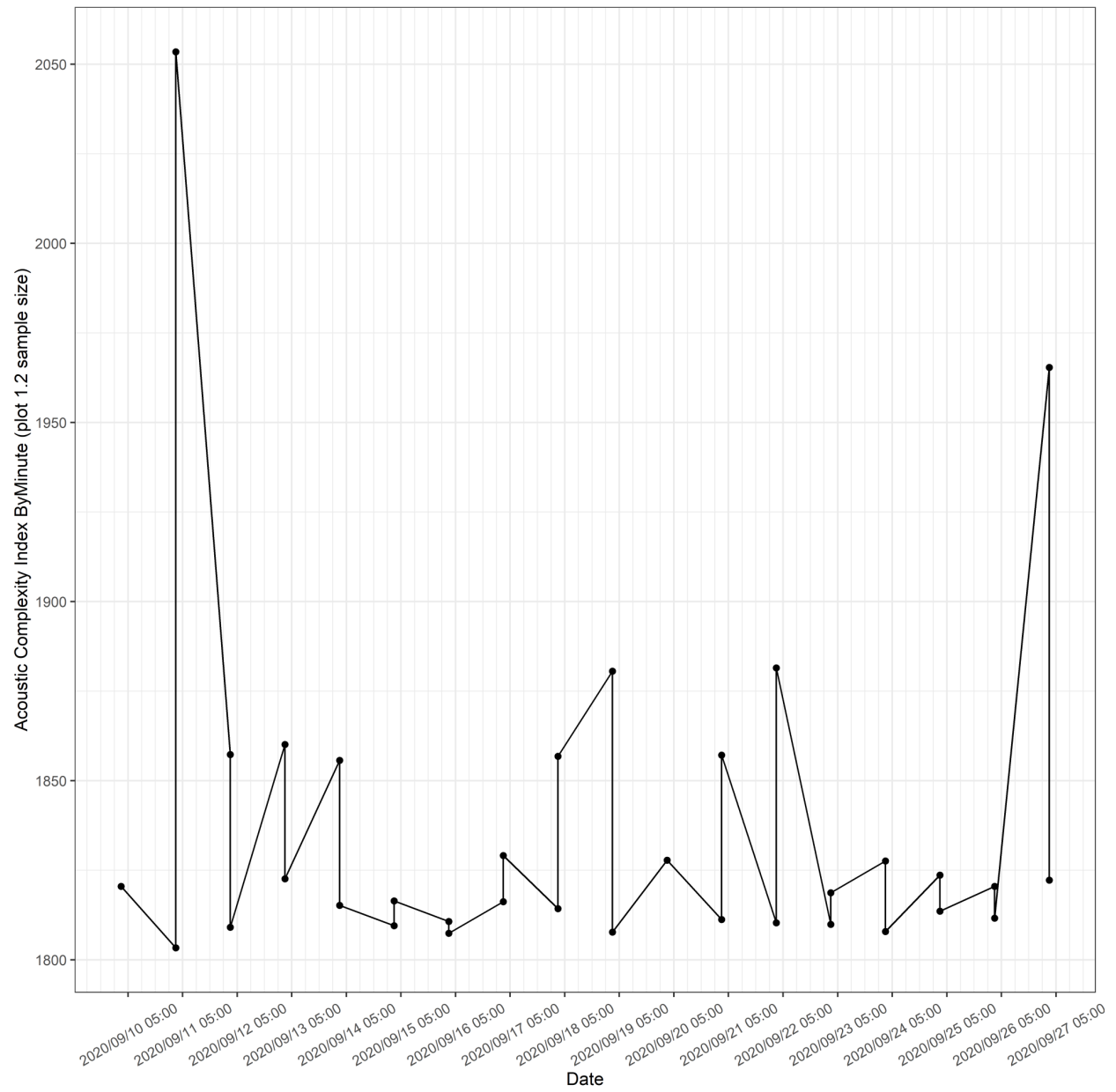
During your time at your plot in the last week, are there any instances that stand out to you with regard to the sounds occurring?

During your time at your plot in the last week, did you encounter any animals you don't usually see or hear?

During your time at your plot in the last week, did you hear any human-made sounds you don't usually encounter at the farm?

Appendix B—Acoustic Complexity Line Charts from Chapter 3





Works Cited

Introduction ‘A New Heat’: Narrowing Horizons In A Warming World

7 News, ‘Worrying Fish Kill in Orange Walk,’ Channel 7, Belize. June 7, 2007.

7 News, ‘DOE Tells ASR/BSI to Quit Dumping Spoilt Molasses In Ponds,’ Channel 7, Belize. July 15, 2016.

7 News, ‘BSI Struggling with DOE’s Demands’ Channel 7, Belize. September 20, 2019.

Duffy, Rosaleen. *A Trip Too Far : Ecotourism Politics and Exploitation*. Earthscan 2002.

Anaya, S. James. ‘Maya Aboriginal Land and Resource Rights and the Conflict Over Logging in Southern Belize.’ *Yale Human Rights and Development Law Journal*, 1998, p. 37.

Cagle, Lauren E., and Carl Herndl. “Shades of Denialism: Discovering Possibilities for a More Nuanced Deliberation about Climate Change in Online Discussion Forums.” *Communication Design Quarterly*, vol. 7, no. 1, May 2019, pp. 22–39. DOI.org (Crossref), <https://doi.org/10.1145/3331558.3331561>.

Chazdon, Robin L. “Making Tropical Succession and Landscape Reforestation Successful.” *Journal of Sustainable Forestry*, vol. 32, no. 7, Oct. 2013, pp. 649–58. DOI.org (Crossref), <https://doi.org/10.1080/10549811.2013.817340>.

Comstock, Michelle, and Mary E. Hocks. “The Sounds of Climate Change: Sonic Rhetoric in the Anthropocene, the Age of Human Impact.” *Rhetoric Review*, vol. 35, no. 2, Apr. 2016, pp. 165–75. Crossref, <https://doi.org/10.1080/07350198.2016.1142854>.

Davis, H., and Z. Todd. “On the Importance of a Date, Or, Decolonizing the Anthropocene”. *ACME: An International Journal for Critical Geographies*, vol. 16, no. 4, Dec. 2017, pp. 761-80, <https://acme-journal.org/index.php/acme/article/view/1539>.

Eubanks Philip. *The Troubled Rhetoric and Communication of Climate Change : The Argumentative Situation*. Routledge Taylor & Francis Group 2015.

Gahman, Levi, Penados, Filiberto, Greenidge, Adaeze, “Indigenous Resurgence, Decolonial Praxis, Alternative Futures: The Maya Leaders Alliance of Southern Belize.” *Social Movement Studies*, vol. 19, no. 2, Mar. 2020, pp. 241–48. DOI.org (Crossref), [doi:10.1080/14742837.2019.1709433](https://doi.org/10.1080/14742837.2019.1709433).

Herrera, Allan, “Cargo Expansion and Construction of Cruise Terminal & Cruise Tourism Village: Port of Belize, Belize City,” Belize Logistics Terminal Limited, August 2022.

Hill, Andrew P., et al. "AudioMoth: Evaluation of a Smart Open Acoustic Device for Monitoring Biodiversity and the Environment." *Methods in Ecology and Evolution*, Ed. Nick Isaac, vol. 9, no. 5, May 2018, pp. 1199–211. DOI.org (Crossref), <https://doi.org/10.1111/2041-210X.12955>.

Hocks, Mary E., and Michelle Comstock. "Composing for Sound: Sonic Rhetoric as Resonance." *Computers and Composition*, vol. 43, Mar. 2017, pp. 135–46. Crossref, <https://doi.org/10.1016/j.compcom.2016.11.006>.

Letcher, Susan G., and Robin L. Chazdon. "Rapid Recovery of Biomass, Species Richness, and Species Composition in a Forest Chronosequence in Northeastern Costa Rica: Rapid Forest Recovery in Costa Rica." *Biotropica*, vol. 41, no. 5, Sept. 2009, pp. 608–17. DOI.org (Crossref), <https://doi.org/10.1111/j.1744-7429.2009.00517.x>.

Ed. McKinnon, Sara L, Asen, Robert, Chávez, Karma R., Howard, Robert Glenn. *Text Field : Innovations in Rhetorical Method*. Pennsylvania State University Press 2016.

Middleton, Michael K, Hess, Aaron, Endres, Danielle, Senda-Cook, Samantha. *Participatory Critical Rhetoric : Theoretical and Methodological Foundations for Studying Rhetoric in Situ*. Lexington Books 2015.

Mirzoeff, Nicholas, 'It's Not the Anthropocene, It's the White Supremacy Scene. Or, The Geological Color Line.' Ed. Grusin, Richard, . *After Extinction*. University of Minnesota Press, 2018. Crossref, doi:10.5749/j.ctt22nmbq0.

Nigh, Ronald. "Trees, Fire And Farmers: Making Woods And Soil In The Maya Forest." *Journal of Ethnobiology*, vol. 28, no. 2, Sept. 2008, pp. 231–43. DOI.org (Crossref), <https://doi.org/10.2993/0278-0771-28.2.231>.

Norden, Natalia, et al. "Resilience of Tropical Rain Forests: Tree Community Reassembly in Secondary Forests." *Ecology Letters*, vol. 12, June 2009, pp. 385–94, <https://doi.org/10.1111/j.1461-0248.2009.01292.x>.

Norgaard, Kari Marie. *Living in Denial Climate Change Emotions and Everyday Life*. MIT Press 2011.

Owens Derek. *Composition and Sustainability: Teaching for a Threatened Generation*. National Council of Teachers of English, 2001.

Shiva, Vandana. *Who Really Feeds the World? : The Failures of Agribusiness and the Promise of Agroecology*. North Atlantic Books 2016.

Smith, Jacob. *ESC: Sonic Adventure in the Anthropocene*. University of Michigan Press. 2019.

Taylor, Marcus. "Climate-Smart Agriculture: What Is It Good For?" *The Journal of Peasant Studies*, vol. 45, no. 1, Jan. 2018, pp. 89–107. Crossref, <https://doi.org/10.1080/03066150.2017.1312355>.

Wainwright, Joel, et al. 'Deforestation and the World-as-Representation: The Maya Forest of Southern Belize.' *Land Change Science, Political Ecology, and Sustainability*, 2013, pp. 169–90.

Wainwright, Joel. "The Maya and the Belizean State: 1997-2004." *Latin American and Caribbean Ethnic Studies*, July 2021, pp. 1–30. DOI.org (Crossref), <https://doi.org/10.1080/17442222.2021.1935694>.

Wainwright, Joel, and Joe Bryan. "Cartography, Territory, Property: Postcolonial Reflections on Indigenous Counter-Mapping in Nicaragua and Belize." *Cultural Geographies*, vol. 16, no. 2, Apr. 2009, pp. 153–78. Crossref, <https://doi.org/10.1177/1474474008101515>.

Watts, Vanessa. "Indigenous Place-Thought & Agency amongst Humans and Non-Humans (First Woman and Sky Woman Go on a European World Tour!)." *Re-Visiones*, Jan. 2013.

Weisser, Christian, Dobrin, Sidney. 'Introduction,' *Ecocomposition: Theoretical and Pedagogical Approaches*. Ed. Christian R. Weisser and Sidney I. Dobrin. Albany: State University of New York Press, 2001. Print.

Wilk Richard R. 'Preface,' *Household Ecology : Economic Change and Domestic Life among the Kekchi Maya of Belize*. University of Arizona Press 1991.

Chapter 1 The Future Already Written: The Climate Imaginaries of Policy Documents

Altieri, Miguel A., and Victor Manuel Toledo. "The Agroecological Revolution in Latin America: Rescuing Nature, Ensuring Food Sovereignty and Empowering Peasants." *Journal of Peasant Studies*, vol. 38, no. 3, July 2011, pp. 587–612. DOI.org (Crossref), <https://doi.org/10.1080/03066150.2011.582947>.

Anonymous, "'How He Made His Pile': Lord Ashcroft." *Management Today*. London, October, 2009. 22.

Barakat, Subhi; Abeysinghe, Achala,Dagnet, Yamide, et. al 'A guide to transparency under the UNFCCC and the Paris Agreement Reporting and Review: Obligations and Opportunities,' International Institute of Environment and Development, London, UK, 2018.

Cagle, Lauren E., and Carl Herndl. "Shades of Denialism: Discovering Possibilities for a More Nuanced Deliberation about Climate Change in Online Discussion Forums." *Communication*

Design Quarterly, vol. 7, no. 1, May 2019, pp. 22–39. DOI.org (Crossref),
doi:10.1145/3331558.3331561.

Cherrington, Emil A., et al. “Modelling the Impacts of Climate Change and Land Use Change on Belize’s Water Resources: Potential Effects on Erosion and Runoff.” CATHALAC / Environmental Research Institute - University of Belize / CaribSave, 2015. DataCite,
doi:10.13140/rg.2.2.16952.75524.

Chicas, Roxana, et al. “Cooling Interventions Among Agricultural Workers: A Pilot Study.” Workplace Health & Safety, Dec. 2020, p. 216507992097652. DOI.org (Crossref),
doi:10.1177/2165079920976524.

Cibralic, Olúfẹmi O. Táíwò, Beba. “The Case for Climate Reparations.” *Foreign Policy*, <https://foreignpolicy.com/2020/10/10/case-for-climate-reparations-crisis-migration-refugees-inequality/>. Accessed 17 Feb. 2021.

Cintron, Ralph. *Angels’ Town: Chero Ways, Gang Life, and Rhetorics of the Everyday*. Boston: Beacon Press, 1997. Print.

Cunning, Ross, et al. “Extensive Coral Mortality and Critical Habitat Loss Following Dredging and Their Association with Remotely-Sensed Sediment Plumes.” *Marine Pollution Bulletin*, vol. 145, Aug. 2019, pp. 185–99. DOI.org (Crossref), doi:10.1016/j.marpolbul.2019.05.027.

Dagher, Ruby. “Policy Space under a Constraining Combination – Open Economies, Austerity and Small Island States.” *Third World Quarterly*, vol. 40, no. 6, June 2019, pp. 1040–63. DOI.org (Crossref), doi:10.1080/01436597.2019.1574563.

Dolven, Taylor, Harris, Alex, “Cruise Lines Have a Solution for a New Clean Fuel Regulation. But Is It the Greenest Option?” *Miami Herald*, <https://www.miamiherald.com/news/business/tourism-cruises/article224596880.html>. Accessed 24 Mar. 2021.

United Nations Development Programme Belize, “Enabling Activities for the Preparation of Belize’s Third National Communication to the UNFCCC,” 2011.

FAO and FILAC. ‘Forest Governance by Indigenous and Tribal People. An Opportunity for Climate Action in Latin America and the Caribbean.’ Santiago, Chile. 2021

Feuer, Will. “Norwegian Extends Suspension of Most Cruises through March in Latest Blow to Industry.” CNBC, 2 Dec. 2020.

Ford, James D., . “Including Indigenous Knowledge and Experience in IPCC Assessment Reports.” *Nature Climate Change*, vol. 6, no. 4, Apr. 2016, pp. 349–53. DOI.org (Crossref), doi:10.1038/nclimate2954.

Friedlingstein, Pierre, et al. “Global Carbon Budget 2020.” *Earth System Science Data*, vol. 12, no. 4, Dec. 2020, pp. 3269–340. DOI.org (Crossref), doi:10.5194/essd-12-3269-2020.

Eds. Fuller, Carlos, Wilson, Roger. ‘First National Communication to the Conference of the Parties of the United Nations Framework Convention on Climate Change’ The United Nations Development Programme

Garcia, Jose, Garcia, Clifford, Garcia, Alan, ‘Dredging Discussion of Port of Belize Expansion Project,’ TNCE, February 2020.

Geden, Oliver. “The Paris Agreement and the Inherent Inconsistency of Climate Policymaking: The Paris Agreement and the Inherent Inconsistency of Climate Policymaking.” Wiley Interdisciplinary Reviews: Climate Change, vol. 7, no. 6, Nov. 2016, pp. 790–97. DOI.org (Crossref), doi:10.1002/wcc.427.

Glenza, Jessica, “Cruise Control: Pandemic Gives Locals Chance to Take Ports Back from Tourists.” *The Guardian*, 20 Dec. 2020

Eds. Green, Earl, Fuller, Carlos, Boles, Raymond E., Esselman, Peter, Kumarsingh, Kishan, Oderson, Derrick. ‘Second National Communication to the Conference of the Parties of the United Nations Framework Convention on Climate Change.’ Ministry of Natural Resources and the Environment, Belmopan, Belize. May 2012.

Hern, Matt, Am Johal, and Joe Sacco. *Global Warming and the Sweetness of Life: A Tar Sands Tale*. , 2018. Print.

Herrera, Allan. “Environmental & Social Impact Assessment Cargo Expansion and Construction of Cruise Terminal & Tourism Village at the Port of Belize.” Nextera Environmental and Engineering Consultants, June 2020.

Herrera, Allan, ‘Cargo Expansion and Construction of Cruise Terminal & Tourism Village at the Port of Belize’, Belize City, Belize. 2020

Ho-Lem, Claudia, et al. “Who Participates in the Intergovernmental Panel on Climate Change and Why: A Quantitative Assessment of the National Representation of Authors in the Intergovernmental Panel on Climate Change.” *Global Environmental Change*, vol. 21, no. 4, Oct. 2011, pp. 1308–17. DOI.org (Crossref), doi:10.1016/j.gloenvcha.2011.05.007.

Keeney, Ralph L., and Timothy L. McDaniels. “A Framework to Guide Thinking and Analysis Regarding Climate Change Policies.” *Risk Analysis*, vol. 21, no. 6, Dec. 2001, pp. 989–1000. DOI.org (Crossref), doi:10.1111/0272-4332.216168.

Keyßer, Lorenz T., and Manfred Lenzen. “1.5 °C Degrowth Scenarios Suggest the Need for New Mitigation Pathways.” *Nature Communications*, vol. 12, no. 1, Dec. 2021, p. 2676. DOI.org (Crossref), doi:10.1038/s41467-021-22884-9.

Lander, Edgardo. “Reflections on the Cochabamba Climate Summit.” Transnational Institute, 29 April 2010.

Luke, Timothy W. “The Climate Change Imaginary.” *Current Sociology*, vol. 63, no. 2, Mar. 2015, pp. 280–96. DOI.org (Crossref), doi:10.1177/0011392114556593.

McLaren, Duncan, and Nils Markusson. “The Co-Evolution of Technological Promises, Modelling, Policies and Climate Change Targets.” *Nature Climate Change*, vol. 10, no. 5, May 2020, pp. 392–97. DOI.org (Crossref), doi:10.1038/s41558-020-0740-1.

Morton, Timothy. *Hyperobjects: Philosophy and Ecology after the End of the World*. University of Minnesota Press, 2013.

Mueller, Tadzio. ‘The People’s Climate Summit in Cochabamba: A Tragedy in Three Acts.’ *Ephemera*. Vol. 12.1. 11. 2012.

National Climate Change Office. ‘Belize’s Third National Communication to the United Nations Framework Convention on Climate Change.’ Ministry of Agriculture, Fisheries, Forestry, the Environment and Sustainable Development. 2016.

Osaka, Shannon. ‘The Paris Agreement set an unrealistic target for global warming. Now what?’ *Grist*. February 12, 2020.

“People’s Agreement of Cochabamba.” World People’s Conference on Climate Change and the Rights of Mother Earth,” Cochabamba, Bolivia. April 24, 2010.

Ramírez, Diana, et al. ‘Belize: Effects of Climate Change on Agriculture.’ Economic Commission for Latin America and the Caribbean. Mexico, 2013.

Raymond, Colin, et al. “The Emergence of Heat and Humidity Too Severe for Human Tolerance.” *Science Advances*, vol. 6, no. 19, May 2020, pp. eaaw1838. DOI.org (Crossref), doi:10.1126/sciadv.aaw1838.

Sebastian, Dave. “Norwegian Cruise Line Seeks Cash Infusion to Stay Afloat.” *Wall Street Journal*, 5 May 2020.

Song, Libing, and Jiming Jin. “Effects of Sunshine Hours and Daily Maximum Temperature Declines and Cultivar Replacements on Maize Growth and Yields.” *Agronomy*, vol. 10, no. 12, Nov. 2020, p. 1862. DOI.org (Crossref), doi:10.3390/agronomy10121862.

Skelton, Maurice, et al. “Customising Global Climate Science for National Adaptation: A Case Study of Climate Projections in UNFCCC’s National Communications.” *Environmental Science & Policy*, vol. 101, Nov. 2019, pp. 16–23. DOI.org (Crossref), doi:10.1016/j.envsci.2019.07.015.

Taylor, Marcus. “Climate-Smart Agriculture: What Is It Good For?” *The Journal of Peasant Studies*, vol. 45, no. 1, Jan. 2018, pp. 89–107. Crossref, doi:10.1080/03066150.2017.1312355.

Taylor, Michael A., et al. “Future Caribbean Climates in a World of Rising Temperatures: The 1.5 vs 2.0 Dilemma.” *Journal of Climate*, vol. 31, no. 7, Apr. 2018, pp. 2907–26. DOI.org (Crossref), doi:10.1175/JCLI-D-17-0074.1.

Thiemann, Louis. “Operationalising Food Sovereignty through an Investment Lens: How Agro-Ecology Is Putting ‘Big Push Theory’ Back on the Table.” *Third World Quarterly*, vol. 36, no. 3, Mar. 2015, pp. 544–62. DOI.org (Crossref), <https://doi.org/10.1080/01436597.2015.1023568>.

Warne, Kennedy “This River in New Zealand Is a Legal Person. How Will It Use Its Voice?” *National Geographic*. April 24, 2019. Accessed 2 Mar. 2021.

Yusoff, Kathryn, and Jennifer Gabrys. “Climate Change and the Imagination: Climate Change and the Imagination.” *Wiley Interdisciplinary Reviews: Climate Change*, vol. 2, no. 4, July 2011, pp. 516–34. DOI.org (Crossref), doi:10.1002/wcc.117.

Wang, Songhan, et al. “Recent Global Decline of CO₂ Fertilization Effects on Vegetation Photosynthesis.” *Science*, vol. 370, no. 6522, Dec. 2020, pp. 1295–300. DOI.org (Crossref), doi:10.1126/science.abb7772.

'A Blue Tsunami, 26 – 5!', *Amandala*, Belize City, Belize, November 14th, 2020.

‘Belize Port Authority Requests That Port Projects Be Suspended’ Channel 5 Belize, <https://edition.channel5belize.com/archives/214709>. Accessed 1 Mar. 2021.

‘Tensions Running High at Port of Belize, Stevedore Protest Continues’ Breaking Belize News, March 4, 2020.

‘Waterloo Port Expansion Project Consultations Should “Tek It Easy”’, Says Minister,’ Channel 5 Belize. <https://edition.channel5belize.com/archives/212341>. Accessed 1 Mar. 2021.

Chapter 2 Cacao Agroforestry and Rhetorics of Hope: A Micro Case Study

Ahmed, Sara, *Queer Phenomenology : Orientations, Objects, Others*, Duke University Press, 2006.

Beaton, Meredith. 'Belize's First Agroforestry Conservation for Conservation and Livelihoods.' Ya'axché Conservation Trust, March 2019.

Baines, Kristina. *Embodying Ecological Heritage in a Maya Community: Health, Happiness, and Identity*, Lexington Books , 2016.

Cultural Survival. "New Maya Leadership Elected in Southern Belize" January 23, 2017. Accessed November 20, 2021.

Diemont, Stewart A. W., et al. "Comparisons of Mayan Forest Management, Restoration, and Conservation." *The Ecology and Ecosystem Services of Native Trees: Implications for Reforestation and Land Restoration in Mesoamerica*, vol. 261, no. 10, May 2011, pp. 1696–705, doi:10.1016/j.foreco.2010.11.006.

Habet, Andre, 'Interview with Manuel Tuc and Bell Rash', August 21, 2020. Audio.

Habet, Andre, 'Interview with Manuel Tuc and Bell Rash', September 5, 2020. Audio.

Habet, Andre, 'Interview with Manuel Tuc', September 19, 2020. Audio.

Habet, Andre, 'Interview with Manuel Tuc', October 3, 2020. Audio.

Medina, Laurie Kroshus. "History, Culture, and Place- Making: 'Native' Status and Maya Identity In Belize." *Journal of Latin American Anthropology*, vol. 4, no. 1, June 2008, pp. 134–65. Crossref, doi:10.1525/jlca.1998.4.1.134.

Morton, Timothy. *Hyperobjects: Philosophy and Ecology After the End of the World*. University of Minnesota Press, 2014. Print.

Nigh, Ronald. "Trees, Fire And Farmers: Making Woods And Soil In The Maya Forest." *Journal of Ethnobiology*, vol. 28, no. 2, Sept. 2008, pp. 231–43. DOI.org (Crossref), doi:10.2993/0278-0771-28.2.231.

Nigh, Ronald, and Stewart AW Diemont. "The Maya Milpa: Fire and the Legacy of Living Soil." *Frontiers in Ecology and the Environment*, vol. 11, no. s1, Aug. 2013. DOI.org (Crossref), doi:10.1890/120344.

Rickert, Thomas J. *Ambient Rhetoric: The Attunements of Rhetorical Being*. University of Pittsburgh Press. 2013. Print.

Roessingh, Carel, and Kees Boersma. “‘We Are Growing Belize’: Modernisation and Organisational Change in the Mennonite Settlement of Spanish Lookout, Belize.” *International Journal of Entrepreneurship and Small Business*, vol. 14, no. 2, 2011, p. 171. Crossref, <https://doi.org/10.1504/IJESB.2011.042718>.

Stanley, Erik Nathaniel. “The Protestant Ethic & Development Ethos: Cacao and Changing Cultural Values among the Mopan Maya of Belize” Dissertation. 2015.

Taylor, Marcus. “Climate-Smart Agriculture: What Is It Good For?” *The Journal of Peasant Studies*, vol. 45.1, Jan. 2018, pp. 89–107. Crossref, doi:10.1080/03066150.2017.1312355.

Van Ausdal, Shawn. “Development and Discourse among the Maya of Southern Belize.” *Development and Change*, vol. 32, no. 3, June 2001, pp. 577–606. Crossref, doi:10.1111/1467-7660.00217.

Wainwright, Joel, Jiang, Shigue and Liu, Deshen “Deforestation and the World-as-representation: The Maya Forest of Southern Belize” Ed. Brannstrom, Christian, and Vadjunec, Jacqueline M. *Land Change Science, Political Ecology and Sustainability*. Routledge. New York. 2013.

Wilk, Richard R. *Household Ecology: Economic Change and Domestic Life Among the Kekchi Maya in Belize*. DeKalb, Ill: Northern Illinois University Press, 1997. Print. 2nd Edition.

Appendix

Chapter 3 Sounding Out for Harmony in the Agroforest: The Role of Human Earing In The Era of Machine-Listening

Andrews, Christopher, and Jan Dick. “The Potential Use of Acoustic Indices for Biodiversity Monitoring at Long-Term Ecological Research (LTER) Sites,” UK Center for Ecology and Hydrology, 2021 pp. 29.

Apol, Chad A., et al. “Ambient Noise Decreases Detectability of Songbird Vocalizations in Passive Acoustic Recordings in a Consistent Pattern across Species, Frequency, and Analysis Method.” *Bioacoustics*, Apr. 2019, pp. 1–15. Crossref, <https://doi.org/10.1080/09524622.2019.1605310>.

Barclay, Leah, and Toby Glifford. “Acoustic Ecology in UNESCO Biosphere Reserves” *International Journal of UNESCO Biosphere Reserves*, Volume 1.1 2017.

Benocci, Roberto, et al. “Eco-Acoustic Indices to Evaluate Soundscape Degradation Due to Human Intrusion.” *Sustainability*, vol. 12, no. 24, Dec. 2020, pp. 10455. DOI.org (Crossref), <https://doi.org/10.3390/su122410455>.

Birtchnell, Thomas. "Listening without Ears: Artificial Intelligence in Audio Mastering." *Big Data & Society*, vol. 5, no. 2, July 2018, pp. 205395171880855. DOI.org (Crossref), <https://doi.org/10.1177/2053951718808553>.

Ceraso, Steph. *Sounding Composition: Multimodal Pedagogies for Embodied Listening*.

University of Pittsburgh Press, 2018. JSTOR, <https://doi.org/10.2307/j.ctv4pqh6h>. Accessed 17 Oct. 2022.

Comstock, Michelle, and Mary E. Hocks. "The Sounds of Climate Change: Sonic Rhetoric in the Anthropocene, the Age of Human Impact." *Rhetoric Review*, vol. 35, no. 2, Apr. 2016, pp. 165–75. Crossref, <https://doi.org/10.1080/07350198.2016.1142854>.

Farina, Almo. "Ecoacoustics: A Quantitative Approach to Investigate the Ecological Role of Environmental Sounds." *Mathematics*, vol. 7, no. 1, Dec. 2018, pp. 21. DOI.org (Crossref), <https://doi.org/10.3390/math7010021>.

Gallagher, Michael. "Field Recording and the Sounding of Spaces." *Environment and Planning D: Society and Space*, vol. 33, no. 3, June 2015, pp. 560–76. Crossref, <https://doi.org/10.1177/0263775815594310>.

Hammer, Steven R., 'Writing Dirt, Teaching Noise' Soundwriting Pedagogies. Ed. Courtney S. Danforth, Kyle D. Stedman, and Michael J. Farris. *Computers and Composition* Digital P/Utah State UP, 2018, <http://ccdigitalpress.org/soundwriting>.

Haraway, Donna. *Staying With the Trouble: Making Kin in the Chthulucene*. Duke University Press, 2016.

Hartigan, Kayla Anne. "Using Acoustic Indices to Determine Changes in Biodiversity off the Coast of Cape Hatteras", Masters Thesis, Duke University.

Hill, Andrew P., et al. "AudioMoth: Evaluation of a Smart Open Acoustic Device for Monitoring Biodiversity and the Environment." *Methods in Ecology and Evolution*, Ed. Nick Isaac, vol. 9, no. 5, May 2018, pp. 1199–211. DOI.org (Crossref), <https://doi.org/10.1111/2041-210X.12955>.

Kunc, Hansjoerg P., and Rouven Schmidt. "The Effects of Anthropogenic Noise on Animals: A Meta-Analysis." *Biology Letters*, vol. 15, no. 11, Nov. 2019, pp. 20190649. DOI.org (Crossref), <https://doi.org/10.1098/rsbl.2019.0649>.

Mcelwee, Pamela. "Climate Change and Biodiversity Loss: Two Sides of the Same Coin." *Current History*, November 2021, pp. 6.

Muluneh, Melese Genete. “Impact of Climate Change on Biodiversity and Food Security: A Global Perspective—a Review Article.” *Agriculture & Food Security*, vol. 10, no. 1, Dec. 2021, p. 36. DOI.org (Crossref), <https://doi.org/10.1186/s40066-021-00318-5>.

Paine, Garth. “Ecologies of Listening and Presence: Perspectives from a Practitioner.” *Contemporary Music Review*, vol. 35, no. 3, May 2016, pp. 362–71. Crossref, <https://doi.org/10.1080/07494467.2016.1239385>.

Selfe, Cynthia L. The Movement of Air, the Breath of Meaning: Aurality and Multimodal Composing,’ *College Composition and Communication*, Vol. 60.4 (June 2009), pp. 616-663.

Smith, Jacob. *ESC: Sonic Adventure in the Anthropocene*. University of Michigan Press. 2019.

Sueur, Jerome, et al. “Seewave, A Free Modular Tool for Sound Analysis and Synthesis.” *Bioacoustics*, vol. 18, no. 2, Jan. 2008, pp. 213–26. DOI.org (Crossref), <https://doi.org/10.1080/09524622.2008.9753600>.

Zannos, Iannis. “Machine Listening to Soundscapes: Playful Discovery of Sound Languages” *Soundscape: The Journal of Acoustic Ecology*, vol. 13, no. 1, 2013, pp. 32.

Chapter 4 ‘Cool Down’: A Belizean [Counter]apocalypse Future

Albert, Lale, *Seasonal Shift*, Breakdown Press, 2020.

Butler Octavia E. *Kindred*. Beacon Press 1988.

Downsizing, Alexander Payne, Ad Hominem Enterprises, 2017.

Escobar Arturo. *Designs for the Pluriverse: Radical Interdependence Autonomy and the Making of Worlds*. Duke University Press 2018. Accessed 30 Aug. 2022.

Estrada, Inés, *Alienation*, Fantagraphics, 2019.

Gries, Laurie E. “New Materialist Ontobiography: A Critical-Creative Approach for Coping and Caring in the Chthulucene.” *College English*, Volume 82, Number 3, January 2020.

Hancock, Trevor, and Clement Bezold. “Possible Futures, Preferable Futures.” *The Healthcare Forum Journal*, vol. 37, Mar. 1994, pp. 23–29.

Harrington, Luke J., et al. “Integrating Attribution with Adaptation for Unprecedented Future Heatwaves.” *Climatic Change*, vol. 172, no. 1–2, May 2022, pp. 2. DOI.org (Crossref), <https://doi.org/10.1007/s10584-022-03357-4>.

Kern, Sim, *Real Sugar is Hard to Find*, Android Press, 2022.

Kumar, Hari, and Mike Ives. “The Extreme Heat Pummeling India and Pakistan Is About to Get Worse.” *The New York Times*, 28 Apr. 2022. NYTimes.com, <https://www.nytimes.com/2022/04/28/world/asia/india-extreme-heat-wave.html>.

Martinez, Aja Y. *Counterstory: The Rhetoric and Writing of Critical Race Theory*. National Council of Teachers of English, 2021.

Mora, Camilo, et al. “Twenty-Seven Ways a Heat Wave Can Kill You: Deadly Heat in the Era of Climate Change.” *Cardiovascular Perspective*. American Heart Association. 2017.

Nagamatsu, Sequioa, *How High We Go in The Dark*, William Morrow, 2022.

Raymond, Colin, et al. “The Emergence of Heat and Humidity Too Severe for Human Tolerance.” *Science Advances*, vol. 6, no. 19, May 2020, pp. eaaw1838. DOI.org (Crossref), <https://doi.org/10.1126/sciadv.aaw1838>.

Schrauwen, Olivier, *Parallel Lives*, Fantagraphics, 2019.

Trapasso, Michael. “Indigenous Attitudes, Ecotourism, and Mennonites: Recent Examples in Rainforest Destruction/Preservation.” *Geojournal*, vol. 33, no. 4, Aug. 1994, pp. 449–52.

Tunio, Zoha. “An Unprecedented Heat Wave in India and Pakistan Is Putting the Lives of More Than a Billion People at Risk.” *Inside Climate News*, 7 May 2022, <https://insideclimatenews.org/news/07052022/heatwave-india-pakistan-deaths-health-risks/>.

Widerynski, Stasia, et al. “The Use of Cooling Centers to Prevent Heat-Related Illness: Summary of Evidence and Strategies for Implementation.” Center for Disease Control, 2017.

Zylinska, Joanna. *The End of Man: A Feminist Counterapocalypse*. University of Minnesota Press. 2018.

Conclusion Extending Climate Research Into the Public Sphere

7 News, ‘Cabinet Says No To Vulcan; Vulcan Says “BRB!” Channel 7 Belize. September 8, 2022.

Belize Press Office, “Sept 8, 2022 Cabinet Brief” Belize Press Office. September 8, 2022.

Cultural Survival. “New Maya Leadership Elected in Southern Belize” January 23, 2017. Accessed November 20, 2021.

Gentle, Khaila, ‘Deputy PM: Vulcan’s efforts to get their own way “reeks of colonialism” *Amandala*. August 15, 2022.

Habet, André, 'Vulcan Mining Still Failing to Win the Hearts and Minds of Gales Point'
Amandala. August 27, 2022.

Hagerty, Bill, '5/20/22 Senator Hagerty Letter to President Joe Biden,' May 20, 2022.

Mares, Fernando, 'International Court Rules in Favor of Vulcan Materials' *Mexico Business News*. September 22, 2022.

Wainwright, Joel. "The Maya and the Belizean State: 1997-2004." *Latin American and Caribbean Ethnic Studies*, July 2021, pp. 1–30. DOI.org (Crossref), <https://doi.org/10.1080/17442222.2021.1935694>.

VitaAndré Habet

2012 B.A in English, University of Houston

2015 M.A. in English, Oregon State University

Field of Study

Climate Rhetorics, Policy and Phenomenology