

**Geothermal Potentials in Puna, Hawai'i:  
How Pele Teaches the Spaces Between**

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Submitted in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy  
under the Executive Committee  
of the Graduate School of Arts and Sciences

COLUMBIA UNIVERSITY

2017

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## **Abstract**

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This dissertation offers an examination of the concept of sustainability, via an ethnography of geothermal life in the district of Puna on Hawai‘i Island. In the midst of global discourse on climate change, population growth, and energy needs, ‘sustainability’ brands a remarkable number of initiatives to signify a thoughtful connection with earth, and concern with the continuation of all of existence. Close examination of what sustainable measures have meant for life in the district of Puna on Hawai‘i Island, however, reveal the ties of discourses on and enactments of ‘sustainability’ and ‘sustainable’ living to the sustenance of market, colonial inheritance and renewability, and the manufacture of narratives that erase forms of existence—human and nonhuman, including and especially the geological. Examinations of the notion of ‘sustainability’ alongside currents of Kanaka ‘Ōiwi inquiries into earth’s heat element and its relations, and settler experiences of geothermal activity, reveal the pliability of material Natures in the face of human desire, the graceless scaffolding of lives under Late Liberalism, and the structure of Late Liberal biases as suspended in love with the biontological—those forms deemed “Life.” In the dissertation I examine engagement points between literatures on Development, Indigeneity, and Space, in particular what they reveal about possible relationships with land and resource, as well as literatures on Foucauldian biopower and what Elizabeth Povinelli (2016) has termed “geontopower”—increasingly exposed arrangements of power as divisions between Life and Nonlife in the Late Liberal period—to think through the commodification of rock and earth, and the spaces between things where the possibility for *hulihia* (overturning) continues to exist.

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## Glossary<sup>1</sup>

ahupua‘a – land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (ahu) of stones surmounted by the image of a pig (pua‘a), or because a pig or other tribute was laid on the altar as tax to the chief.

aunaki – stick rubbed in obtaining fire by friction; “block wood” \*(Kanaka‘ole Kanahale 2012a)

aulima – stick held in the hand and rubbed in the fire-plow to produce fire by friction; “stick wood” \*(Kanaka‘ole Kanahale 2012a)

haole – White person, American, Englishman, Caucasian; formerly, any foreigner

hewa – mistake, fault, error, sin, blunder, defect, offense...to err, miss, mismanage, fail

kahakō – macron

Kanaka Maoli – full blooded Hawaiian person

Kanaka ‘Ōiwi – people of the bone \*(Tengan and Ayau 2002)

keiki – child, offspring, descendant, progeny, boy, youngster, son, lad, nephew...

kīpuka – oasis of vegetation \*(McGregor 1995)

kinolau – many forms taken by a supernatural body, as Pele, who could at will become a flame of fire, a young girl, or an old hag

kua‘āina – *literally*, “back country”; used to describe country people \*(McGregor 2007)

kuleana – right, privilege, concern, responsibility...

makai – ocean

makuakāne – father, uncle, male cousin of parents’ generation

mauka – inland

mele – song, anthem, or chant of any kind

moku – district, island, islet, section...

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<sup>1</sup>unmarked definitions from Pukui and Elbert (1986)

\*astericks indicate definitions from other sources

mo‘okuauhau – genealogical succession, pedigree

mo‘olelo – story, tale, myth, history, tradition, literature, legend, journal, log, yarn, fable, essay, chronicle, record, article

ohu – mist, fog, vapor... “rising mist” \*(Kanaka‘ole Kanahale 2012b)

‘okina – glottal stop

oli – chant that was not danced to, especially with prolonged phrases chanted in one breath, often with a trill (‘i‘i) at the end of each phrase; to chant thus.

one hānau – birthplace, homeland

pele – lava flow, volcano, eruption

uhiwai – heavy fog, mist; “descending mist” \*(Kanaka‘ole Kanahale 2012b)



## Acknowledgements

There is no way to delimit what goes into the making of a person, a place, a thing. The research I completed from 2014-2015, along with the writing of this dissertation, was made possible only by the generosity of many, over the course of lifetimes. I want to acknowledge all the forms and forces that fashioned the conditions for this writing; only a few can receive mention in this space.

Foremost, I am grateful to the lands of Hilo, Puna, and Ka‘ū, which hosted me during my time in the field and allowed me admission to Earth’s liveliness. This made all the difference.

It is not lost on me that I would not have approached the field if not for Paige West. Her steady support of me as mentor and as friend saved me, multiple times, from exiling myself from the Ph.D. process. She has cultivated my aptitude toward thinking and guided me towards striving to be a better person in the world—earnest, honest, open to the unexpected. I am indebted to her. For their generosity, flexibility, care, and teachings, I am also grateful to committee members and mentors Hugh Raffles, Elizabeth Povinelli, Herve Varenne, and Dean Saranillio. They are among the best of scholars I have learned to think with, who consistently demonstrate the task of making space for others.

Kristen Davis guided me, for the five years I was in New York and through the fieldwork and dissertation writing years, toward being in my body and being in the world. The subtlety and paradox in her teachings helped me reassert and trust and also question my experience in a body, in the midst of life; her paces trained my attention. She is someone I carry with me now, everywhere. Through my time in New York, Jennifer Sokolov, Floski Lunn, and Frank Ricci saw me and held me when it seemed nothing else would. I am indebted to, and in awe of, each of them.

In the field, my Uncle Alvin, Aunty Jan, and cousins Jakey and Matty took care of me, opened paths to people and places I would not have otherwise known about or have been able to see and meet, and taught me the meaning of generosity. They made home for me and saved my life. I owe them in so many ways. Aziz Turkqueet, Debbie Ward, Nelson Ho, Robert Petricci, Tom Travis, ‘Anakala Jim Albertini, ‘Anakala Palikapu Dedman, ‘Anake Pi‘ilani Ka‘awaloa, ‘Anakala Skippy Ioane, ‘Anake Pualani Kanaka‘ole, and Ruth Aloua each, in their own ways, lifted me up and kept me humble. They taught me how to fight and how to pray, how a fight can be a form of prayer, how prayer can be a form of fight. They reinforced for me the power of bowing, and the intelligence of hands and earth. Mahalo piha to each and every one of them.

Coming back from the field was an endeavor on its own, as it meant returning home to O‘ahu after many years. Joe Bright and I met here, by no small act of chance. His off-color humor, art, and deep grasp of the pulse and its relation to life have helped me travel the path of becoming. Tagi Qolouvaki found me here. She lived with me through the dissertation writing process offering the fiercest of loves, giving freely of her brilliant insights, keeping faith in me and my work, and harboring patience for the process. Along with Bisa, our shared charge, she has taught me so much about the beauty, complexity, and depth that is possible in relationship. Tagi and Bisa are my favorite surprises.

Last: None of this would have been possible without my mother, who claims to understand little of what I do but nevertheless supports anything I attempt, and my father, whose reserve and even advice steadies me. Along with my brothers, Chadwick and Jeffrey, they form my foundation.

For the grandmothers

## Mele no Pele

Hele ho‘i kea la ma uka o Ka‘ū  
Hele ho‘i kea la ma kai o Puna  
‘O ka ma‘ema‘e lā o ka pua lē‘ī  
Aloha ka pi‘ina i Kūkalā‘ula  
Ho‘opuka akula ka Pu‘ulena  
‘Āina a ke akua i noho ai  
Ka‘u makana ia ‘o ka leo  
‘O ka leo wale nō ē.

*I traveled the upland trails of Ka‘ū  
And traveled the lowland trails of Puna  
I am pure as an attractive flower  
Enjoying the climb at Kūkalā‘ula  
Pu‘ulena emerges  
Residence of the god  
My only gift is the voice  
Only the voice.<sup>2</sup>*

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<sup>2</sup> Kawelo 1907. Translated by Pua Kanaka‘ole Kanahele 2011:66-67.



True Geothermal Rig, Kahaualeʻa  
Photo by Nelson Ho

## INTRODUCTION

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<i>Kaulana nā pua a 'o Hawai'i</i>	Famous are the children of Hawai'i
<i>Kūpa 'a mahope o ka 'āina</i>	Ever loyal to the land
<i>Hiki mai ka 'elele o ka loko 'ino</i>	When the evil-hearted messenger comes
<i>Palapala 'ānunu me ka pāhaka</i>	With his greedy document of extortion

<i>... 'A'ole mākou a'e minamina</i>	... We do not value
<i>I ka pu 'ukālā a ke aupuni</i>	The government's hills of money
<i>Ua lawa mākou i ka pōhaku</i>	We are satisfied with the rocks
<i>I ka 'ai kamaha'o o ka 'āina...</i>	The wondrous food of the land...

*Mele Aloha 'Āina*, Ellen Kekoahowaikalani Wright  
Prendergrast, 1893

This dissertation began with an interest in the intimacies that occur between people and geothermal forms—rock, steam, and molten earth—and the dependencies and responsibilities that emerge from living with this force in Hawai'i. The interest itself was borne of a confluence of chance trajectories, including having been born and raised in the islands, never far from news of the activity of the volcano named Kīlauea, and of stories—including contemporary reports of the present-day manifestations—of Pele, the heat-force who settled at Kīlauea. Because the eruptive activity of the volcano has not ceased for 275,000 years<sup>3</sup> and remains a highly visible reminder of earth's liveliness, the scale of the human in relation to earth's forces and the manifold potentials of nonhuman life cannot long fall out of view.

Attentions to Kīlauea and to Pele occur across the major Hawaiian Island chain, albeit especially in the district of Puna on Hawai'i Island, where lava continues to flow and life

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<sup>3</sup> 275,000 years is the age estimate of Kīlauea given by USGS scientists, based on radiometric testing of samples of submarine rock from the southern slope of the volcano. In other scientific literature the volcano is dated back to over 450,000 years; USGS scientists contend that the core samples on which this age is based is faulty, because on the limits of the paleomagnetic methods at the depth from which the core was taken (*see* HVO 2007).

continues to evolve with the characteristics and potentialities of heat, lava, *pele* (lava rock), and the particularities of earthen structure, deep earth gases, and atmospherics that accompany them. In the midst of conversations on climate change, population growth, and energy needs, however, relations between people and geothermal forces and forms have become heavily influenced by regulation of everything from lava viewing to energy infrastructure, patterns of settlement and development, and arguably, relations with Pele. This work of regulation is prominent in Hawai‘i State’s pursuit of geothermal energy development, in the face of claims that the continued extraction of geothermal heat will extinguish Hawaiian life—land, spirit, and people. Though U.S. Federal funding for geothermal exploration has waned significantly and the sustainability of geothermal energy has itself been thrown into question in the scientific community, geothermal development exploration continues in the ostensible pursuit of a sustainable society—built on the use of sustainable resources. Justification for the pursuit continues to rest on claims that, given current conditions of climate change and the state’s heavy reliance on oil to meet its energy needs, geothermal development in Hawai‘i is not only an environmental necessity, but a social one—a sensible solution implicitly aimed at a greater good than what can be comprehended as “traditional” Hawaiian life.

The fact that “sustainable” energy developments come to supercede instances of human life calls into question what is being sustained, not only through developments themselves, but through notions of life, as harbored in the concept of ‘sustainability.’ I use instances of life in Puna connected to both the geothermal form and assertions of sustainability—geothermal energy development, Hawai‘i Volcanoes National Park, and “sustainable (off-grid) (back-to-the-land) living”—to examine how discourses around sustainability and sustainable development eradicate alternative potentials of relationship to the earth, and to the geothermal form. I argue that

rhetorics of sustainability as are supported by late liberal<sup>4</sup> and market embodiments that permit the hierarchization of instances of human and nonhuman life, and normalize the loss of some lives and ways of life as intrinsic to the process of what we call ‘progress.’ This has everything to do with divisions between nature and culture, biontological biases through which “Life” is indicated under late liberal governance, and indigenous life—which continues relationships with geological forms that might be best termed in English as genealogical, familial, religious, spiritual, and embodied intimacies, and deep investigation of the relationships between forms. These divisions, biases, and erasures hint at how late liberal governance and market continue to be classified not merely as moral but as inevitable and good, in the face of rampant and continued death.

At their foundation, my enquiries stem from scholarship attenuated to the matter of the weight of a life on other lives—the responsibility and vulnerability inherent in interdependence, the multiple entanglements that allow for and disavow flourishing in and through existence. As has been shown, perhaps especially in work that explores matters of species extinction and the complex ethics of that tenuous possibility of life over death (Bird Rose 2011; Van Dooren 2014), these questions are particularly critical as shifts in climate and resource availability affect the ways all beings are allowed and trained to respond to changes in what is available for living. And, also, as is revealed as the inhering division between life and nonlife that subtends market and Late Liberal management of difference (Povinelli 2016), our devotion to concepts of Life allow for rationalization of the mining of earth, and the extermination of that which does not move into alliance with market or Late Liberalism quickly enough.

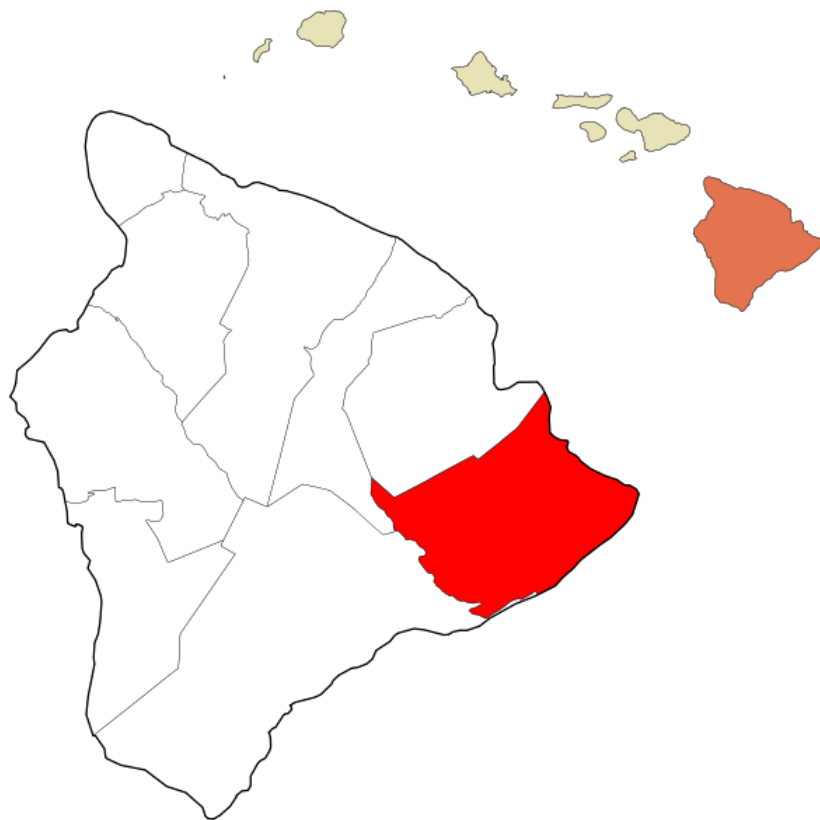
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<sup>4</sup> Late liberalism reflects the particular shape of state strategies to meet “challenges of difference within and beyond the settler state.” These include “formal or informal policies of cultural recognition (or cognate policies such as multiculturalism)” (Povinelli 2011:25).



If our very concept of sustainability erases and precludes the possibility of the multiple potentials of existence, including that of the geothermal form and between the form and its relations, how and why this occurs necessitates reveal. As the thickness of our interdependence with all things and each other becomes unmissable, we must continue to ask how spaces between various human and nonhuman entities can be (re)made, so that these spaces no longer justify the continued abjection and erasure of some for the ‘good’ of others. This dissertation is one attempt at that ask.

‘Āina (Land, People)



Map of eight major Hawaiian Islands, Hawai‘i Island highlighted in orange (above)  
Island of Hawai‘i, District of Puna highlighted in red (below)<sup>5</sup>

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<sup>5</sup> Creative Commons media, HawaiiIslandDistricts.svg uploaded from Sn1per/gallery, 20 December 2011. Accessed November 2016.

The eight major Hawaiian Islands—Kaua‘i, O‘ahu, Ni‘ihau, Molokai, Lanai, Maui, and Hawai‘i—are part of the longer Hawaiian Ridge-Emperor Seamounts chain of which the Hawaiian archipelago is part. The collection of reefs, atolls, and banks that stretch about 2,000 kilometers long are partially and fully submerged instances of land, formed over the course of 70 million years as the Pacific Plate<sup>6</sup> moved over volcanic hotspots on the sea floor (USGS 1999). This “hot spot” theory asserts that as the Pacific Plate continues to shift northwest, new islands are formed (USGS 2001). Hawai‘i Island is the youngest island in the Hawaiian Island Chain. The island is made up of five volcanoes: Kōhala (extinct), Hualalai (active), Mauna Kea (dormant), Mauna Loa (active), and Kīlauea (active).<sup>7</sup> An estimated 600,000 years separates the age of Kōhala, the northernmost and oldest Hawai‘i Island volcano, from the youngest, Kīlauea.

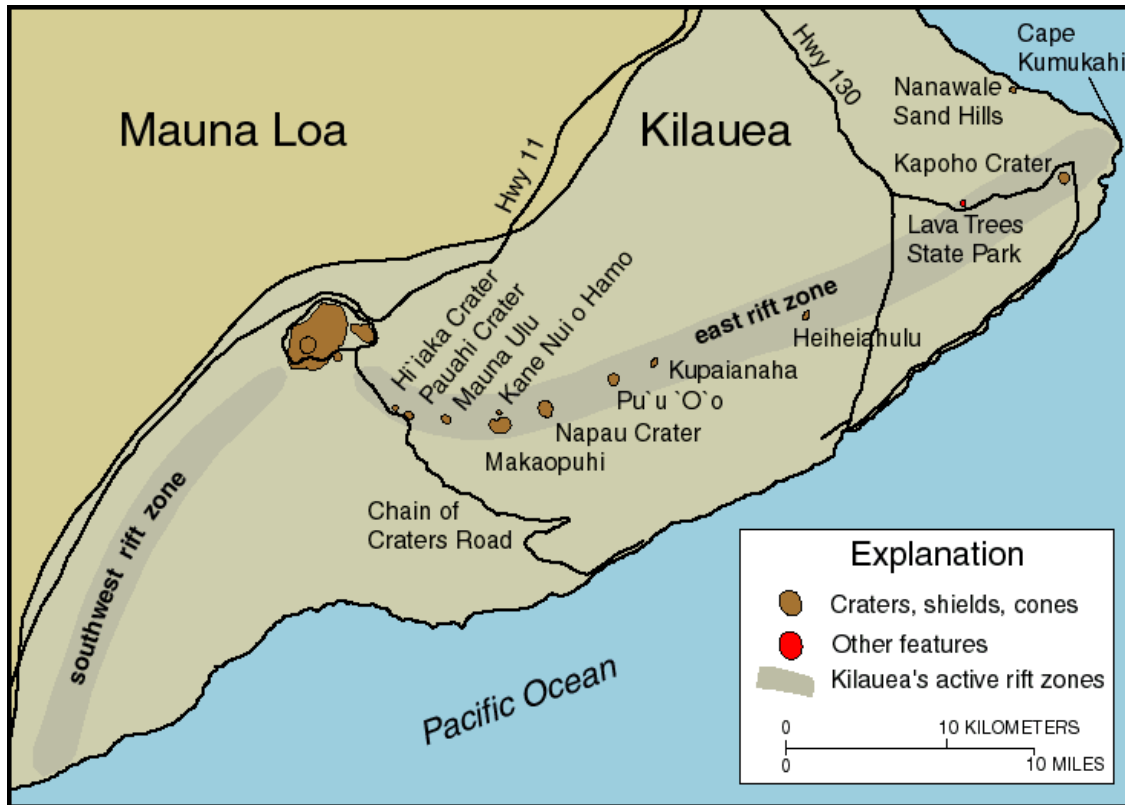
The flanks of Kīlauea form the southeastern flank of Hawai‘i Island, comprising the base of the *moku* (district) of Puna on the island of Hawai‘i. The volcano is estimated to have developed over the past 275,000-350,000 years (Quane et al. 2000; USGS 2007), and continues visible magmatic activity at its summit at Halema‘uma‘u, as well as at vents along its two rift zones—lines of earthen fissures and dykes along which lava also erupts. The smaller, 35 kilometer southwest rift zone runs from the summit toward the lands of Ka‘ū. The larger, east rift zone runs 100 kilometers from Kīlauea’s caldera to the easternmost point of the island at Cape Kumukahi and out along the ocean floor; it has been the primary location for Kīlauea eruptions

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<sup>6</sup> The Pacific Plate is a tectonic plate. Series of tectonic plates form the earth’s outer crust, and move over the surface of the planet at rates estimated from two to fifteen centimeters per year USGS, “Understanding Plate Motions,” 9/15/2014.

<sup>7</sup> Kohala Volcano last erupted 120,000 years ago; as HCAV explains, the distinction of “extinct” from “dormant” is imprecise, based on the time relationship of the last recorded eruption with the known recurrence interval for that type of volcano. When previous eruptive frequency is not geologically verified, this measurement is not considered predictive of future volcanic activity. ([https://www.soest.hawaii.edu/GG/HCV/haw\\_activity.html](https://www.soest.hawaii.edu/GG/HCV/haw_activity.html))

in geologically recorded history (Thomas 1964). The east rift zone, from which Kīlauea has been continuously active at its Pu‘u ‘Ō‘ō vent since January 1983, cuts across the 320,000 acre moku of Puna—a land area roughly the size of the entire island of O‘ahu.



Main Features, East Rift Zone<sup>8</sup>

The east rift zone and its continuous recent activity,<sup>9</sup> with memorable eruptions at Kapoho (1960), Mauna Ulu (1969-1974), Kupaianaha (1986-1992), and Pu‘u ‘Ō‘ō (1983 to present), has meant, in part, that lands that lie below the rift zone—topographically and also directionally south—remain particularly vulnerable to overflow of lava. Historically, flows have led to the cover of what had been developed into farmlands and villages, and more recently, subdivisions and community infrastructure such as highways and electric lines. The incapability

<sup>8</sup> USGS, Hawai‘i Volcano Observatory, “Main features along the east rift zone of Kilauea Volcano.” <https://hvo.wr.usgs.gov/gallery/kilauea/erz/>. Accessed November 2016.

<sup>9</sup> See Appendix A for a more comprehensive list of Kīlauea eruptions since 1918, as compiled by Klein (1982).

of predicting eruptive events and directionality of flow, the difficulty and sometimes impossibility of constructing housing infrastructure and residences on lava lands, and the possible/probable loss of residence to a contemporary flow, has meant that Puna lands have been and remain the most inexpensive land in the islands.



Real Estate Subdivisions Map, Puna, Hawai‘i<sup>10</sup>

This has meant very particular demographics for the population drawn to the area. Lower Puna populations have higher rates of poverty than most areas in the state, with 31-44% of people living 200% below the Federal Poverty Level (US Census 2010 *in* NHOP 2012). It has a higher percentage of Hawaiians than in the rest of the county and the state, some of whom were able to maintain old-style, *kua‘āina*<sup>11</sup> ways of living, in part because of the conditions that the

<sup>10</sup> Kevin E. Lewis. “Puna Subdivisions.”

<http://www.hiloagent.com/images/Puna%20Subdivisions.jpg>. Accessed November 2016.

<sup>11</sup> Kua‘āina means “back country,” and referred to and implied a backwardsness of people from the rural areas of Hawai‘i (as compared to the Kingdom’s municipal centers). In the Hawaiian Cultural Renaissance in the 60s, 70s, and beyond, the term *kua‘āina* was reappropriated and

lands of Puna provided as lush, harsh, lively lands, making it both difficult or undesirable for the agricultural, touristic, and military development that happened elsewhere across the island chain, and a continued dynamic of life in the area (*see* McGregor 1999). Ways of life attached to and reliant upon the animated landscape, and the absence of sustained industry in the area, meant that Hawaiians in the area were able to maintain practices that were identified as particularly Hawaiian (McGregor 1995); by the 19<sup>th</sup> century, through the Hawaiian movements to restore Hawai‘i through righteous relationship with land, Puna was looked to as a “cultural *kīpuka*”—an oasis where Hawaiian cultural knowledge flourished and from which cultural forms could be learned and renewed (*ibid.*). Also during the period of post-Statehood Hawaiian cultural renaissance movements, however, was ever-growing immigration and gathering concentration of first generation, White, American-born settlers into Puna—many of whom (re)imagined the area as remote and untouched frontier lands. To this imaginary was bound their own identities, as adventurers, environmentalists, war-detractors—frontiersmen and women, who “gave up” the implicit values of the industrialized, technified, war-fond U.S., and had arrived “back to the land,” to live sustainably, with little impact on the earth. According to the 2010 U.S. Census, White settlers form the majority population in the area today, making up over 60 percent of the population in many lower Puna subdivisions. The politics of the iterations of settler colonial life in Hawai‘i is examined in Chapter 3; suffice here to say that the intrusion<sup>12</sup> of White settlers to the area with their ethos of environmental sustainability affected, and continues to affect, the politics of geothermal energy development in the area.

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came to signify people who lived ‘Hawaiian culture,’ who kept the spirit of the land alive (McGregor 2007).

<sup>12</sup> I use this term here to think of the flow of the population into the area and the interruption that this represented—akin to magmatic intrusion.

These populations in particular have assumed the risks of lava flow of the active Kīlauea, below the east rift zone. As well, they have adopted acute risks of geothermal energy development, as the east rift zone, with its indications of land permeability and renewing heat, was and remains a prime location for the exploration of geothermal energy. The University of Hawai‘i, various private geothermal companies from the U.S., and the state have encouraged exploration, experimentation, and development since the 1960s. The sole currently operating geothermal facility in Hawai‘i—Puna Geothermal Venture (PGV)—began construction in 1991 just east of the subdivision of Leilani Estates, and southeast of Nanawale Estates—two residential subdivisions settled by poor, largely White, communities. It is located in Kapoho, Puna where the rift zone lightning-bolts, creating permeability in the rock and, with heat and water, the potential for geothermal energy extraction. PGV began as a joint venture between Constellation Energy<sup>13</sup> based out of Baltimore, and Ormat, a publically-traded Israeli geothermal development company. With sale by Constellation in 2004, PGV became a wholly-owned subsidiary of Ormat, and has remained so through the time of this writing, in 2016.

The ‘āina of Puna—a word which refers to land, as well as people of the land—is the condition into which geothermal energy development arrived. While the active earth makes it an attractive prospect for the extraction of geothermal energy, it also makes it a risky prospect, given that, without much advance warning, lava could erupt from the north-lying east rift zone and cover the plant. Moreover, the demographics of the area—poor, Hawaiian, White—in the context of the colonial thieving of the Hawaiian Kingdom in 1898, bring together a mesh of complicating, intersecting vectors, in support of and in opposition to the development of geothermal energy. The continued dispossession of Hawaiian lands and the representational

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<sup>13</sup> Constellation was founded in 1816 as the Gas Light Company of Baltimore. It currently operates Baltimore Gas and Electric as a subsidiary of Exelon of Chicago.

dispossession<sup>14</sup> of people; iterations of settler colonialism (as State) and its relation to Native Hawaiians and White settlers; the geothermal energy industry and its political and economic relation to Hawai‘i’s economy; the expense and limits of food and energy resources on an island—not to mention the continuous life of Pele, fire goddess, and her enmeshment with the material, spiritual, embodied lives of people and places in the Puna area and beyond—factor into what is at stake in determinations about development. In this mesh of life, the use of geothermal energy calls into question who and what is being sustained through its development—and, correspondingly, who and what is being extinguished.

## Literatures

### *Sustainability + Development*

Current use of the term “sustainability” is broad and inconsistent; its use crosses fields from ecology to business and politics. For decades, discourses on climate change and global warming, as well as population growth and agricultural concerns, have driven attention to the potential of resource depletion and that of human extinguishment. In this context, ‘sustainability’ references the relationship of human activity to the continued life of the earth and biotic life upon it. Sustainable measures ostensibly lengthen environmental resource use potential and are therefore deemed positive mitigations to current human activity and its exhaustive impacts on the planet.

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<sup>14</sup> As I mean it here, representational dispossession is to dispossess an Other from control over representation of themselves and their world. Dispossession can happen through media, art, law, propaganda, literature, politics, commodities, etcetera. The production and reproduction of these representations of the “Other” direct understanding and seeing of people/subjects and spaces/places. Paige West (2006; 2011; 2016) illuminates how representational dispossession allows for dispossession of material goods by larger and more powerful actors, obliterate social worlds, and preclude the ability of people to determine how they and their worlds are represented.

The use of the terms ‘sustainability’ and ‘sustainable’ to signify a supportive relationship of the environment by humans can be traced back to the conditions that a U.S. post-World War II boom produced through initiatives of global development and industrial expansion. The pressures of this rapid growth on the environment stimulated questions about the long-term ability of the earth and its resources to support human life. Strains of thought in ecology, conservation, and environmentalism began to assess the limits of a given environment to sustain ongoing life into the future, given then-current rates and scales of human use and consumption. Across and within fields, broad and at times disparate assessments—from concrete calculations of the “carrying capacity” of an environment, to broader determinations of the ethical and social goals toward which a just society must work—were used to draw attention to human habits of consumption and development. Though the term ‘sustainability’ had no real traction through these early sets of literatures, these trajectories of thought lay the groundwork for what would emerge under the umbrella of the term “sustainability.”<sup>15</sup>

Kidd (1992:12-13) traces first use of the term “sustainability” to the 1972 publication *Blueprint for Survival* (1972), a special issue journal published by *The Ecologist* just prior to the first UN Summit on the Environment. The issue, which was printed as a book later that year, sought to illustrate the impossibility of continued economic and human population growth being sustained by earth’s finite resources (Kidd 1992:13). The work fell along the lines of other early publications, including *The Road to Survival* (Vogt 1948), *Our Plundered Planet* (Osborne 1948), and *The Challenge of Man’s Future* (Brown 1954), as well as later, more widely-known

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<sup>15</sup>Kidd (1992) identifies six strains of thought that contributed to the sustainability concept prior to its naming as “sustainability” in *Blueprint*: the early 20<sup>th</sup> century conservation movement, the environmental movement in the 1960s and 70s, the no-growth philosophy of the 1970s, the discipline of ecology and its concept of carrying capacity, the counter-technology movement of the 1960s and 1970s, and the global environment concept in which “the scale of change initiated by man is [noted as] no longer local, but global” (Marsh 1864).



works such as *Limits to Growth* (Meadows et al. 1972) and *Silent Spring* (Carson 1962). And, just as the early works before it, *Blueprint* was disregarded by government and industry as an exaggerated, pessimistic, non-academic account of the elevated potentials of global environmental collapse (*cf.* Cole et al. 1973; Simon and Kahn 1984). *Blueprint* was reviewed as “utopian and apocalyptic...[ringing] the doomsday bell with frantic vigor...[using] sensational and emotive prose to get its message across...” (Ashby 1978 *in* Kidd 1992:13). Reviews noted marked straying from scientific interpretations of environmental phenomena, and remarked on the excessive blame placed on industrial development for environmental degradation. However poor the reviews, *Blueprint*'s claim that “[t]he principal defect of the industrial way of life with its ethos of expansion is that it is *not sustainable...*” (*italics mine*, Goldsmith et al. 1972:3), represented the central problematic, as viewed in the American sustainability movement, between a culture of indefinite growth and expansion, and the earth's finite resources (Goldsmith et al. 1972:6).

‘Sustainability’ also began cropping up in documents related to development and planning, albeit with a different tack on human action in relation to the environment. As the central theme for the Woodlands Conferences—annual gatherings with a focus on planning and building sustainable societies—and the focus of the conference's annual Mitchell Prize<sup>16</sup> for work by individuals that exemplified creative strategies towards the achievement of sustainable societies, ‘sustainability’ came to represent a *means* to growth and development, rather than an argument against its continuation. A series of Mitchell Prize winners led this turn by provisioning that “no-growth” economies are themselves unsustainable (Meadows 1977), and that continuous economic (and industrial and technological) development would in fact improve

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<sup>16</sup> The Mitchell Prize is named after the conference founder, a Houston-based geologist named George P. Mitchell.

environmental quality and resource yield (Cleveland 1979). In direct opposition to *Blueprint* and previous writing that warned of limits to growth, Mitchell Prize winner Cleveland (1979) argued,

...[W]hen it comes to raw materials the human record of ingenuity in technology and substitution suggests that a general policy of self-denial by the present generation would be fruitless....Therefore we may be well advised to focus on the policy implications and the management problems of alternative rates and patterns of growth without pressing further for an unambiguous and elusive definition of sustainability. (276-278 in Kidd 1992:21).

Instead of defining the terms by which sustainability might be measured, Cleveland emphasizes human ingenuity and alternative raw materials to suspend the continued possibilities for growth. Here is the making of sustainability as technology and substitution, and ideas of non-growth as austere. Growth, it seemed, was necessary for the imagination of any future in which humans would contentedly survive.

By the 1980s, this latter concept of sustainability had been adopted by international governmental and nongovernmental organizations such as the UN, The World Resources Institute, The World Bank, and USAID, that were grappling with a growing environmental conscience and the entwinement of global social, economic, and environmental futures. For these organizations, the logics of sustainability were located close to those promoted by Mitchell Prize winners. With additional reasoning that poverty in the developing world was “a major cause and effect of global environmental problems” (Bruntland 1987:I.1.8), economic development, foremost, became the answer to economic, environmental, and social problems—and remained at center of the imagination of an environmentally and socially ethical future.

“Sustainability,” which had its roots in ecological directives to train human action according to needs of the environment and nonhuman life, thus also became a term connected to the promotion of industrial and other development. The concept of sustainable development encouraged the assumption that those particular instances of development named “sustainable”

had considered the long-term effects of any particular development on local places and the broader environment. But to be sure, sustainable development directives couched the solvability of environmental degradation in the possibility of continued economic growth. By promoting the idea that the environment (and its people) would best be protected through continued industrial, economic, and technological development, government and nongovernment organizations secured their abilities to intervene and implement policy and practice in developing countries, in the name of people and the earth. And as tautological as the logics of sustainable development seemed, when measured alongside development ventures that ravaged the environment and its resources without conscience, *sustainable* development carried the promise of protecting, or even saving, the environment, and hence appeared moral, and virtuous.

Development—and here I am speaking of technological, political, and economic projects driven by capital growth (and seeking to “advance” people and places toward European and American forms of ‘modernity’)—has never been an innocuous undertaking. Anthropological literature has shown that, beyond environmental degradation, development projects obliterate human and spatial difference through the principle of making ‘modern.’ More specifically, the political, economic, and social renovations meant to condition places towards replication of economically established capitalist nations inevitably homogenize myriad cultural systems toward late liberal configurations. Arturo Escobar, an anthropologist who has done extensive work on development, writes, “[T]his dynamic of recognition and disavowal of difference is endlessly re-enacted in each [development] project or strategy...[and] is not only of the reflection of the failure of development to fulfill its promise but an essential feature of the development enterprise” (1997:497). In other words, the erasure of difference and the failure of development is not an aberration of a few early or notable development projects, but the very

mechanism by which development operates. ‘Development’ works less to bring nations and places toward their own versions of improvement and innovation so much as it imposes a structure of advancement on people and place. The effect of this is development as a homogenization measure, ‘advancing’ people and place toward one particular notion of a developed society.

Difference, too, is made in the development enterprise, albeit as another homogenizing force. Anthropologist James Ferguson (1994) describes how development ventures discursively, falsely, and repeatedly characterize places and peoples as isolated, backwards, and in need of ‘modern’ goods and services. People are portrayed as unlearned, tied to the land through subsistence, and in need of wage-earning jobs. Conveniently, places and their people fit the needs of international development agencies, and justify the means by which places are re-made via funding, “experts,” and programs (Ferguson 1994:176). Seen broadly, the characterization of places outside “developed” industrial and technified centers as backwards, poor, isolated, and in need in precisely the ways development agencies need them to be become a classification that blinds approaches to people and place that might better attend to specific social, political, and economic conditions. They set development ventures up for failure (ibid.:178), and strip people from power of self-determination and self-representation. These material consequences are caught in the discursive formulation of destitute, disadvantaged places.

In this dissertation, I argue that these enactments of development are not separate from those of sustainable development projects, despite the suggestion that these “new” versions of development are good for the planet. The adjectival “sustainability” works to draw attention away from interrogation into the actual inevitability or need for funding and expertise that aspires to improve imagined places and lives through proposed ventures, despite the fact that

funding and its restrictions eliminate possibilities that might respond to actual life in a place. Along with convoluted notions of sustainability, these impulses toward development must also continue to be examined, especially for how they make, guide, and fail places and the people in those places.

When geothermal experts, constituents of the State of Hawai‘i, scientists and others talk about geothermal energy development in Hawai‘i, they often play up the logics of sustainability, framing geothermal energy as a moral alternative to shipping and burning fossil fuels. Development itself, protective of the economy, is taken as an inevitability. As will be shown below, geothermal energy production through contemporary energy technologies makes the resource remarkably short-lived; the quality of the environment is not improved from its existing state; and the lives of people—different communities, in different ways—are put at risk to loss of life. This raises questions about how the state measures the success of development, how it assesses what is sustainable, and what, exactly, it is seeking to sustain through the development of geothermal energy in Hawai‘i.

### *Of Land and Life*

Foucault argues in his latter 20<sup>th</sup> century lectures on biopolitics and biopower that shifts toward assimilatory and other practices of state control over human life reflect a shift of a sovereign’s pre-19<sup>th</sup> century right “to take life or let live” were penetrated by a new exercise of power: “to make live and to let die” (Foucault 1976: 241). Under these strategies of governance, a sovereign’s power to order a subject to death became the power to deem that subject worthy of life. In this system, life is not a given, it is granted, and taken away. Taking life becomes “the fact of exposing someone to death, increasing the risk of death for some people, or, quite simply,

political death, expulsion, rejection, and so on” (*ibid.* 256). As scholars have illuminated (*cf.* Povinelli 2002, 2006:10, 2011; Fassin 2009), this is achieved in contemporary settler states through policies and practices marginalize and “leave to rot” instances of life that fail to provision late liberal and market aims, and often appears as nothing any more spectacular than the failure of a body at its ‘natural’ end.

In Foucauldian frames, one of the preconditions to this (bio)political system is racism, as race acts to “[introduce] a break into the domain of life that is under power’s control: the break between what must live and what must die” (Foucault 1976:254). By these means, the state can categorize and separate people into a hierarchy of identifiably “different” populations, some worthy of life, and some not. Logics around difference—here akin to Late Liberal logics—intimate that whatever is perceived as different, or other, from whatever is deemed ‘normal,’ must be expunged, to no longer threaten to sully the otherwise clean population. Killing, and letting to die, is thereby morally justified, through the assertion that the obliteration, removal, erasure of “the few” who pollute the imagined homogeneity of the greater population will allow for the increased quality of life for those who are left. This scrutiny and management of difference does not merely initiate combat of races against one another, but the general clamber for authority and power of some life, and some ways of life, over others (*cf.* Foucault 1976:258). That which is Other, or “Otherwise,”—a term Povinelli (2012) utilizes to indicate something other than prevailing arrangements of existents/existence—is not necessarily consistent, though it is consistently sought out and destroyed.

Otherness, of which Race is an example, is, as Wolfe reminds us “made in the targeting” (Wolfe 2006:388). In other words, what is needed by those in power affects how those sought to be extinguished are represented, in order to be justified as the Otherness that necessitates

expunging so that power can be achieved. In Late Liberal arrangements, “power” is often masked as a definitive “good,” morally supportable by a broad segment of the population. This deepens support of initiatives to gain power—as individuals’ attach their own moral standards to a given project—as it offers wily defense of human desire and rise to power. In examining racial relationships to land and life in the settler state in an era of (sustainable) development, there are multiple progressions of factors and vectors to trace. One is the arrangement of the settler state itself, where Native elimination—or at least the elimination of the idea that a Native has more “right” to land than any other settler—is central, as it is the identified barrier to morally appropriate settler life. Private land ownership carries the potentiality of elimination in the guise of self-achievement and meritocracy; the imaginary is that one purchases land with earnings which one comes to through work and effort. The purchase and ownership of land stands as verification of “right” to space. Settlement itself is justified through law and capital expenditure.

The kinds of harm Wolfe underlines that indigenous bodies have faced—direct removal from land via mass genocide, murder, and ‘biocultural’ assimilations and resocialization practices that pull people towards homogeneous ways of living (2006:403)—can thus be seen as not only products of state action against indigenous people, but also of settler alignment with the state and the politics of race and multiculturalism in the Late Liberal settler state. Settler alignment supports the conditions for race-based state violence against indigenous people by setting arbitrary moral standards by which a state can then operate (*see* Povinelli 2002). This violence is enacted through policies that directly impede socialities with land that satisfy psychological, physical, subsistence, and even financial needs, placing the indigenous body in a dependency relationship to the state rather than an interdependent relationship with land (Alfred

2009). As the state then fails to satisfy needs, bodies are left at risk—in Foucauldian terms, let to die (*see also* Fassin 2009).

Specifically in Hawai‘i, where White plantation owners brought in laborers from Asia and the Pacific beginning in the early 19<sup>th</sup> century to work the land, immigrants were pitted against one another by plantation owners to impede collective revolt. As Hawai‘i scholar Dean Saranillio (2013:282) elucidates, divisions of different ethnic groups and the pitting of them against one another and against Kanaka Maoli “produced a pyramidal view of the world, an intricate arrangement of power relations that helped diverse non-White settlers to see their interests as aligned with the formation of a liberal settler state” (Saranillio 2013:282). Immigrant ties to land through work and living, therefore, were never disconnected from a scramble to power that supported the work of White American colonists who needed to dispossess Kanaka Maoli of land, resources, and means and rights to self-determination in order to effectively capitalize on Hawaiian lands and resources. Especially given the context and theorization of race in the U.S. with its Black-White binarisms of U.S. race discourse, the rise of non-White Hawai‘i settlers to power through purchase of land was masked by liberal multicultural ethics and its frames of “equality” (Trask 2006; Saranillio 2013; Hall 2009). To pull it back to thinking through concepts of life and land: through settlement, the management of difference—through hazarding the margins and the real risk of death at the margins—became a practical political stance in Hawai‘i, and over time, an embodied practice. Elimination of the Other, and especially the Native Other who represented a foil to logic that people acquire “rights” to place via capital purchase and law, became an acceptable means for sustaining power—so acceptable as to be obscured from everyday questioning.



The reverberations of settler politics, too, meant that the politics and legalities that supported private ownership of place also supported development and expansion, as concepts of purchase and use of privatized lands were unobjectionable if and as settlers reasoned their own rights to place allowable. The transfer of the politics of land-ownership meant, in ways, that capital expansion and growth were justified insofar as they were deemed “legal” through existing land and resource regulation. Of course, land and natural resources, essential for continued capital expansion and growth (*see* Luxemburg 1913 *in* West 2016:15), were also othered, to the extent that they could be seen as something essential for human life, rather than something akin to it. This is not separate from Native elimination, if and as one sees the terrible consistency of loss of some forms of life over others and, as West (2005:633) argues, the attendant destruction of diverse aesthetic, poetic, social, and moral relations people have with the world. The elimination of diverse non-Market relationships with land has everything to do with the processes by which development is justified and carried out, as it accepts the commoditizability of all things (*see* Harvey 2005:197), and facilitates Market means to expansion.

The politics of the Otherness of Nature as divisible from Culture shine through arguments about sustainability and development. Too often, question about what is sustained and sustainable are only comprehended by assumptions inhered in *biopower* and the *biopolitical*, with preference to the biontological as referent to those things imbued with Life. Povinelli (2016) asserts that the specter of climate change in multicultural liberal settler states like the U.S., Australia, and Canada has revealed the biontological bias through the very liveliness—and expiry—of Earth, exposing that which subtends the Late Liberal state and Market, and rests beneath biopower. This she terms geontopower or gerontology, to reference the division between *bios*, recognized as life, and *geos*, recognized as nonlife—a division which has serious

implications for the sorting and valuing of extants and the thinking by which the arrangements of power inhered in Late Liberalism and Market move into an Otherwise—another configuration that is not yet so. This is so because the Life/Nonlife division marks Earth as inert, and without ties to the moral codes that dictate how the life or death of these extants might be considered. In these frames rock, atmosphere, and “resources” are usable to the extent dictated by human desires for human life, with attention to those instances of nonhuman biological life that matter. Geontopower allows a geologist to say, “It does seem to me you’re sort of robbing something from the volcano in a sense, but we do that with any natural resource we use. . . .I don’t have anything against the geothermal per se.” In the limits of this dissertation, geontopower frames geological existence as apart from life, and through sets of reason and logic, free for use via freedom from moral burden.

Geontopower also has grave implications for indigenous people who maintain relationships with *geos* for, as Povinelli (2016:5) illuminates,

The attribution of an *inability* of various colonized people to differentiate the kinds of things that have agency, subjectivity, and intentionality of the sort that emerges with life [which] has been the grounds of casting them into a premodern mentality and a postrecognition difference.

Relationship with the rocks of the earth and things deemed nonliving—sky, stars, space itself—thus become interpretable as ignorance—an *inability* to recognize the lines between life and nonlife. The maintenance of this division regulates and manages difference in the multicultural liberal settler state through productions of indigenous relationships with the rocks of the earth as “premodern,” in order to manage a remarkable difference that cuts through late liberal and market maneuvers to maintain market access to land and natural resource. This management strategy swells into the banishment of the indigenous or the Otherwise to the margins, to be

killed or let to die. In this way, relationship with the rocks of the earth place one at risk for death, even as the severance of the socialities with rock also assure nonlife, and/or death.

I utilize these latter theorization on geontological power to examine sustainability measures in Puna because it allows for a refiguration of the moral sensibility by which relationship with earth can be viewed. In other words, socialities with Earth that trust a subjectivity in geological and atmospheric forms are not caught in indigeneity so much as by purchase into the geontological illusions of Late Liberalism, wherein the strict division between Life and Nonlife, the active and the inert, persists. In what follows I argue that in this severance of the matter of existents comes the potential of Market and the power of Late Liberalism. In Puna, therefore, in spaces between indigenous life and geos, is the potential for examination of this division, revision of Late Liberal categories of Life/Nonlife, and the prospect of movement into an Otherwise—into somewhere else.

### *Thinking Spaces*

In Lefebvrian theorizations of space, the production of space is undeniably human; perceived space, conceived space, and lived space are created through interactions and power relations between people and each other. Things in the environment are noted as cultural and regional relations with place stemming from ontological difference and the practices subtending them—even when, as West illustrates so clearly, substances in and of the environment are considered as part of transactive social relationships in particular societies (2007; see also 2005:633). In this way, nonhuman things are limited in the ways they are allowed to also be in relation, and produce and reproduce space; they are the materialities involved in the production of space, rather than the figures also producing them. The processual nature of Lefebvrian

conceptions of the production of space also do not necessarily leave room for spatial genealogies, or the varying strengths of them; an interest in space replaces an interest in time (Foucault 1986:23 *in* Kahn 2000:7).

The Oceanic concepts of *tā* and *vā*, translated literally as “time” and “space,” indicate a relationality between and among things that have been patterned through time (Māhina 2002). It has been utilized in contemporary theorizations of Oceanic philosophy and governance (Hau‘ofa 1993; Māhina 2010); transnational social ties (Ka‘ili 2009); human health (Mila-Schaff 2009; *see also* Tuhiwai Smith 2009 *in* Mila-Schaff 2009<sup>17</sup>; Māhina 2002, 2004); architecture (Refiti 2005, 2013); practices such as seafaring and tattooing (Ka‘ili 2009; Wendt 1996); and art (Wendt 1976). The emphasis on contextualizing space between people and people and things in and through time remembers the two concepts as inseparable, at least for understanding context for a relationship at any given moment (Taufe‘ulungaki 2005:117 *in* Mila-Schaff 2009).

In contrast to notions of space in which space is understood as empty (*see* Ka‘ili 2009), Oceanic space is always already relational, not only connecting objects in space but objects in space through time. The *tā-vā* includes ties back through lines of the deceased through genealogies and bonds to the spirit world, and extends to animate and inanimate surroundings not bound by reaches of the human in Euclidean space, but across Oceanic spaces through recognized relation.

As Wendt (1999), Mila-Schaff (2009), and others remember, in this scene the *vā* must be tended, and through generations, and continuously. These spaces between form “one’s sense of belonging and interconnection [and are] considered the essence of identity” (Mila-Schaff 2009:135); they are the basis for the unlocking of knowledge (Kekipi *in* Meyer 2001). Tending

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<sup>17</sup> Unpublished manuscript referenced in Mila-Schaff (2009). Linda Tuhiwai Smith, M. Hudson, S.J. Tiakiwai, and M. Hemi. “The Negotiated Space.” *In* Te Hau Mihi Ata: Mātauranga Māori, Science and Biotechnology. Waikato: Waikato University, 2008.

the vā, here, is tending the self. In the beautiful tā-vā, in the space which has been tended well, patterned carefully, there is “an optimal and equitable balance of reciprocity” (Mila-Schaff 2009:135). There is a realization of interdependence made manifest through enactment of that interdependence; the making of space is a responsibility; in vā action is directed toward reciprocity, which becomes beauty. Moreover, these actions are not only from the past for the present, but as vā is kept, and inherited, it also looks toward the future—what might be made possible for following generations.

I utilize the tā-vā frame for rethinking the ways spaces are produced in Hawai‘i because it shifts the scales and direction of attention to the ways space is always already relational, and includes the function of time as patterned through sustained relation—ancestral, generational, over months and years of a life. While not an explicitly Hawaiian concept, the conceptualization of relations between human, nonhuman, and ancestral worlds and the temporal scales of relation—both long-term and moment-to-moment; the ethic of being in relation pointed toward beauty and reciprocity; the study of the other as study of the self, are concepts that arise in Hawaiian concepts of Aloha ‘āina and in Hawaiian literature and philosophy (*cf.* Kanaka‘ole Kanahahele 2011:xv-xvi; Hauanio 1982; Meyer 2001). More than the theorization of the production of space through material and discursive constructions that rest upon and represent social status and power at a given point in time (Lefebvre 1991[1974]:14), tā-vā concepts of space incorporate Oceanic ways of knowing and being in the world, widening possibility for thinking and practice.

Through this exploration of relationship and relationality, I hope to understand something of the ways people attend to their taking from the earth and from human and nonhuman others. If we are speaking about some kind of ability to sustain ourselves in concert with the planet we

have occupied, questions about the relations we can sustain with others need to be driven deeper, not only to quantify and qualify human impacts on what we have come to call ‘the environment,’ but to bear witness to temporalities and qualities of relationality with all things, and what they might teach about life.

### Map of the Dissertation

This dissertation begins with an examination of geothermal energy development and its sustainability in practice. I contextualize geothermal development in broader geopolitical circumstances of the 1960s and 1970s and burgeoning U.S. national sustainability discourse, in order to elucidate the multiple motives for the productions of geothermal development as a necessary, beneficial, clean, ethical practice. In addition, I trace histories of the import of alternative energy practice and discourse into Hawai‘i, and explore the gap between these global productions and the practice of development in the particular. By questioning the honesty of claims that geothermal energy is a sustainable, clean, and reliable source of energy on any scale, I begin to trace what is being sustained in geothermal energy production. I propose, here, that global and national spaces promoting the ‘sustainability’ of geothermal energy overlook, disregard, and/or neglect the intimate spaces where the earth’s heat works in exchange with atmospheric and biological life, and question how these considerations might matter in the particular, where the prospect of the death of heat is a catalyst for the ends of life.

Chapter 2 looks at the impacts of widespread ideologies about the divisions of Nature and Culture and Elizabeth Povinelli’s (2016) theories on the divisions of biontological and geontological existence in relation to late liberalism. In the first section, I explore these ideas through histories of the U.S. sustainability movement, as captured in the early 20<sup>th</sup> century preservation efforts of the U.S. National Park System. I seek to show how efforts aimed and

framed as protections of Nature and the Wild direct beliefs about human relationships to Nature and to Kanaka Maoli, and thereby shape the possibilities for understanding Nature, lava, and Kanaka Maoli ontologies, strip Kanaka Maoli of place and the rights to self representation and self determination, and set the conditions for abandonment of that which appears Other, when and where the Other threatens views of Self. In the second section, I look more closely at biontological biases. I illustrate how geological forms and forces are understood and treated in the face of human life through the case of a lava flow into a populated area in Puna, and contend that this instance illustrates both the routineness of belief about control of Nature and the value of the geological in the face of that which is qualified as “life.” The gap between the awe of witnessing Pele in the Park and the antagonism of witnessing her in full force in life reveal deeper habits about late liberal practices of being with, or rather, dealing with, Nature’s wild.

Chapter 3 examines the rubrics of sustainability as carried into lower Puna by the largely White population seeking to get “back to the land” and live sustainably upon it. In this chapter I examine how the meanings and values of lives are hierarchized, and how harm and extinguishment are justified in everyday practice, by taking the instance of the White community that is, at once, an iteration of settler colonial domination and an example of a group abandoned in the face of market and state. Here, I seek to foreground the arbitrariness and non-linear temporality of violences under late liberalism, and the ways that stantions of sustainability—as exemplified both through geothermal energy development and through ideologies of sustainable living—do not sustain life, so much as late liberalism and market.

Finally, in Chapter 4, I look at the fiber of ideologies of sustainability as compared to ‘mau a mau,’ a continuum. In particular, I examine how the concept of Tradition has been employed by developers and the state as an experience of linear time, Euclidean space, and fear

and repugnance at difference, and offer an idea of how traditions function as indigenous practice to carry, rather than concretize, practices of being and relationality. Utilizing Oceanic theories of *tā* and *vā* I sink deeper into thoughts about the ways relationships between people, places, and things are patterned, and propose that developers, scientists, and arms of the state look deeper into why relations between developers and Kanaka communities continue as they do.

Each of these chapters is meant as an opening to view how ideas about difference and otherness under a multicultural liberal settler state are managed, but also as an entreaty into looking more deeply into how they have become embodied as ways of being and relating to people, places, and things. In other words, this dissertation is not an attack on geothermal development, and Hawai‘i State, and Scientists, and White settlers in the particular; it is a call to witness our embodiment of late liberal and market ideals as comes through repugnance of difference, domination of Nature, inflation of self, self-importance, non-dependence, as an incarnation, a personification, of the late liberal violence that, here, is inhabited by these forms. Looking wider and further to find Others to condemn, dominating and killing everything until homogenization is complete, will not move us anywhere new. Seeds of repugnance and vectors of opposition will continue to exist. Movement into somewhere else requires the space of relationship, with each other, with ourselves, and with the rocks of the earth. ‘Eli‘eli kau mai!

#### Notes on Tenses and Terms

Throughout the dissertation I switch between past and present tense. This is not without grasp of the power and politics of the ethnographic present as a literary device and a mode of representation. It has been analyzed as an obsolete compositional mode that de-temporalizes, distances, and objectifies an “Other” that underscores the colonial anthropological endeavor



(Fabian 1983; Clifford 1983; *e.g.* Evans-Pritchard 1940; Malinowski 1922), though more recently, its use has also been defended as a helpful device in particular contexts, and one that needs revisiting (Hastrup 1990; De Pina-Cabral 2000).

In the dissertation I utilize the present tense when narrating or relaying narration of particular stories. This is in part a decision to emphasize the living nature of stories and their potential to carry lessons through multiple timescapes—“who we were, who we are, and who we are meant to be” (McDougall 2011:7). It is also used to challenge the idea that the suffering and grief that emerge from certain practices of ignorance and mindlessness in society are past—that they lie outside of conjoint moral timescapes and no longer need or warrant address. The immediacy and reader-involvement that the present tense calls for test an ability to acquire distance from the Other, albeit if and when the ethnographic narrative is engaged with. It is my hope that the stories are told in ways that engage enough to challenge dissociation, distance, detachment.

Throughout the dissertation Pele is referred to and narrated as multiple forms: as a deity with human, animal, and elemental forms, who lives and breathes in contemporary Hawai‘i; a genealogical ancestor; a figure of religious worship; a mythological prior; a commodity form; the heat force and eruptive volcanic fire; the land itself; the lava; the steam; “the rosy colors in the sky after [the volcano] has erupted” (Kame‘eleihiwa and Kanaka‘ole 2002:7). Pele and her stories, the songs and chants that carry her through time, the hula that embodies her travels and eruptive events, as well as the shallower tales sold of her and the commodity forms that are circulated as her, are part of what make up the lands of Puna.

The term ‘native Hawaiian’ has been politicized through its use in legal settings to delineate individuals of 50% Hawaiian blood quantum or more. These race-based qualifications

were utilized to determine individuals' access to reparative rights granted by U.S. Federal and Hawai'i State legislation since the 1920s (HHCA 1920), and has, more insidiously, denied recognition of the genealogical relationships of Hawaiians to land, nonhuman forms, and other human beings (Kauanui 1999:138). 'Native Hawaiian,' with a capital 'N,' is utilized in legal contexts, and to some reinforces the subjugation of Hawaiians to American colonial rule (Trask 1991:1197). Given the political implications of the terms 'native Hawaiian' and 'Native Hawaiian,' I choose to avoid the use of them to refer to the indigenous people of Hawai'i. Except for the segments of the dissertation in which the specific context of blood quantum is discussed, I employ the terms Hawaiian, *Kanaka Maoli* (true people), and *Kanaka 'Ōiwi* (people of the bone) interchangeably to refer to the indigenous people of Hawai'i.

Throughout the dissertation, I italicize the first mention of Hawaiian words and define them there. This is to set apart words on first glance for non-Hawaiian readers while recognizing that Hawaiian is a home language in the context in which I write. Hawaiian words can also be found in a glossary following the List of Figures for quick reference. Definitions are taken from the Hawaiian-English Dictionary (Pukui and Elbert 2003). Diacritical markings—the 'okina (glottal) and *kahakō* (macron) are included unless not used in the original text.

Names of participants have been omitted, though general mention of work or other affiliation has been mentioned. This is to maintain confidentiality of participants as much as possible.

### Approaches

My grandmother and grandfather on my father's side of the family were born and raised in Hilo, Hawai'i. Their parents immigrated from Kumamoto and Hiroshima, Japan in the early

1900s. During my grandparents' courtship they relocated to Honolulu, O'ahu, where my father was born; their parents and siblings remained in Hilo. As young children we visited my father's cousins and their growing families once or twice. There are pictures of a single trip.

Returning to Hawai'i Island specifically to do research for the Ph.D. in the summer of 2011 and again for a year from May 2014 to June 2015 was a homecoming of sorts—and, much felt new. My family's generosity in welcoming me (back) into their homes helped me acclimate to Hawai'i Island and opened up opportunities to experience the island that which I would otherwise not have had. As the kinds of qualitative research anthropology does relies so heavily on trust and relationships, their long-time connections to people on the island made many things possible. There were as well many chance encounters and pointed queries of strangers that proved fruitful. The mix of this experience is found in these pages.

Given that both sides of my family immigrated to the islands from Japan in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, I consider myself a settler in Hawai'i. In part, this position requires that I take particular responsibility to pay attention to settler discourses and practices that ultimately strip Kanaka Maoli of rights to self-determination. As Trask (2000) and others have shown, the ever-lengthening history of settler colonialism in Hawai'i by non-White plantation immigrant settlers has impeded Kanaka Maoli sovereignty for over a century now. In particular, third and fourth-generation Japanese settlers have contributed to the subordination, dispossession, and erasure of Hawaiians by foregrounding multicultural civil liberties, where power struggles and suffering at the hands of White colonial powers are portrayed as shared experiences of people of color (Trask 2000; Saranillo 2013). The settler ideology of a meritocratic rise to power—an earning of dominance and entitlement—is carried in these multicultural settler politics, serving to further entrench Kanaka Maoli in conditions of subjugation.

My work is thus pointed towards examining how these conditions persist, and what needs doing in order to reformulate possibilities for Kanaka Maoli becoming in Hawai‘i. As an environmental anthropologist, this means interrogating my approach to research—my aims, my methods, my position—as well as my work of representation. Linda Tuhiwai Smith’s (1999) writing on the colonial and imperialist formations of “outsider” research and necessary steps toward decolonizing research methodologies were formative to my approach, as it details both the snares in which so many researchers have been caught, in every step of the research process, and imagines research done well from an indigenous perspective, for indigenous people. Also particularly influential were the writings of Epeli Hau‘ofa (2008), who outlines reasons for the longstanding tensions between the discipline of Anthropology and Pacific Islanders as well as potential solutions; Lisa Uperesa (2010), who weighs the position of being an indigenous anthropologist; and Haunani Kay Trask (1991; 1993; 2008), who writes extensively and brilliantly on Hawaiian life as an object of exploitation in Hawai‘i. Each of these works and many others continue to teach me about indigenous and Oceanic perspectives as well as the histories of violences that have occurred through research in the Pacific and with indigenous peoples. I study them so as not to repeat them. While my work was not exclusively with the Kanaka Maoli community in Hawai‘i, paying attention to the voices of indigenous researchers and scholars in Hawai‘i, across Oceania, and beyond, has shaped the project. Many of them are cited in this dissertation. Shortcomings are, of course, all my own.

## Chapter 1: WAIWAI

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*If somebody told me [geothermal energy] will benefit you  
and give you electricity...we have solar energy.  
The sun provides for us.  
When I was little we made sure we did our homework...  
before it got dark. Our chores were done.  
...At night, after you eat, you had family time.  
You'd pray and then you'd talk story about the day.*

*Even when they offered us geothermal energy, we didn't hook up.  
...If geothermal was to happen, we would not have peace.”<sup>18</sup>*

One night, Aunty Pua tells a story of a spider—or rather, a spiderweb. This is part of her longer story about *hā'ena*,<sup>19</sup> what she translates in this context as the “intense breath of the sun.” It is the very first peek of the sun over the ocean horizon—one which titillates the island earth to give up its breath. In the deep rainforest, where the spider lives, the shift in temperatures of air through the night and into this moment compels an exchange of air between levels of atmosphere that might be witnessed as mist.

She pulls up a picture of a spiderweb on the large white screen behind her. The web appears four to five feet across, and is laden with water droplets. The heaviness of droplets at the center of the web pulls the web into a conical shape. She names the web as *'ohiwai* (*lit.* water collector), and makes a point to note that this is not an *'ohiwai* that collects rainwater, but rather one that collects the fine mists as they rise from the earth and fall back towards it during the transition time from one day to the next. “The web collects water and methodically allows the drips to go back in the ground, and this is what feeds our aquifers,” she says. “...When you have

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<sup>18</sup> Matsuoka et al. (1996:125).

<sup>19</sup> *Hā'ena* is translated in Puku'i-Elbert (1986) as “red-hot, burning, red.” *Hā'ena* also names locations in Kohala and Maku'u on Hawai'i Island, Hanalei on Kaua'i, and 'Ewa on O'ahu (Pukui, Elbert and Mookini 1974).

something like this that's happening constantly every day, whoever we are that has brains, you need to know that this has to continue.”<sup>20</sup>

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Among those who promote geothermal energy development in Hawai‘i, the story has long been that using the volcanic heat resource to power the electric grid is a no-brainer. Geothermal, it is said, is a “clean” form of energy, producing comparatively little of the carbon and methane emissions of fossil fuel-fired plants that are responsible for the degradation of the ozone and the rapid warming of the earth.<sup>21</sup> It is a form of renewable energy that provides baseload power, meaning it allows for a continuous, controllable stream of energy, unlike the patchy and unpredictable draws from wind and solar. It reduces state dependence on oil and coal imports to Hawai‘i, and would help the state lead the nation towards a 100% renewable energy portfolio. All of these benefits advertised projected side benefits, too: by relying on “indigenous” resource, Hawai‘i would no longer be reliant on other economies and would thereby be more “secure;” the shift to geothermal would keep millions of dollars in-State that would otherwise be spent importing oil and would simultaneously earn monies off mineral rights to resource from private, independent geothermal ventures, thereby setting up the conditions for reduced electricity costs; it would attract more “green,” environmentally-minded business and expertise to Hawai‘i to participate in the clean energy economy, and reduce dependence on touristic and military economies (HCEI 2016). It would provide jobs, keep electricity costs down for the public, and benefit Hawaiians—through land trust royalties equaling 20% of all State geothermal

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<sup>20</sup> Pua Kanaka‘ole Kanahale, “Hā‘ena: Intense Breath of the Sun,” Video (Published 2012).

<sup>21</sup> Geothermal Energy Association (GEA) reports on the carbon emissions of geothermal plants estimate geothermal plants produce about 5% of the carbon emissions of carbon-fueled plants. However, the GEA is careful to note that emission rate estimates are not an exact science, vary widely per type of geothermal resource as well as type of plant, and comparisons themselves are troubled due to the lack of a consistent reporting method (*see* Holm et al. 2012).

mineral rights earnings transferred to the Office of Hawaiian Affairs (OHA). Data and projections are held up against development opponents' claims: that geothermal energy developments are dangerous to people and degrading to air, water, earth, sea; and that extraction of geothermal heat is theft of Pele's breath, is sacrilegious, would extinguish the heat resource, and would lead to the passing of a Hawaiian way of life.

The visions of the world driving alternate views of what geothermal energy is, does, and can do are incommensurable—they do not share a standard value by which truth or ethical substance might be measured. They are also not evenly weighted or attended to in the making of social, legal, and development decisions in regards to geothermal energy; too often the claims that geothermal is hazardous, poisonous, and life-ending are shunted in light of louder, broader claims of the safe, clean, life-promoting qualities of geothermal as an alternative energy development. Instead of arguing for any definitive truth, I seek to examine what is at work in the formation of a world that suffocates those instances of life that lie outside of a late liberal imaginary of sustainable development as a 'good,' and the effects of this work on attendant social worlds.

I begin this work by considering geothermal energy development and its sustainability in practice. To begin, I contextualize Hawai'i's geothermal development ventures in the broader geopolitical energy climate and the burgeoning sustainability movement of the 1960s and 70s, in order to elucidate the intersecting vectors that produced geothermal development as a sensible, beneficial, ethical, *sustainable* practice. I seek to show how multiple potentials of terms such scattered around alternative energy developments build geothermal development as a superior alternative to other renewables, and generate misleading narratives about the potentials of the energy resource. I move to tracking the history of importation of alternative energy discourse

into Hawai‘i, and explore the gap between these productions and the messy practice of geothermal energy development in the particular. In tacking between histories and ideations of alternative energy developments and the practice of geothermal development in lower Puna, I illustrate the ways that discursive productions about the form come to affect the material realities of people in place through development ventures.

### Power Troubles

#### *In(ter)dependence?*

In 1973, the Organization of Petroleum Exporting Countries (OPEC) banned petroleum exports to the U.S. in response to U.S. support of the Israeli military during the Arab-Israeli War. During the embargo, which lasted until March 1974, oil prices rose drastically, and continued to increase exponentially through the 70s into the 80s. Figures show that over this period, U.S. domestic crude oil prices raised 800%, from \$3.39 a barrel in January 1970 to \$37.42 per barrel by 1980 (McMahon 2015; Hamilton 2011).<sup>22</sup>

The sudden and exponential increase in oil prices led to a realization by the U.S. government of its vulnerability to oil-rich Arab nations. The proverbial rock and hard place in which the U.S. had situated itself through its unwaning support of Israel and its dependence on cheaply-priced oil of Arab nations, following a show of power by these nations via the embargo, initiated a desire to jettison from relations with Arabian countries—to be independent through

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<sup>22</sup> Economists believe the rise in price was exacerbated, or enabled, by decisions made in Bretton Woods in 1971, which delinked the U.S. dollar from gold and ultimately destabilized the U.S. dollar from fixed commodity prices. While the relation of ballooning oil prices to Bretton Woods are thought to be far from causal, it is argued that the flexible exchange rates allowed by the detachment of the price of goods from the stable material substance of gold allowed for the determination of value of goods by and between governments, feeding conditions of possibility for drastic increase in the price of oil (Hammes and Willis 2005).



securing of domestic reserves. Then-President Richard M. Nixon launched Project Independence to further an effort at discovering and developing U.S. domestic energy reserves. In the midst of disavowing “foreign” oil resources, Project Independence drove development into Canada and the Gulf of Mexico, and continued to source coal and other carbon resources from Australia and Southeast Asia—alongside deep oil exploration in Alaska and throughout the U.S. continent.

The confinement in “domestic” oil resources came coupled with a fear that oil reserves to which the U.S. had easy access would inevitably decline, leading to a true dependence on Middle East oil. This incited heavy research and development (R&D) into non-carbon energy possibilities, including nuclear, solar, wind, biomass, and geothermal. These resources were named “alternative energies,” signifying their departure from carbon-based resources. Excepting nuclear, these forms of energy would later gain the designation of “renewables,” indicating their ability to naturally replenish as living forms of nature. This distinguished them from non-renewable sources of energy, such as oil and natural gas—finite resources with definitive ends. Despite its high potential for extinction through development, geothermal energy is included in the suite of renewable energies, based on scientific models and estimates about the length and strength of emanations of the core heat of the earth.

With rising oil prices and increasing fear, R&D funding for energy renewables and related technologies ballooned. From 1973 to 1977 the federal government spent \$1.6 billion on R&D on renewables, \$147 million on energy efficiency, and \$178 million on electric systems (Congressional Research Service 2012). In 1980, when oil prices were at their highest, the U.S. budgeted 7 billion dollars to alternative energy R&D, almost equivalent to the total energy budgets of all other IEA<sup>23</sup> countries (Margolis and Kammen 1999:690). Many of the new

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<sup>23</sup> The International Energy Agency (IEA) was proposed by then-Secretary of State Henry Kissinger in 1974, to serve a consortium of oil-consuming countries connected through the

technologies were exported as aid packages to developing countries, and tested there. Trends in U.S. government spending indicate that at the same time that Federal funding for energy technology R&D drastically declined, some of the largest fossil fuel and military technology corporations increased investments in the alternative energy sector (ibid.). Scales of renewable projects increased, while diversity of energy resources being researched decreased. An interest in geothermal drew Chevron, Shell, ConocoPhillips, Sandia (Lockheed Martin), and Halliburton, not least because of its likeness to the discovery, testing, and recovery of oil. These companies remain some of the largest investors in geothermal R&D today.

The market activity of government and corporation earnings were tucked into a strengthening and salient U.S. environmental movement, initiated nearly a century before in EuroAmerican romanticism, and a particularly American vision of the frontier (Cronon 1996; *see also* Tsing 2004). These ideas carried Nature as “the best antidote to the ills of an overly refined and civilized modern world” and a place where “modern” people could “shed the trappings of civilization, [rediscover] their primitive racial energies, [reinvent] direct democratic institutions, and...[reinfuse] themselves with a vigor, an independence, and a creativity that [was] the source of American democracy and national character” (Cronon 1996:13). Threats to broad expanses of wilderness, as well as the wildness of the frontier, thus represented a threat to this boundless possibility of rebirth for the “modern.”

In part, industrial development represented that threat, with its own boundless search for resources with which to build capital. Tsing (2004) relates that this building consciousness about dwindling Nature, coupled with the post-WWII boom, made increased access to nationally preserved areas of Nature—the national parks—a quality-of-life standard. Further, literatures

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Organization for Economic Cooperation and Development (OECD)<sup>23</sup> dedicated to research on oil and the energy market, responses to oil disruption, and common international energy problems.

tracking the ill-effects of industrial development raised public concern about the health of the planet via the declining biodiversity of plant and animal life, and the deteriorating state of American waters, air, and soils. Legislation in the 1960s and 70s sought to regulate industry in order to preserve wilds, rivers, species, and the potential for Americans' endless rebirth.

The energy industry was imbricated in the heavy costs of human energy production and consumption on the environment. Growing awareness on the costs of oil dependence was driven by direct effects of fossil fuel production, distribution, and consumption, including a Union Oil Company blowout in Santa Barbara (1969), the Exxon Mobile oil spill in Alaska (1989), and the broadening of circulation of information on the depletion of the ozone and the greenhouse effect through the 1970s and 80s. In the midst of the formation of environmental legislation around development and increased public antagonism to carbon fuels, market incentive for oil companies to invest in renewables expanded, as it provided the means for companies to diversify their capital investments and expand their markets while producing a positive impression of their company vision as one aligned with human and planetary needs.

Like Federal models, private oil companies exported alternative energy R&D across the globe. This enabled the companies to utilize resources of smaller and less powerful countries to test novel energy technologies, while simultaneously selling material resources and expertise to develop energy infrastructure, extraction of resource, and provision of energy. And, when the resources themselves collapsed, these companies often provided chemical compounds and new technologies created to extend the production life of the resources. In this design of "aid," private companies locked countries into particular types of alternative energy production—i.e., hydro, geothermal—through material and regulatory infrastructures and the accrual of debt to the U.S. corporations.

The OPEC oil embargo of the 1970s (and subsequent oil peak scares) every decade since drove the funding, research, and development of carbon alternatives to energy resources. Among these were renewables—those types of resources that were theorized to be infinitely renewable and therefore advantageous as an energy resource for a growing human population. Coupled with heightened public concern about the disappearance of Nature (and, attendantly, their own chances at self-discovery) along with concerns about the depletion and poisoning of natural resources, alternative/renewable energy developments appeared as a beneficial solution to both energy and development problems. The oil and military industries, in particular, ventured into the territory of alternative energy developments, continuing to expand their reach and increase capital gains through developments in foreign countries whilst laying claim to their efforts to protect the planet.

#### A Question of Terms

*And all of the geothermal opponents  
have these fabulous solutions to solving energy problems.  
Except that their solutions require  
that we completely change the engineering  
behind our economy.  
And that's just not going to happen.<sup>24</sup>*

#### *“Renewable”*

In the suite of alternative energy resources, geothermal energy was an early source of hope as a domestic energy because of its theoretical availability across the U.S. landscape. Early in research, University scientists and industrial engineers involved in energy R&D promoted the idea that geothermal was a potentially infinite, easily accessible resource. A 1972 article in *Science* insisted that “[H]ot rock can be found anywhere; in much of the western United States,

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<sup>24</sup> University of Hawai‘i geologist, Personal communication, July 2015.

temperatures of 300 °C are estimated to occur within 6000 meters of the surface” (Science 1972:978). Along with findings of “natural deposits of steam” and the early success of the Geysers in Northern California, which generated 180MW of electricity at the outset, the implication was that “geothermal resources [across the U.S.] are large and can be readily exploited” (ibid.).

Different kinds of resource—such as the Geysers of California, versus the dry rock of Arizona—require different types of extraction techniques. For electricity generating purposes, the basic idea is to extract or induce pressurized steam into a system of turbines; the movement of steam through the turbines creates energy that can be used to generate electric power. Beyond the earth’s heat, then, the permeability of earth near the heat sink and the presence of water resources at the reservoir site are necessary, as the latter two factors allow for steam production. In contradiction to initial projections of the ubiquity and ready availability of the geothermal resource, the presence of these three factors occurring naturally in concert proved difficult to find. R&D examined possibilities of inducing earth permeability and water have been induced through fracturing and liquid injection techniques, and established plant technologies (dry steam, flash, and binary cycle plants)<sup>25</sup> to accommodate resources they could find. Even with the ability to create material conditions that allowed for extraction, however, geothermal did not live up to the early excitement about it. Today, with geothermal plants installed across nine states in the U.S., including Hawai‘i, geothermal produces about 3,000 MW of geothermal electric generating capacity, and provides less than one percent of total U.S. electricity. 80 percent of those

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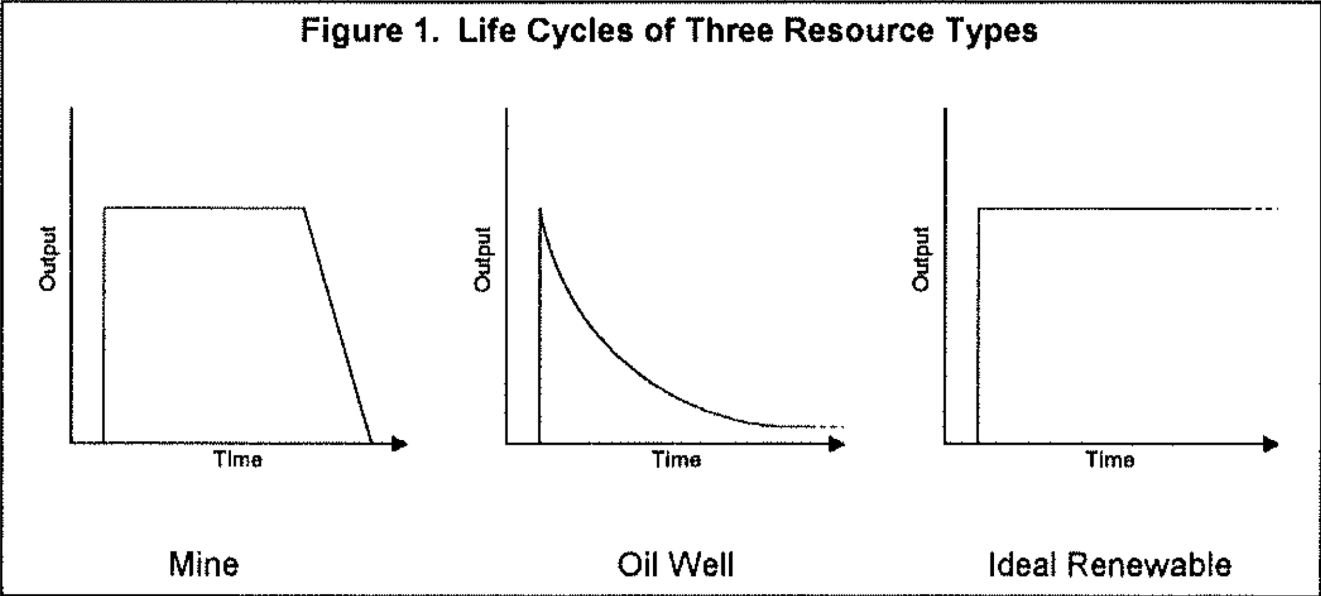
<sup>25</sup> Dry steam plants extract steam from fractures in the earth and use it directly to drive a turbine. Flash plants pull hot, high-pressure water into cooler low-pressure water, inducing steam which then drives a turbine. Binary plants pass geothermally heated water near a fluid with a low boiling point (such as pentane), causing the secondary fluid to turn to vapor and drive a turbine. The plant at PGV is a flash-binary plant, a combination that allows the plant to extract more energy from a single pull of heated water. Cooled water is injected back into the earth.

3000MW are produced in California (C2ES 2016). Nevertheless, geothermal electricity projections continue to voice the potential of the energy resource, stating potentials of at least 308 million MWh of annual geothermal electric generation with the relentless pursuit of discovery of resource (NREL 2012).

These projections are met by the reality that existing geothermal electricity generating capacity is in steady decline. Early in U.S. continental geothermal R&D it became known that the earth's heat, while theoretically infinite and renewable on the planetary scale, was finite in the particular. Meaning, over time, the heat capacity of the resource would dwindle to the extent that the heat energy was no longer rechargeable—that it “would require such a long time for recovery, that geothermal energy is not, strictly speaking, a renewable energy source on the human time scale” (Ledingham 1998). Water and permeability/pressure also proved to be limiting factors, as they were compromised in different geothermal systems, making the systems less effective at generating electricity to projected capacity.

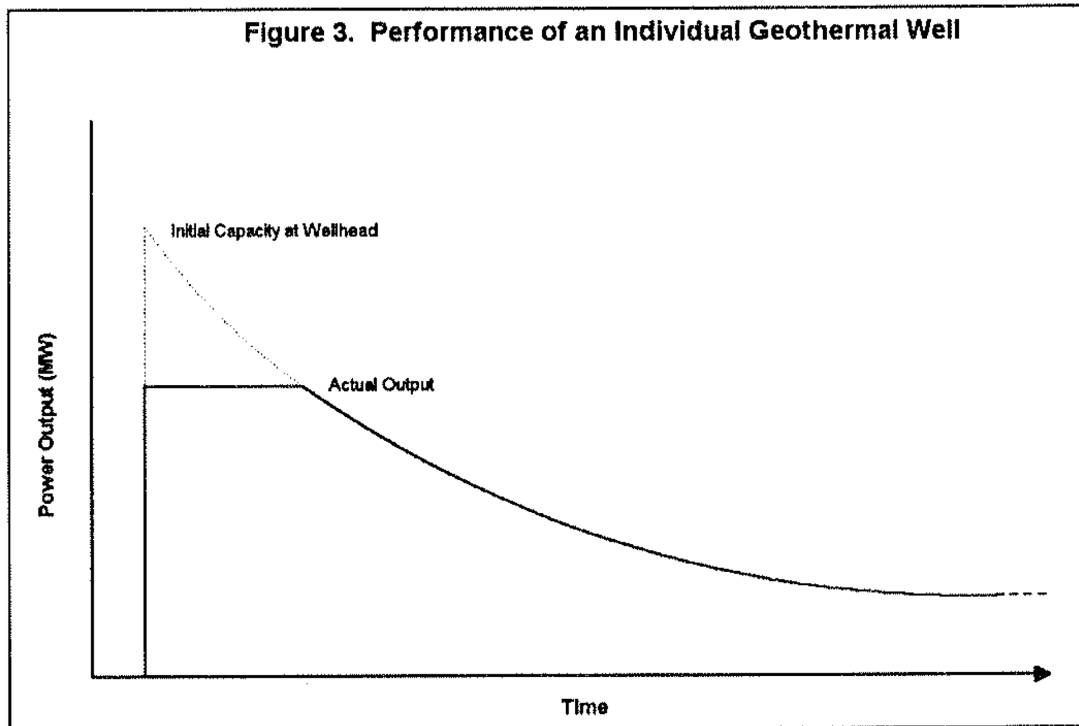
While the formulas for determining the tenure and limits of renewability are up for debate (*cf.* Steffanson 2000), it is generally accepted that commercial geothermal developments have an average longevity of 20-30 years (Kutscher 2000; IEA 2010). This is owing to the fact that commercial plant operators have incentive to run their wells to capacity as they are looking to recoup the high costs of initial investment, and are not only paid for the amount of energy they produce but the rate at which they can produce it (Kutscher 2000:518). Technological and chemical advances are created to mitigate losses, but geothermal reservoir depletion is occurring across the U.S., and is well-documented in studies seeking to understand the limits of this energy resource and the effects of its extraction on the earth (*cf.* Foulger et al. 1997; Pruess and O'Sullivan 1992; Clotworthy et al. 2010). Thus, although it is promoted as an ideal renewable

(C2ES 2016), geothermal energy does not perform like one. In fact, heat sinks have proven to function most like oil reserves—with a high initial output, and a steady, certain, decline.



Life Cycles of Three Resource Types<sup>26</sup>

<sup>26</sup> James Lovekin, “Sustainable Geothermal Power: The Life Cycle of a Geothermal Field,” in *Transactions*, Vol 22, Sept 20-23 1998: 515.



Performance of an Individual Geothermal Well<sup>27</sup>

The case in Puna debunks ideas about the constant renewability of heat, even along the rift zone of an active volcanic resource. Geologists at the USGS facility atop Kīlauea assume,<sup>28</sup> in the case of PGV, that the steady decline of resource means that the plant is pulling from a thermal reservoir where heat is not being replaced by magmatic flow. One geologist pointed out that the lower east rift has not had intrusion of new magma since 1955, which begged the question, for him, of just how large the PGV-tied heat sink had been, and how much heat had been used. He added,

The irony of course is when the magma injects the rift zone, then of course the potential for eruptions goes way up. Hehe! And the eruptions become a hazard to the power plant. Which depends upon the magma that supplies the eruptions. And there's—I consider there's a vicious circle, acting there.

<sup>27</sup>In James Lovekin, “Sustainable Geothermal Power: The Life Cycle of a Geothermal Field,” in *Transactions*, Vol 22, Sept 20-23 1998: 516.

<sup>28</sup>Each of the geologists made explicit their inability to work with PGV or any geothermal venture based on a condition of their Federal employment.



If heat sinks without continuous intrusion—rather than those with renewable heat supplied from active magmatic flow—need to be used to protect the safety of the plant itself, heat resources will inevitably be depleted.

The instance of PGV evidences the point that heat resources used for commercial geothermal production are short-lived. Along with lots of hearsay in the lower Puna community, and confirmation by a lead PGV official (personal communication 2014), a lawsuit against Ormat and PGV indicates that PGV has not been able to sustain its Hawai'i Electric Light Company (HELCO) contracted minimum 30 MW production. Moreover, the lawsuit indicates that Ormat/PGV has employed dangerous and illegal measures to stimulate and expand production (Calilung and Kell v. Ormat 2014). The suit, opened by ex-relators of Ormat, indicates that at the time of sale of the company by Constellation to Ormat in 2004, production was maintained at 30MW. By February 2010, generation had dropped to 17MW, and Ormat, a publically-traded company, reported declining revenues averaging a loss of one million dollars per month.

Initially, PGV attempted “cleanouts” of the existing wells, a technique known to stimulate production of wells by clearing blockages of residual mineral accumulation on the interior of geothermal well piping. The amounts of hydrogen sulfide into the air and the surrounding community were not tracked, as the air from the venting was “scrubbed” by sodium hydroxide meant to counteract and neutralize H<sub>2</sub>S into sodium sulfate. When cleanouts failed to stimulate existing wells, PGV began drilling of another production well, KS-14, in 2010, in order to bring the plant back to production capacity. This resulted in a series of blowouts, termed “uncontrolled releases”—uncontrolled because venting is unscrubbed and vents themselves cannot be closed, due to malfunction or simply the necessity of release of pressure from the

system. PGV rejected any claims of harm due to these releases. In late 2011, PGV claimed an 8MW expansion to the plant by upgrading the flash-steam technology with binary cycle technology, which allowed them to vaporize pentane with extracted geothermal fluids to drive turbines and produce more electricity.

Despite public assurances by PGV, HELCO, Hawai‘i County, and the State of Hawai‘i that geothermal energy was a beautiful, viable option, and the contracting of Ormat for another 25MW of energy in 2015, continuous deep drilling that fails to bring up resource is indication that the heat sink in the location of the existing plant is depleted, and can no longer generate electricity to its initial capacity. And, in light of inside knowledge of these ventures, scientists, engineers, and public and private officials tied to PGV, HELCO, Hawai‘i County, and the State of Hawai‘i continue to refer to geothermal as renewable—allowing people to purchase into the belief that infinite heat exists in the earth, beneath a volcano. So, when a man says to me, “Geothermal heat going keep coming up for 500,000 years. That’s longer than to when we were back in the caves,” I cannot be surprised.

### *“Clean”*

The “clean,” “green” claims about geothermal energy are, like claims of geothermal energy’s endless renewability, disputable. There are no standards or regulations for these measures, or the comparisons made between fossil fuels and renewables like geothermal energy—and the space made by the vague standards by which clean/green/renewable might be measured maintains its possibility. Reports on environmental impacts of geothermal development showed that production generated release of deep earth chemicals, gases, and effluents at levels that rivaled fossil fuel and nuclear technologies (Axtmann 1975), and in

concentrations that could be considered hazardous to human health (Siegel and Siegel 1975; Layton 1981). In Hawai‘i specifically scientists warned that the tapping of magmatic heat would “release into the atmosphere...substances far more toxic and persistent than the usual oxides and hydrides of carbon and sulfur” (Siegel and Siegel 1975:473), substances which would be carried to the surface during drilling or venting of geothermal plants in amounts and could be considered environmentally hazardous (ibid.). The substance of focus in Siegel and Siegel (1975) was geothermal mercury, which was known to accumulate in soil, marine and aquatic plants, and on up the chain—invertebrates, birds, humans.

Early complaints about illness due to geothermal plant activity led to testing of water catchment systems installed in Puna<sup>29</sup> specifically for mercury. Early attentions to mercury as opposed to hydrogen sulfide, sulfur oxides, benzene, radon, and arsenic—effluents with significant human health effects that are released to the surface earth in heightened concentrations due to geothermal electricity production systems (Layton 1981)—are curious, and have faded as concerns about hydrogen sulfide have become the primary concern in health studies related to geothermal production in Hawai‘i today (*see* Goddard and Goddard 1991; Adler 2012:29-30). A series of studies on geothermal mercury production and surface accumulation (Siegel and Seigel 1975; Siegel et al. 1977; Siegel and Seigel 1978; Siegel and Seigel 1985) complete the published studies on mercury pollutants as related to geothermal development in Hawai‘i. Yet there is indication that other studies regarding mercury in water as a primary concern for human health were completed. In a collection of stories related to early state responses to geothermal pollutants, an ex-geothermal research employee relates:

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<sup>29</sup> Much of Puna relies on water catchment systems as lava lands and threat of lava flow inhibits Hawai‘i County from installing water lines into and through (lower and upper) Puna subdivisions.

They [residents] were convinced that pollutants from the steam was affecting their drinking, everyone was complaining that they were getting sick. Well, we [people working on the exploration, drilling, research, and monitoring of geothermal] were not getting sick! I guess you could say it's psychosomatic. I mean you get up in the morning, you don't feel good, you want to blame it on something. Last night's pizza, something.

...So we got this one sample way high for mercury. Mercury in the water. All of the [other] samples that we took [were] below the limit of detection. We did occasionally find lead, from people's copper pipes. So this one enterprising young—well, we'll call him a hippy, a radical. We sampled his, the mercury was sky high. And he had reported it as such. But we knew he had spiked his sample.

For this researcher, who had throughout his career heard a long list of complaints, the sample of mercury was less indicative of the potential pollutants of geothermal development so much as a political position in opposition to development, and an effort to give reason and voice to that opposition through doctoring of scientifically testable material. Instead of casting into question the negative potentials of geothermal electricity production, it firmed the researcher's belief that geothermal was clean—so clean, in fact, that only malfeasance could make it not so.

In an ethnographic study of Hawaiians in Puna and Southeast Maui that was to serve as a cultural impact statement for a large-scale geothermal project in Hawai'i,<sup>30</sup> numerous concerns about the scale of operations and the ill-effects of ongoing geothermal exploration and production were raised. With the understanding that gases released through geothermal production were colorless, tasteless, and (in high concentrations) odorless, Hawaiians who relied at least partly on subsistence from the Puna rainforest and sea took note not only of their own symptoms of illness but of the health of the plant and sea life with which they were familiar.

People paid close attention to the wind and the waterways. A fisherman, offshore at the time of a

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<sup>30</sup> The ethnographic study, published in May 1996, was prepared for Lockheed Martin Energy Research Corp. representing the U.S. Department of Energy. It was initially intended as part of an environmental/cultural impact statement for the Hawai'i Geothermal Project—for which research had begun in 1978—a project to determine the viability of commercial geothermal operations in Hawai'i (Kamins 1974). However, in 1994 DOE withdrew its Notice of Intent and the State of Hawai'i abandoned this instance of the large-scale geothermal project. Nevertheless, the EIS was completed and published as an archive (Matsuoka et al. 1996:2).

geothermal blowout in 1991, told of the *ohia* (*Metrosideros polymorpha*) forest turning a dull gray color. Other fisherman watched the *opae 'ula* (*Halocaridina rubra*), a tiny red shrimp that lives in brackish waters, noting that the lives of the shrimp would be compromised by freshwater contaminants produced by geothermal and, as food for larger fish, would ultimately carry those contaminants out into the sea. (Matsuoka 1996:126). Wind, which since the instance of geothermal development had been connected to headaches, muscle aches, irritability, nausea, spontaneous abortions (*ibid.*), could not be constrained, and with deforestation due to the plants themselves would not be filtered by trees in the forest (*ibid.*). Noting the strange shifts of plants along with the negative shifts in their own health, and the potential for deep poisoning of the sea and atmosphere through geothermal effluents, Hawaiians—who were determined to be qualified participants for the ethnographic study through their “deep and vested knowledge of Hawaiian culture and practices” as well as their knowledge of place (*see* Matsuoka et al. 1996:3)—grew troubled. If the plant was truly self-contained, emissions free, “clean” and “green,” how and why was the area shifting its mode of existence toward a loss of life?

My questions toward geothermal researchers and geothermal plant employees about the potential health and environmental hazards of geothermal production in Hawai‘i were reframed back to me as classifications of terms. For example:

**Me:** Is pentane<sup>31</sup> toxic?

**PGV plant manager:** Everything’s toxic. It’s the dose that makes it poison.

He went on to expand on how “some of the guys” tried pentane in their cars, because of its chemical resemblance to gasoline—and, without irony, pondered aloud on the damage it might do to automobile gaskets, as well as his avoidance of the experiment. In other instances, my

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<sup>31</sup> The PGV plant uses a flash-binary cycle to produce electricity from the Hawai‘i geothermal resource. The secondary fluid used in the binary cycle is pentane, a byproduct of crude oil refining.

mention of “environment,” or conversation on byproducts of the geothermal heat mining process was enough to elicit explanations of the naturalness of gases in the volcanic process—without caveat of the effects of the geothermal process on bringing those gases to the surface in concentrations that would never “naturally” occur.

**Me:** What about the chemical...

**Geothermal engineer:** Well...in water dominated systems, you will have non-condensable gases. And noncondensable gases typically include carbon dioxide, H<sub>2</sub>S, in our case nitrogen, hydrogen, you can also get ammonia in some systems, you can get boron in some systems. You get down to some of the trace elements, you have mercury that’s present in geothermal fluids. Basically what a geothermal system is is an ore body in the making. You have heated fluids passing through a mass of rock and leaching constituents out of the rock, and in the natural system, those fluids will leave that thermal body and move into cooler formations, and then you get sort of a reverse chemical reaction [in geothermal extractions], where some of the stuff that’s been leached out of the rock at high temperatures are redeposited as ore bodies. So that’s one way to look at or think about a geothermal system.

The bottom line was the maintenance of the idea of geothermal as a “clean,” natural, energy resource. To complicate the categorization of geothermal as something other than “clean” (producing fewer carbon emissions than fossil fuel-based plants) with claims of the heightened and sometimes dangerous emissions of geothermal gases brought to the surface through geothermal production, both by geothermal and local scientists and the residents of lower Puna, never lingered as a possibility. For geothermal proponents, the claim of geothermal as potentially dangerous to the life of the planet and the life dependent upon it was considered a plot to end the sensible potentials of an alternative source of power for the electric grid.

*“Reliable”*

Early hope in geothermal as an energy resource was also pinned on its baseload capacities. In electricity and energy worlds, this means that the energy source can generate

consistent electric power 24 hours a day, and is humanly adjustable to meet the needs of a grid. This capacity was pitted against the variable capacities of solar, wind, and even hydro- systems, which fluctuated over time and through seasons, and, it was implied, could therefore not be depended upon. What was also implied thorough the comparison of baseload (coal, nuclear, geothermal) and variable energy resources (solar, wind) was that people would have to do without electricity if the sun did not shine strongly enough, or the wind did not come. The implication that baseload was better drew attention to the baseload options: coal and oil, nuclear, and geothermal. In terms of carbon emissions, safety, and “renewability,” geothermal appeared a clear winner.

Emerging research argues that the reliability and necessity of baseload energies is a myth that is promoted to protect the interests of fossil fuels, nuclear power, and geothermal—which, because of its likeness to oil exploration and extraction, remains tightly tied to the oil and military industries. There is evidence that wind and solar-based power can be *more* reliable than baseload systems due to construction costs, supply and demand imbalances, volatility in fuel prices, and unplanned outages (Sovacool 2009:295; *see also* Curren 2012; Diesendorf 2008, 2011). Moreover, despite U.S. (and Australian and U.K.) dedication to baseload systems, Denmark, Spain, and Germany are quickly moving toward 40-100% of electricity generated by renewables, and finding the increased flexibility in energy supply of benefit to meeting public demands (Sovacool 2009; NREL 2012). While energy “experts” in the U.S. thus continue to claim that switching from baseload to renewables will cause havoc on the system and requires too much technical adjustment to be feasible, researchers question whether the barriers to integrating renewables “may not be technical at all, and [may be] more about the social, political, and practical inertia of the traditional electricity generation system” (Sovacool 2009:295).

In Hawai‘i, the story about the HELCO grid is much the same as the narrative pursued by energy “experts” across the U.S. The accommodation of wind and solar is regarded as a technical headache that will cost too much to pursue and will lead to unreliable grid power; LNG (liquid natural gas) and geothermal are regarded the best potential “renewables.”<sup>32</sup> While HELCO pursues a diversified portfolio that includes wind and solar resources, they persist in framing geothermal as a “best” option, because of its baseload capacities. The sentiment is the same as Senator Daniel Inouye’s statement in 1989 almost three decades prior:

Until scientists are able to make sun shine 24 hours a day, and get the wind to turn the turbine round the clock, we know that there is much to be done before we can harness the power of the sun and the wind as *reliable* and *sufficient* sources of alternative energy. . . . Until then, we must utilize and develop what we have—an energy source from the earth which is ready to be harnessed to light up the Island of Hawaii. (Inouye 1989:6, *emphasis mine*)

Inouye, like his successors in government and the energy business in Hawai‘i, portray the fluctuations of nature as out of sync with people and unqualified for satisfying the demands of a contemporary population.

Over the decades the entrenchment of the belief of the dissatisfactory nature of solar, in particular, have allowed Hawai‘i’s electric (monopoly) utility HELCO to come into the 21<sup>st</sup> century without updating its grid from coal-fired plants, despite indications that renewable energy would cut down on imported oil costs and could lower electricity costs.<sup>33</sup> This condition currently forces HELCO to deny would-be so PV (photovoltaic) users to a waiting list, as the grid is “saturated”—there are too many homes providing too much solar energy for the grid to

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<sup>32</sup> It is unclear how and why LNG is categorized as a renewable at Hawaiian Electric.

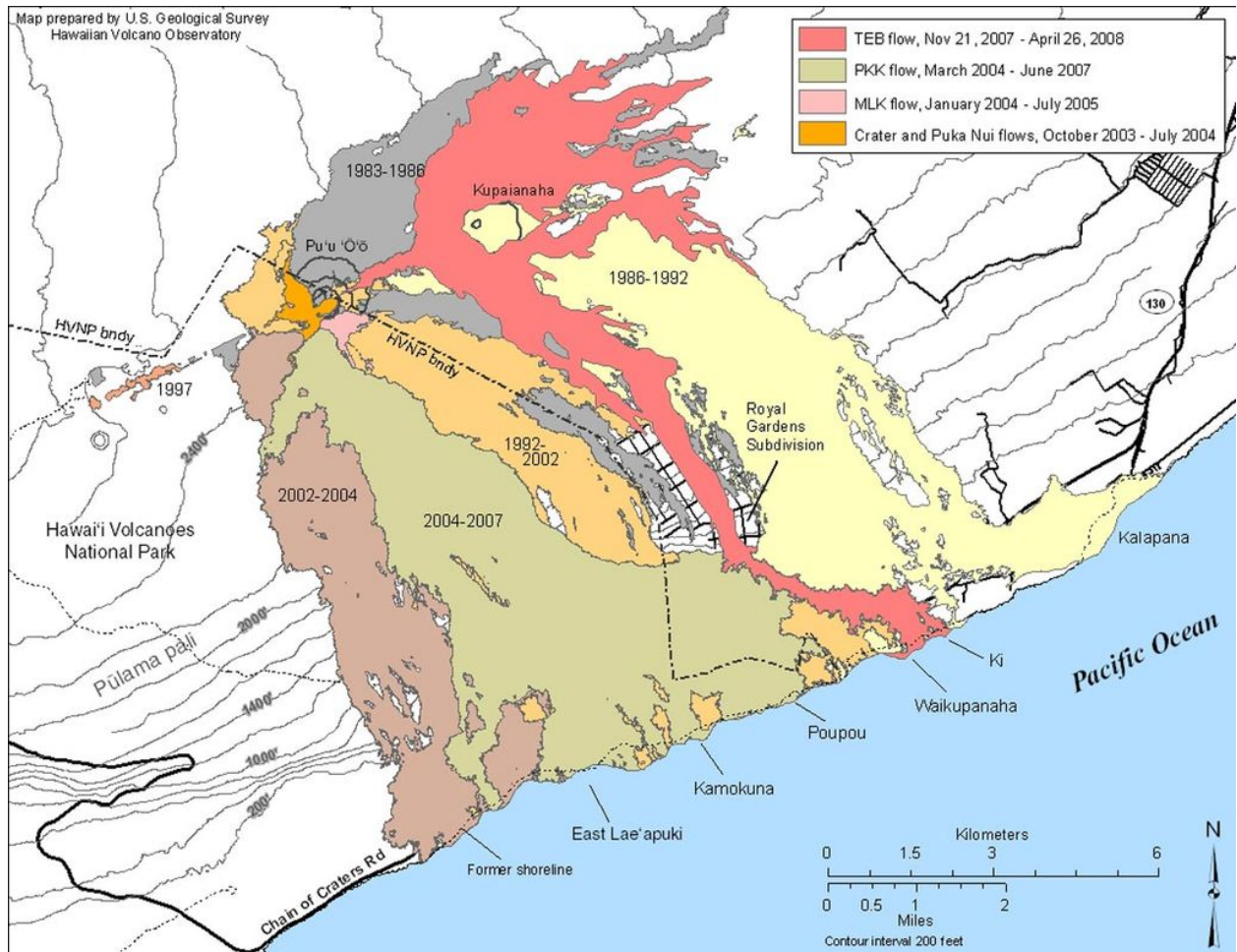
<sup>33</sup> Electricity costs vary per island, and are dependent on types of unit (i.e., residential, commercial etc.) and amount of kWh used. Costs per kWh increase with increased usage; in 2015 the average rate per kWh in a residential unit on the Island of Hawai‘i was 34.65 cents (HECO 2015), which reflects both the non-fuel and a base-fuel energy charge, but not monthly customer fees. The cheapest rates are offered to the largest businesses. Hawai‘i maintains the highest electricity rates in the U.S.



handle in particular areas. It is unclear whether or not HELCO has encountered methods used for flexible grids and energy storage in European nations, but the company's stance, as stated by Ignacio, remains that "This [PV] is a difficult technical issue, and we're not aware of another utility in the world that has addressed it. There's no model for us to follow, no resource for us to tap into. We're really creating new frontiers on this" (Ignacio *in* Brewer 2014). Geothermal works in this instance because it hooks to the grid like a coal-fired plant—through two transmission lines that run a steady stream of baseload energy to the grid system. While geothermal development is an expensive prospect for the developers themselves, it is sold at fixed rate costs to HELCO (based on oil prices at time of contract) and thus does not require rearrangement of current grid or contractual technologies.

Yet even aside from the baseload arguments, the stated "reliability" of geothermal on Hawai'i Island is arguable. The plant sits along the rift zone, on land which, according to USGS geologists, will inevitably be covered by lava flow. *When* these areas will be covered is uncertain, though according to patterns of eruptive history, Kīlauea renews most of its surface every thousand years (Holcomb 1987), and the area of Kapoho/Pāhoa is considered highly prone to current eruptive activity. A USGS geologist relates,

Aside from the [cultural] issues, whatever they may be, there's a very important long term economic concern that is not expressed very often. ...And that is that the power is being generated from a very active part of Kīlauea's rift zone. And all it takes is one night of eruption and the power plant could be destroyed. And you know, the area itself has several vents that were active in 1955, which is nothing geologically in terms of time. The area could erupt at any time. And there may be seismic warning of a few hours or even a few days, but that doesn't do any good when the island depends on the plant for 20% of its power, or whatever it is now. So in other words I think it's a very metastable situation there that isn't discussed, publically at least, as much as it should be. In just the blink of an eye it could destroy a large percentage of the island's power.



Pu'u 'Ō'ō Flow Map<sup>34</sup>

The geologist makes clear that the area itself is prone to eruption in this century, and that what is at stake is not only the plant, but a sudden loss of a quarter of the island's power.<sup>35</sup> This is not to mention the danger of the transport and storage of pentane in the residential zone during a flow, or the unknowns in terms of what will happen to the well heads and the geothermal system itself

<sup>34</sup> USGS Hawai'i Volcano Observatory, "Map of flows from Pu'u 'Ō'ō: April 30, 2008."

Updated 16 October 2008. <https://hvo.wr.usgs.gov/multimedia/archive/2008/Oct/maps.html>.

<sup>35</sup> The output of the plant has been dropping, but PGV and HELCO maintain that PGV provides at least 25-30% of the island's power. The total island at peak hours requires 180 MW, and PGV has been contracted for between 25-38 MW over the course of PGV's installment.

if lava should flow into and over the plant.<sup>36</sup> The “reliability” of geothermal thus rests on the reliability of volcanic eruption—something HELCO, PGV, the State of Hawai‘i, Hawai‘i County, and USGS cannot predict.

The PGV plant manager insists, and generously, on my meeting with him, on taking me on a tour of the plant. Perhaps he is convinced he can convince me: this plant is well-placed, effective, important; that community concerns refuting the “good” of geothermal are loud but untrue. Perhaps it is less about convincing me, and more about sharing with me what he knows to be true. Here is the plant: Zero emissions. Completely self-contained. Clean. Sustainable. Smart. Community-oriented. The Future of energy in Hawai‘i.

We drive around in a circle. He shows me: the well-heads and overland piping are protected by lava-proof material—so that, should a lava flow occur, the piping will remain undamaged and the plant itself can be dug out from the lava. I might have frowned. I might have tried to believe him. It is not consonant with anything I understand about lava. He goes on: these parts of the plant are mounted on skids, so that these structures can be hauled to a safe destination should lava flow occur. Prepared for the worst. Expecting the best. He parks where we began. “Anyway, that’s us,” he says to me, as if all is now transparent. From the passenger seat, I believe he believes what he tells me.

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Riding on the coattails of a strong crusade toward domestic and alternative energy development, sources of “renewable,” “clean,” and “reliable” energy resources were sought throughout the U.S. Early on there was hope for geothermal, as an infinite, ubiquitous resource,

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<sup>36</sup> To note again, geothermal electricity production relies on a pressure system, where heated steam is being shot up extraction wells to turn a turbine system. As such, a system load cannot be changed or shut down quickly because of the pressure build up in the system at any given time, and the danger that a shut down would cause to the system entire.

and that as a baseload energy resource akin to fossil fuels in its recovery and admitted to a grid much like coal, it was a dream come true.

Above I sought to show how broad interpretation of terms linked to geothermal energy, such as renewability, safety, and reliability, make it possible for states and development companies to construct misleading ideas about a resource or a potentiality of a resource. For instance: the large-scale gloss of geothermal heat as infinite conceals its determinate nature in any given place, bringing into question its true “renewability.” Comparatively low emissions when related to fossil fuel-based production schemes create the narrative of a “clean” energy source, despite known and noticed environmental and human health concerns which are carried and experienced in bodies of life. The imagined “reliability” of baseload power over other alternatives boosts commitment to the form. The gap between interpretations championed by geothermal development proponents and the actual practices and effects of geothermal development illustrate how the possibility for broad interpretation of terms can be and is problematic, when it is used by the industry to mask the harm enacted by particular developments to the earth. These terms are directly related to the concept of sustainability, as they mark long-term, earth and community-friendly practices. Delineation of the limits and meanings of these terms are bound to political and economic positions related to geothermal development, and reflective of social positions of relation to the geothermal force. Stories about geothermal energy’s benefits continue to be spun so totally that sometimes those closest to its production, management, and distribution become caught in its possibilities and the reproduction of those possibilities in order to pin hope: that something so good is true.

## Leading Horses to Water

*[Knowledge] doesn't only have to do with intelligence,  
it has to do with spirituality,  
it has to do with everything that has lined up before you,  
and all of the things that are lined up ahead of you.  
All sorts of coming together to make all of this happen.  
You, yourself, cannot make any of this happen.<sup>37</sup>*

In attempting to understand heat as an elemental force I sit still in the mornings before the sunrise, and watch out the window in the direction of Kumukahi for the sun to rise. Living more *mauka* (toward the mountain) than *makai* (toward the sea), I find the light first in the purpling of the deep black sky over the papaya fields; I sit and wait until it lifts over the treetops and turns a hot white. Nearly every morning where I stay in Puna, there is a downpour that comes and goes before the heat rises again, leaving the wet earth visibly steaming and the old wood homes budding mold. As I watch the day break and shift, I call up the stories I have heard from Aunty Pua of hā'ena—the very first breath of sun in the dawn which begins the stirring of the air. The earth sacrifices its breath to the day in a rising mist named *ohu*. In return, as the sun lifts, mists known as *uhiwai* or *noe* descend, coming back to the earth as what Aunty Pua references as “the gift of life.”

There is something to know in the heat of the sun calling up the heat of the earth, beginning an atmospheric exchange that creates the possibility for water to feed an aquifer. In interpretations of chants of Pele's journey to Hawai'i, her task is finished when she reaches Makapu'u (Kanaka'ole Kanahale 2011:48). However, she continues to travel, chasing Kānehoalani, whose form of nature is the sun. The *mele* (song) reads:

32     A loa'a i ka lae kapu 'o Makapu'u  
33     I laila pau ke kuleana

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<sup>37</sup> Pualani Kanaka'ole Kanahale in Meyer (2001).

- 34 'Imi iā Kānehoalani  
 35 A loa'a i ka lae 'o Makahanaloa  
 36 He lo aka uka o Puna  
 37 'Elua kāua i ke kappa ho'okahi  
 38 'Akahi au a ;ike hā'upu mau, walohia wale  
 39 E Kānehoalani ē  
 40 E Kānehoalani ē  
 41 Aloha kaula<sup>38</sup>

Kanaka'ole Kanahale (2011:48-9) distinguishes the phrasing and language as revealing of a particular tenderness in this relation between the pure form of sun (Kānehoalani) and magmatic heat (Pele). This flow of magma to the eastern points of islands—in this section of her *huaka'i* (travels), to Makapu'u, on O'ahu, and to Kumukahi, on Hawai'i—is telling of Pele's search and her destiny. These forms of heat are bound: Kanaka'ole Kanahale writes, “This deity whom she greets, Kānehoalani, the sun, is the purest and ultimate form of the volcano. The sun is the source of her persona...she is the image of its reality. She is the Hi'iaka of Kānehoalani...” (2011:49).

At daybreak, hā'ena, this intense first breath of the sun, is met by the breath of earth. The atmospheric exchange caused by this movement of heat creates mist, collected by a spiderweb as water, dripped back to earth to feed the island aquifer. What would it mean if the earth did not or could not reciprocate? What would it mean to extinguish earth's heat, to leave the ground cold? What is renewable, in a section of earth riddled with defunct geothermal wells plugged with solid concrete, thousands and thousands of feet down?

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<sup>38</sup> This version of the travel song (he mele huaka'i) and line numbers are sourced from Emerson, *Pele and Hiiaka*, X-XII as transcribed and translated in Kanaka'ole Kanahale 2011:40-43. Kanaka'ole Kanahale translates the lines as follows: ...Was found at the sacred cape of Makapu'u/It was there that our task ended/We searched for Kānehoalani/And he was found at the cape of Makahanaloa/The uplands of Puna were far in the distance/At one time we shared one covering/I began to recall those memories and called out/Kānehoalani/Say, Kānehoalani/Greetings to us (2011:43).

The potentials for research on and development of geothermal resources in Hawai‘i were tied to many things: the OPEC embargo; the United States’ moves towards domestic energy alternatives; the framing of particular kinds of domestic energy resources as a sustainable “good;” the making of Hawai‘i as a U.S. Territory, then a State,<sup>39</sup> and subsequent moves of the installed government to shore up a steady source of capital to support a state economy. With lands and resources being used as property of the U.S., World War II and post-World War II excesses struck Hawai‘i with rapid U.S. military, industrial, and economic growth. Increased access to the lands and resources of the islands, in part through the construction of the new multimillion-dollar Honolulu International Airport, created opportunities for new waves of tourists and to-be settlers from the U.S. mainland (Daws and Cooper 1990). Moreover, the expansion of the University of Hawai‘i Mānoa set the conditions for the influx of continent-born University faculty to the islands, to fill what was seen as a gap in Hawai‘i’s higher education and knowledge repository.

In 1958, just prior to Hawai‘i being declared the 50<sup>th</sup> State, a Department of Geology was formed around Harold S. Palmer, who had resided as the sole geologist at the University for 30 years (Moberly n.d.:1). Agatin Abbott, the mining geologist and engineer after whom the first geothermal project was named, and Gordon MacDonald, a geologist who authored *Volcanoes in the Sea*, became the team at the University of Hawai‘i. According to a brief memoir of an early Department of Geology faculty member, in early years, prior to and just following Statehood, it proved difficult to recruit geology faculty to the islands. The University was perceived in the

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<sup>39</sup> The territorialization of Hawai‘i was formalized by the U.S. government in 1898, following the 1893 overthrow of Queen Lili‘uokalani and the establishment of a Republic of Hawai‘i, to replace the Kingdom. The overthrow was named an act of war by President Grover Cleveland. Territorialization and Statehood, subsequently pushed forward by American businessmen who had forcefully instated themselves as government, is not uniformly legitimated in Hawai‘i today (*cf.* Liliuokalani 1898; Osorio 2002; Silva 2004).

continental imagination as an isolated intellectual desert with a high cost of living and a difficult “social structure” (Moberly n.d.:2). Due to the exceedingly small numbers of geology faculty, each recruited faculty member was required to take on a heavy teaching course load, with no graduate students. Early faculty remember that one of the bases for recruitment of new faculty was financial stability, over and above academic or intellectual achievement (*ibid.*).

With small funding from Palmer and his wife, and additional funding from Thomas A. Jaggar, a Harvard geologist who spent much of his career at Kīlauea, the department stayed afloat. By 1950, in an effort to fund an official Institute for Geophysics and attract faculty candidates who could not only survive financially but contribute to the intellectual growth of the department, the handful of faculty applied for a grant to the then-newly formed National Science Foundation (NSF) in 1950. Upon appraisal, the NSF committee sent to assess the department found “no real evidence of competence or ideas in the physical sciences faculty” (*ibid.*:2). However, personal connections of faculty to U.S. continent-based science colleagues along with help from the Territorial legislature helped the department to secure \$3 million bid to establish the Hawaii Institute of Geophysics (HIG).<sup>40</sup> Through the years, HIG drew graduate students to the island by advertising the prospect of studying natural resources in the islands that were found nowhere else in the world (*ibid.*:5).

As Hawai‘i continued to grow, industrial developments were matched by growing residential use of electricity, and energy use across the state increased drastically. According to Hawaiian Electric Company (HECO) statistics, residential customers increased their average annual household use from 5,349 kWh in the 1960s to 8,108 kWh by the early 1970s (HECO 2013). Hawai‘i steadily increased its reliance on fossil fuels. HECO created two new

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<sup>40</sup> The department is currently named the Hawai‘i Institute of Geophysics and Planetology (HIGP).



subsidiaries, Maui Electric Company (MECO) and Hilo Electric Light Company (HELCO) on Hawai‘i Island, to keep up with outer island demands, and the city and counties were installing infrastructure and developing land to meet the needs of a growing population. When the price of oil rose due to the OPEC embargo, the State of Hawai‘i, because of its political and economic connections, was hit hard.

HIG maintained attentions on funding and growth. As U.S. federal funding for energy diversification R&D skyrocketed, considerations of commercially viable geothermal resources in Hawai‘i subsequently raised—though, as one early University of Hawai‘i geology faculty relates, the entry of Hawai‘i into geothermal research and development seemed almost as happenstance:

I was actually very distantly involved in the fossil fuel industry. In my senior year of college I did a project on catalysis...So I went on to graduate school [to do surface chemistry] and I wasn't really excited about it...It turned out the University of Hawai‘i was recruiting graduate students, and one of the programs they were recruiting for was the study of gas geochemistry at Kīlauea. That was also the beginning of the oil crisis, back in the early 70s, and some barely progressive individuals at the University said, “Gee, why can't we do geothermal?” And I was kind of drawn in.

Whatever the initial imagination of geothermal energy potentials at Kīlauea, the research interests of faculty and then-incoming graduate students were guided by geopolitical concerns and, foremost, funding. Monies received from NSF and the Federal government directed research of the faculty, which then directed research of students who came through the program. A current USGS geologist, a Hawaiian man who grew up in Hawai‘i knowing he wanted to study volcanoes, recalls his graduate work at the University, and the way he was handed work that required and built knowledge about assessing the viability of a commercial application of the geothermal resource. He recalls,

For my Master’s work it was strictly the application of electromagnetic methods for the assessment of geothermal resources in Hawai‘i. And I didn’t know any of that out of

college...I had a degree in geology. So you know, I just sort of charged into it, learned all I could about it. We did the work.

His statement, “we did the work,” referred to the handfuls of incoming graduate students who worked in teams to assess probable locations and viability of the geothermal resource.

Hydrology, geology, volcanology students mapped out zones with likely resource, and wrote up their individual studies as theses. In these projects, there were few questions about how mapping, predicting, and ultimately developing the resource would affect surrounding communities.

Attentions were so focused outward, toward U.S. scientific, political and economic interests, and crudely, toward political favor and economic interests of the State of Hawai‘i, that there was little attention to other histories and potentials, both of the geothermal resource and its relations to Hawai‘i’s people, places, and things, and of the effects of geothermal research and development on Kanaka Maoli. Projects—exploration, drilling, erection of an experimental plant, contracting of private geothermal interests for development—were done without consult or consideration of community. Agreements simply floated between the University and its faculty, the Department of Land and Natural Resources (the state arm that oversees land use), and private geothermal developers.

NSF would grant the University of Hawai‘i \$3 million to test the long-term viability of resource, which funded the Hawai‘i Geothermal Project-A(bbot) (HGP-A). The project was established in lower Puna, and this was the community’s initial experience with geothermal development. Despite issues with development that drew strong opposition from the Puna community—issues that will be covered in more detail below—the project was deemed a success: geothermal energy development was potentially viable as a commercially producible resource in Hawai‘i. From 1982 to 1990, the height of the oil crisis, state and federal funding approximating US\$26 million dollars was provided to developing the Hawai‘i Geothermal

Project—which was being envisioned as the pull of hundreds of MW from Kīlauea, run through an interisland transmission cable to the city center at Honolulu. The Hawai‘i Deep Water Cable Project became the sister project to the Hawai‘i Geothermal Project. It posed “unique engineering challenges,” and quickly gathered energy around geothermal development as the silver bullet for Hawai‘i’s energy problems and economic stability (Fesmire and Richardson 1990; Bonnet 1990; Thomas et al. 2002:15).

Laura Nader, an anthropologist who has done work on cultures of thinking about energy—especially those that are built and regulated by groups of engineers and scientists in their workplaces—witnesses how the technical difficulty of a project itself affects the possibility of it. In an article in *Physics Today*, she relates her observations of a series of conferences on energy that she was invited to attend as a social scientist. At a Committee on Nuclear and Alternative Energy Systems (CONAES) conference, she notes “a good deal of standardized thinking; lack of respect for diversity; absolute taboo on the word ‘solar’” (Nader 1981:99). She relates,

...I asked the co-chairman, “How come nobody ever uses the word ‘solar’ around here? I’ve been on the board six months and nobody’s used the word ‘solar’.” He looked at me, rather surprised. “I don’t know. Solar’s been an orphan child.” Somebody else piped up. “Solar? Solar’s not very intellectually challenging.” Somebody else said, “What’s solar? A bunch of mirrors.”

...“Solar’s not very intellectually challenging.” What is intellectually challenging to these people? They seem to relish something complicated, hazardous, difficult and risky, something that requires high technology and big money. They seem to have a real attraction to that sort of thing. (Nader 1981:99).

In attempts to reason how these tendencies in thinking against practical and simple and toward “intellectually challenging” came about, she notes the lack of the diversity in the room itself—majority male, mostly white. It is something she notes as problematic, for likeness (even

amongst primates) breeds competition, which, in this case of nuclear energy, leads to the promotion of “big is better. Hazardous is interesting and intriguing” (ibid.:100). She continues,

Conservation isn't sexy. It's not hazardous; it's not risky: it's obvious. We have gotten to the point in our society where we can no longer entertain obvious solutions. ... The energy problem is not a technological problem. It's a social problem. We must build technologies that recognize human frailty. ... We must decide whether progress as a concept should be reserved for something that improves the quality of life. (Nader 1981:104).

Nader makes multiple important points through her collection of observations. Here, the breeding of machismo in the workplace due to lack of diversity (*her conceptualization; see Nader 1981:99*) cultivates a work culture in which the technical difficulty of a project is more valued than a simple one. The placement of values where those who support intellectual difficulty reign over those who support life cultivates a workplace in which fear of not fitting in or not gaining power or respect breeds silence around obvious, practical energy solutions, and fear around voicing concern not related to intellectual aspects of the project. Asking about solar is something that is not done—not because it is not feasible or inferior to nuclear, but rather because the technology, the challenge, seems too basic.

But Nader also makes the point that the “energy problem” isn't a technological problem. It is a social problem. It is a problem which necessitates an understanding of humans—what they need and want from and for their lives. Progress—a word that tags along with “development” and “advancement” in post-Truman Doctrine expansion-speak—is what, again? She asks.

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“You know there's not enough energy to put into a cable, right?”

I hear this again and again. Since the advent of PGV, no companies have come, no further viable resource has been found.

He smiled over a breakfast of eggs, hollandaise, ham.

But if we talk about money to put into a cable: development money, development money. We don't actually have to develop a cable. This is all exploratory stuff, these are free dollars. . . .Everybody gets a little piece of the pie. Geologist guys get a piece, oceanographers get a piece, they all get paid for doing the exploration stuff they want to do. Mapping all the underwater features off the Hawaiian Islands at extremely high resolution: who wouldn't take the money? It's free. And if it turns out to be nothing more than science, nobody's going to come bark at'cha. The sad thing is...if you put as much money as they talk about just putting into the cable, there would be a solar panel on every structure in this state.

Without express reason, Lockheed Martin and the Department of Energy pulled funding from the Hawai'i Geothermal Project in the early 90's, and the state—without similar funds to devote to geothermal and undersea exploration, subsequently abandoned the project. The imagined economic and intellectual futures that were being built on the project also necessarily faded. For a while, geothermal development was quiet, except for the hum of production in the otherwise dripping quiet of Kapoho.

Yet the land and the people were not untouched by these early instances of scientific and state collaborations to build the economy and intellectual repository of the State. After witnessing first hand the level of disruption and pollution that a supposedly clean alternative energy resource development could bring to a community, confusion about how sustainable these developments were—for people and the planet—grew. The reconciliation of sustainability with what was said to be clean but left waste in and above the earth and induced unforeseen health effects; what was said to be reliable but never functioned when the grid itself shuddered, what was said would bring jobs but instead brought settlers, what was said to cut consumer electricity costs but instead leveled them at the fixed costs of 1990's oil prices proved too large a leap for informed community members. Intellectual interests were not paying attention, and were doing the work that gave the state and private geothermal interests reason to play, without

interdisciplinary concern of what would happen should the heat be extinguished from a line running from the crater at Kīlauea to the eastern tip of the island at Kumukahi.

### The Space between Here and Here

Sometimes we humans think  
that we can control, you know, we're in control.  
And that's what I love about the *'ōlelo no 'eau*<sup>41</sup>  
*He ali 'i ka 'āina, he kaua ke kanaka.*<sup>42</sup>  
My grandmother them always talked about that.

We are only here for a time being  
and then the land will consume us.

So when you look at all what is happening,  
you know, who is the one who is really damaging,  
or trying to restore?

Aunty Pua speaks of *manamana*, upright stones that recognize the path of the sun. “They can be found on most of our islands if we are looking for them,” she says. “If we’re not looking for them they are almost invisible.” She speaks of a particular *manamana*, set up to reveal “the space, or time, of the equinox.” She says,

Within this corridor, it tells us where our boundaries are. This is where our life is. [In *manamana*] we have these signals that say, this is your boundary: this is where the sun will move, from this stone to that stone and back to that stone.

The day is hot. I walk around the yard and look at spiderwebs, almost invisible in the sun. I think about the limits we shed in the living of our “modern” lives; about the relations we are allowed to forget in our homes, in the light.

The day passes; a purple dusk comes. The moon is a cup over the sea. In some hours there will be the ascent of *ohu*, the descent of *uhiwai*. Geothermal heat conditions this “gift of

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<sup>41</sup> Proverb, saying.

<sup>42</sup> Land is chief, man is its servant. Pukui interprets, “Land has no need for man, but man needs the land and works it for a livelihood” (Pukui 1983:62, no.531).

life,” the relation illustrated as droplets of water that appear on a spiderweb from thin air, breath that descends to the earth to sustain life after the earth has given up all.

I am hyperconscious of my complicity in the geothermal project by the sheer act of flipping on the lights. I walk to the window facing Kumukahi. It is dark outside. A white owl, which I would see just once during my year in the field, glimpses me as it passes through.

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The making of geothermal energy development as a possibility in Hawai‘i is a confluence of vectors and factors, from geopolitical postures to the material realities of Kīlauea. In this chapter I sought to reveal some of the histories that feed into the potentialities of geothermal development in Hawai‘i, and the ways that these histories and the narratives they contain stamp ideas about things (like geothermal energy) and positions (like carbon alternatives as “good”) into human imaginations, and human work. The reverberations of imprinting by the energy industry and the geothermal energy industry are so ubiquitous and arresting as to blur lines between what is “good” for people and what is good for the life of the projects themselves—economic projects, knowledge projects. This has serious social implications as it allows and even promotes a forgetting of the frailty of human life (Nader 1981:104)—and I would add, all existence—for the purpose of intellectual and material accumulation.

What cuts through narratives about the renewability, harmlessness, and security of geothermal energy are a willingness and an ability to look past the narrative that is presented by the industry itself. People who live in areas of geothermal development and see and feel changes in the environment and in themselves, as well as scientists watching geothermal productions across the globe, base their knowing on empirical evidence that itself insists on the temporariness, harmfulness, and uncertainty of geothermal developments. Alongside these

empirical gatherings, deep (and for some, ancestral) knowledge of the relationship between things tied to the heat elements immediate to the earth warn that people, places, and lives are at stake in the extraction of geothermal energy for electricity. Ancestral knowledges and contemporary interpretations of them—here presented as the story of a spiderweb—put into perspective a manner of attention to things that may seem distant from intellectually or socially relevant factors but continue, nevertheless, to point to that upon which the forms and exchanges of existence depends.



## Chapter 2: SIGNIFICANT OTHERS

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*The learning apparatus is Lono and Kane.*<sup>43</sup>

When Aunt Pua tells a story of Lonomakua and Pelehonuamea, she says, to begin, “I’m going to give their short names, so you can catch on to their names.” Lo-no. Pe-le. She tells,

Lono was the uncle of Pele. And his kuleana, his responsibility, was to teach this young girl, when she became of age—and [girls] usually became of age about 10 or 11—to teach this young girl how to make fire. That was her responsibility.

So when Pele became 10 or 11 years old, Lono took Pele, and he took her into this darkened cave. And he told her about all the space that was above their head. About the layers of space, the horizontal and vertical spaces above their head. About the movement of the sun, stars, moon, clouds, wind. And then he told her about this island earth they lived on, and all about this island earth. And the island earth included all of the ocean water, it included the fresh water within the land, it included the mountaintops and the valleys, it also included the kinds of different soils that they had.

And he told her this long long story about all of that. I don’t know how many days, or weeks, or months, or years they were there. And then he told her about everything that was born on this island earth. And went through regenerative cycles on the island earth. And he named everything that lived in the ocean, the grasses, the trees, the birds, the bugs, the animals, people.

And so she had this big knowledge that he had handed to her. And then he told her the other thing that is important for me to teach you is how to make fire.

The hall is dark. The audience pushes forward in their seats. Aunt Pua tells of *aunaki* and *aulima*, the block wood, the stick wood. She recounts a conversation between Pele and Lono and chants an *oli* (chant) that she explains encodes the heat technologies and elemental forces at work in the making of this fire. *Whoosh*, she says. Behind her on the Power Point projection the

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<sup>43</sup> Rubellite Kawena Johnson in Manu Meyer, “Our Own Liberation: Reflections on Hawaiian Epistemology,” *The Contemporary Pacific* 13:1 (2001): 127.

dancers in her *hula hālau*<sup>44</sup> appear, their arms and hands lifted as leaping fire to the roof of the cave.

And [Lono] told [Pele], *This is who you are*. And this is your *kuleana* (responsibility), is to keep this fire burning. Because those things that I told you about, that are dependent on this land as a home—you will be the one to build their home for them.

And with that Pele's destiny is told. She will be responsible for maintaining fire, in order to create the land upon which all the beings on the island earth could continue their life.

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As mentioned in the introduction, in this dissertation Pele is referred to and narrated as multiple forms—deity, ancestor, myth, material manifestation, atmospheric, lava, breath of birthing land. Pele and the stories, songs, chants, and embodiments that carry her through time, as well as the shallower tales sold of her and the commodity forms that are circulated as her, are part of what make up the lands of Puna and the conceivable socialities that guide human interaction with these particular nonhuman forms. How Pele is represented, and which representations gather iteration and where, have political, social, economic, ethical, and material consequence. Yet more than simply a discursive production, Pele—as magma, lava, volcanic eruptive force—is an undeniable materiality: she pushes back against worlds that would be made without her to confront human machinations of control over “Nature,” ideations of permanence, fancies of land ownership, and narrow notions of beauty, life, birth, and death. Her materialities are, like her discursivities, dynamic, active, and irreducible; her flow—magmatic, gaseous, atmospheric—is something neither state nor science can feign power to stop.

As Hugh Raffles (2002) suggests, it is precisely because of the inextricability of the materialities of nature (and its dynamic physical manifestations through time) and/with its discursivities (carried in representations and also material interventions in place through time)

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<sup>44</sup> *hālau*: long house, as for canoes or hula instruction (Pukui and Elbert 1986).

that nature(s) are embedded in the social. Natures are forms of life that are also always already imbued with cultural, historical, biological, geographical, political, physical, aesthetic, and social presences (Raffles 2002:7). Any telling of a so-called natural history is thus what Raffles refers to as a “condensation” of space, time, and nature, and one that reflects histories of representation, material practices, affective relations, “intimacies of memory, and on-the-ground complicities and yearnings” (ibid.: 7-8). The stories of nature we hold are never natures “out there;” they are versions of entanglements—relations that are approached from very particular angles, guided by beliefs and assumptions about what is, who knows/how one knows, and who we, ourselves, are. These, too, are dynamic matters of relation.

In tracing sets of relations that give the narrative of “sustainability” substance and power, I look to Hawai‘i Volcanoes National Park (HVNP). Here is Halema‘uma‘u, the everlasting home of Pele, figured as the main attraction in a system of American beliefs about the preservation of wild natures for the viewing of them. I use the event<sup>45</sup> of the park and its continual remaking through narrative about who and what exists there to illustrate not only how the discursive and material productions of the National Park guide human relations to natures, but how the ethical, social, economic, political principles that allow for National Parks themselves support the liberal settler state and its capitalisms through the entrenchment of the divide between nature and culture, and ideas of “life” as biological, and *not* geological, in nature.

I then turn my attention to Pele in the instance of an overland lava flow into the town of Pāhoa, a largely white settler community. Through this instance I seek to investigate how Pele—a figuration of the life of what is, under late liberal governance, considered geological and hence

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<sup>45</sup> I am using the word *event* here deliberately, to reference the long-term production of space-as-National Park culminating each moment as such. I want to note the eventfulness—the remarkable confluence of moments and possibilities—of “Nature” and the “natural” in and as the Park.

not a matter of “life”—comes to matter. Beyond the borders of the park, how does her iterative narration as mythological, prior, explicitly Hawaiian religious belief support nature/culture, life/nonlife divides? And how are these divides vital to the life of the state and its pursuit of geothermal energy development?

### Inheritance

*Significantly other to each other, in specific difference,  
we signify in the flesh a nasty developmental infection  
called love. This love is an historical aberration  
and a naturalcultural legacy.<sup>46</sup>*

Ideations of “nature” as separate from “culture” emerges from European (and American) traditions of seeing the nonhuman environment as a material reality separable and separate from human influence and construction. In this frame, “nature” exists as places imagined most wild—places that 18<sup>th</sup> century explorers and naturalists experienced as so excessively “other” that they provoked strong reaction—fear, disgust, amazement. 19<sup>th</sup> century European imperial and colonial adventures amplified visions of excess nature as shocking, aberrant, and all but civilized, and implicated landscapes as cause for “savage” human natures. For instance, Raffles (2002:7) writes of 19<sup>th</sup> century naturalists’ interpretation of the Amazon as over-fecund and easy, breeding human indolence and social stagnation; then, a century and a half later, the reverse view by cultural ecologists encountering these Amazonian natures, supporting theories about the inhospitability of the tropics, its unforgiving qualities trapping its inhabitants in primitive life. The contrariness of encounter of the Amazonian rainforest a century and a half apart illustrates the wily (discursive and material) shaping of nature via European and American interests, hints at the authority of a set of emerging European and American epistemologies known collectively

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<sup>46</sup> Donna Haraway, *Companion Species Manifesto* (Chicago: Prickly Paradigm Press, 2003), 3.

as Science, and carries an inertia of conceptualization of the human other, embedded in the environment, as profoundly other and so remarkably lesser as to be produced as object: lazy, innocent, noble, brutish—whatever meets desire or need. All of this is bound up in the power that European imaginaries of natures and cultures as independent of one another (and in continual battle for dominance) brings: liberty for colonial, scientific, and misogynistic entities to direct the narrative, symbolic, and material possibility of worlds.

Literature establishing natures and cultures as intimately and intricately tied finds no definite divide between biology and sociality, and no definite hierarchy of man (culture) over whatever is deemed “nature” (cf. Strathern 1980, Haraway 1989, 2003; Butler 1993). To imagine as such is to invest in human exceptionalism, where humans’ ability to adapt to, overcome, and manage dumb natures—so often to economic and political benefit—is regarded as intelligence, skill, power. Moreover, the separation is one that, through history and at present, privileges maxims of unilineal development wherein European and American collections of ideals are ‘developed,’ and societies geographically and qualitatively distant from European and American civilizations are seen as further “back” on the linear trajectory of becoming civilized. Not surprisingly, ‘developed’ peoples rest outside of and are in controllable orientation to nature, whilst ‘developing’ worlds and their cultures are bound up with and trapped in primitivity by their relations to it. Furthermore, the separation posits feminine “nature” to be at the behest of masculine “culture” (*see* Ortner 1972), again granting power to the dominance of man over all other forms of existence.

In tracing intimate relations between humans and nonhumans, Haraway (2003) illustrates the trouble with continuing to deepen the groove of this divide through iterations of the (clean) separation between the evolutionary/biological trajectory of nature and adaptive/dominating

capabilities of human culture. She contests this ideology by demonstrating the emergence of being and subjectivity that is possible in and through the making of relation across species, where “natures” are not deterministic, “cultures” implicate non-human involvement, and intra-species communication renders capable the viewing of “naturecultures”—the entwining of the natural and cultural, body and mind, material and semiotic. She writes,

The point about both [human and nonhuman] players “having” or “doing” history turns, rather, on their co-constitution of the actual events of the world—on their “worlding,” in my sf-inflected terms—in such a way that *something happened* that redid all the players in ways meaningful to them, and that something was not determined by anybody’s “natures.” A material-semiotic event of becoming-with actually happened in entangled re-worlding *significant to and constitutive of the players*. (Haraway 2011:20, *emphasis in original*)

Haraway emphasizes the ordinariness of between-species intra-action, in which humans are not exceptional shapers of history and nature does not simply continue on its guileless ecological evolution. Both parties—here, the parrot which might be deemed “nature” and the human which might be deemed “culture”—make history and change, and “their whole naturalcultural world, which in this case includes various cognitive scientists and many human and nonhuman others”—is also implicated, involved, potentially changed (ibid.:20). ‘Nature’ and ‘Culture’ get blurry here. This is not to say that difference between parrot and human dissolves, nor to say that some mystical method of inter-species communication has been created. Rather, it is to say the domains which “nature” and “culture” signify as terms are troubled and troublesome—they confuse the seeing of what is happening through the intra-action.

To push the boundaries of this observation is to question the kinds of intra-actions that might happen not only between forms understood as “life” (conceptualized as human/nonhuman species comprised of inherited, ever-evolving, biological cells) but between forms that might be considered in this same frame as “nonlife”: inert, unfeeling substance that, in scientific

rendering, is designated as geological, chemical, atmospheric (meteorological). Where “Nature” and “culture” once referenced the division where agency, subjectivity, and sovereignty were managed, the division between “life” and “nonlife”—bios and geos—has *also*<sup>47</sup> become clear, in an age of claims around and definitions of an Anthropocenic geologic era, as a conceptual division that unevenly distributes power.

Elizabeth Povinelli (2016) names the investments in the maintenance of this division and the shaping of this division between life and nonlife as geontological power (geontopower).<sup>48</sup> As she relates, these “are concepts meant to help make visible the figural tactics of late liberalism as a long-standing *biontological orientation and distribution of power*” (Povinelli 2016:6, *emphasis in original*), thus giving name to ontological leanings which sustain late liberal governance of difference and market. She writes,

[I]t is increasingly clear that the *anthropos* remains an element in the set of life only insofar as Life can maintain its distinction from Death/Extinction *and* Nonlife. It is also clear that late liberal strategies for governing difference and markets also only work insofar as these distinctions are maintained. And it is exactly because we can hear “insofar” that we know that these brackets are now visible, debatable, fraught, and anxious. It is certainly the case that the statement “clearly, *x* humans are more important than *y* rocks” continues to be made, persuade, stop political discourse. But what interests me...is the slight hesitation, the pause, the intake of breath that now can interrupt an immediate assent.

This is the formula that is now unraveling:

Life (Life {birth, growth, reproduction} v. Death) v. Nonlife. (Povinelli 2016:9).

What Povinelli perceives in the space of pause, “the intake of breath,” is the possibility for viewing the roots of assumptions that sustain late liberal power formations through the conceit

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<sup>47</sup> The “also,” here, referencing geontological power as alongside theorizations of sovereign power within the lines of Foucauldian biopower and biopolitics, and the limits of the latter as the sole terms by which the shapes and tactics of late liberal settler power formations might be seen, theorized, contested, changed. Povinelli (2016:6) argues that geontological power has long subtended biopower, and necessitates calling out and naming for an awakening to the ontological leanings in which the logics of late liberal governance of difference and market are sustained.

<sup>48</sup> Povinelli (2016:5-6) clarifies her choice of the term geontology as many choices, intended to “intensify” the contrasting notions of nonlife (geos) and being (ontology) through their juxtaposition as well as to highlight “the *biontological* enclosure of existence.”

captured in the notion of the Anthropocene, where Humans are figured against all other biological, geological, and meteorological forms as *the dominant planetary force*. That the statement “*x* humans are more important than *y* rocks” creates pause is the (iterative) moment of break in the obscuration of geotological power as a mode of late liberal governance—one subtending the oft-employed notion of biopower and one that Povinelli (2016:16) sees as that which lies between late liberal governance and movement into somewhere else.

The point to emphasize here, for this dissertation, is that in these seemingly scientifically natural or factual divisions of nature/culture, life/nonlife, is the vitality of late liberal (settler) formations, couched in and formative of social, political, and economic discourses, moralities, deeds. How do the naturalcultural and the geontological affect how we might need to refigure discourses of sustainability? What falls apart in notions of (multispecies conscious) living and the sustenance of biological existence when the binarism of life and nonlife can no longer hold up the organization of ethical thought around what should and should not be saved? What does Pele teach, and what do relationships with her teach, not only about the ways that late liberalism and liberal capitalism rely on the idea that “*x* humans are more important than *y* rocks,” but of what stands in the way of that which is otherwise, in the way of the emergence of different possibilities for this world?

### *National Parks*

A week into fieldwork I drive up to the lands kept as Hawai‘i Volcanoes National Park. I arrive a little after 9 am, and the mist is still thick in near the 4,091-foot summit elevation. The day is overcast, the air is cold. I meet a park-led tour just leaving. The tour is led by a young



National Park Service (NPS) ranger—*haole* (White), Pāhoa-born,<sup>49</sup> no older than twenty-five. He herds the twenty two of us down an asphalt path carved through ‘ōhi‘a (*Metrosideros polymorpha*) forest toward the rim of Kīlauea Iki, the smaller of the two craters in the Park, formed by an eruptive event in 1959. As we walk, a light rain begins to fall. Wet and shivering, having not expected the cool temperatures and thick mist in Hawai‘i, a teenage boy dressed in shorts and a t-shirt asks the ranger leading the tour if he can borrow his fleece-lined, rainproof coat. The young ranger smiles, and obliges. “As long as you can handle my stink,” he says.

We start and stop and talk of Pele, Hi‘iaka, love—as it is with Pele and Hi‘iaka—and trees. “My number two tree,” the young ranger says, “is the hāpu‘u pulu (*Cibotium glaucum*).<sup>50</sup> Can everyone say that? *Ha-pu-u pu-lu*.” Most of the crowd mimics the syllables.

Pulu, the variety of hāpu‘u, names the wool-like substance that grows in the trunk of the tree. It gathers moisture from the air like a sponge and keeps the tree well-watered. The guide pulls a tuft of pulu from the trunk of the hāpu‘u, and has everyone finger the material before joking that pulu is a species of poison ivy. An older male tourist becomes upset, and scolds the young ranger for the belatedness of information. The ranger clarifies: pulu is hypoallergenic. It was a joke. He pinches the pulu between his fingers, and shifts the direction of attention: “It’s a kind of cool thing too...it’s the reason we’re here.”

*We?* I ask myself. *Here?*

The ranger goes on to explain how Americans ‘discovered’ pulu in the late 1850’s, noting the likeness of the substance to cotton—but the color of *gold*.<sup>51</sup> With the American Civil War, as

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<sup>49</sup> Pāhoa is a growing town in Puna along the southeast rift zone of Kīlauea. It is known among Hawai‘i residents for its large population of *haole* and hippie settlers, its marijuana and methamphetamine production, trade, and consumption, and the harshness and beauty of the land.

<sup>50</sup> Alternately, *Cibotium splendens*; common names include blonde tree fern, female tree fern, Hawaiian tree fern (CTAHR n.d.).

the North found itself missing cotton imports from the South, the pulu industry swelled. Pulu exports reached their height in 1862, totaling 738,000 pounds at 14-28 cents per pound (McGregor 1999:7). They were exported to ports in San Francisco, Vancouver, Portland, and Australia (ibid.). As U.S. businessmen drove the expansion of the pulu market by promoting golden pulu-stuffed pillows, comforters, and upholstery, they also began installing infrastructure along the slopes of the volcano, to accommodate their growing pulu trade. This included a paved road from Volcano's hapu'u forests down to the coast, and a Puna-based pier where steamships could load pulu without suffering the four-day horseride to the port at Hilo. The industry employed Hawaiian entrepreneurs and laborers and was endorsed by the territorial government and businessmen as the economic solution to the otherwise industry-deprived Puna district.

Hāpu'u are *kinolau* (body form) of Haumea, who gave birth to the Pelehonuamea clan (Mei 1908 *in* Kanakaole Kanahale 2011:2-3); Pele came from "the usual place of people" (Emerson), from between "the sacred thighs of Haumea" (Beckwith 1970[1940]:276). As goddess, Haumea is identified with Papa, the mother earth; in some versions, she has multiple incarnations—she transforms herself from old to young and returns to marry her children and grandchildren. Stories of Haumea associate her with a never-ending food supply for humans—both fruit and fish—human propagation through marriage and birth, and Kalauokekāhuli, "the tree with exceedingly beautiful flowers" (*see* Kamakau and Barrere (Story of Kūho'one'enu'u)). In some versions, too, one of Haumea's reincarnations is as Pele (Kamakau).

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<sup>51</sup> The gold color of pulu may have been significant during these years as the gold rush in California had captured continental obsessions, and also funded Union government during the Civil War (*see* Richards 2008).



Hapu‘u tree fern, Kīlauea, ca. 1901<sup>52</sup>

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<sup>52</sup> From Gill, Edwin, “Kīlauea, Greatest Active Volcano in the World,” *in* The Honolulu Republican, Sunday June 16, 1901:16.

Pulu from the hāpu‘u is used as a poultice for wounds, and to address the illness of “shaky hands” (EKF 2003). With the threat of uncontrolled harvest over 2956 acres on private land on Kīlauea in 1971, public concern over what might happen to the forests led to a state-funded study, which concluded that the harvesting of the hāpu‘u pulu would change the ecological arrangement of the native species in the forest, increasing possibility for the growth of undesired introduced species (Buck 1982). The application was denied. These naturalcultural histories were not under consideration during Civil War-time pulu harvests. What ended trade was another discovery: that pulu itself could not hold its fluffy character outside of the damp climes of the tropical Volcano rainforests. Beyond that, pulu turned to dust.

The guide continued,

Well these guys<sup>53</sup> put their heads together. They said, “Wait a minute. We got an easy way to get up to the top of the volcano now. And it seems like people like seeing an erupting volcano, right?” So 1877 rolls around, and these guys build the Volcano House Hotel...In 1909 the vice president under Theodore Roosevelt, a guy by the name of Charles W. Fairbanks, who I like to think was elected on the merits of facial hair alone, well he came out here. He goes, “Yeah! This is exactly the kind of spot we want for a national park.” And so Aug 1, 1916, we were established as the 15<sup>th</sup> National Park in the National Park System.

As this version of the story goes, land finds its ultimate use via the ingenuity of investors. With the fall of the pulu trade came the emergence of the volcano trade—lands which, through their establishment as “protected,” renewed possibility for market opportunities and wilderness associated development.

This new “trade,” which was 333,000 acres subsumed under the name of Hawai‘i National Park, brought those who could afford the cost and time to travel to the islands to sightsee. Kīlauea’s eruptive summit was the main attraction of the park, and by 1866 investors had erected a four-bedroom shelter, which allowed guests desirous of firm shelter to stay

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<sup>53</sup> A group led by Lorrin Thurston, a key character in the dissolution of the Hawaiian Kingdom.

overnight. This permitted nighttime treks to the volcano at a time when horseback travel meant a two-day journey from slopes to the summit, and allowed for the crater, which at the time was more fervently eruptive, to be seen in glowing against the night.

Famously, Mark Twain stayed at this facility, viewing Kīlauea over the course of a few days and nights. His travel tales tell of the immensity and awe-inducing activity of Kīlauea, and his admiration for the sight especially in relief of the dark. Of the facilities he is said to have penned, “Neat, roomy, well furnished and a well kept hotel. The surprise of finding a good hotel at such an outlandish spot startled me, considerably more than the volcano did.”<sup>54</sup> In his recounting of Kīlauea, however, he seemed equally astounded by the immensity of the crater, the “fire fountains,” and pyroclastic flows. He penned,

By the path it is a half a mile from the Volcano House to the lookout house. After a hearty supper we waited until it was thoroughly dark and then started to the crater. The first glance in that direction revealed a scene of wild beauty. ... The illumination was two miles wide and a mile high, perhaps; and if you ever, on a dark night and at a distance beheld the light from thirty or forty blocks of distant buildings all on fire at once, reflected strongly against over-hanging clouds, you can form a fair idea of what this looked like.

A colossal column of cloud towered to a great height in the air immediately above the crater, and the outer swell of every one of its vast folds was dyed with a rich crimson luster, which was subdued to a pale rose tint in the depressions between. It glowed like a muffled torch and stretched upward to a dizzy height toward the zenith. I thought it just possible that its like had not been seen since the children of Israel wandered on their long march through the desert so many centuries ago over a path illuminated by the mysterious “pillar of fire.” And I was sure that I now had a vivid conception of what the majestic “pillar of fire” was like, which almost amounted to a revelation... (Twain 1872: Ch. LXXIV)

These writings, along with productions of early geologists, formed the vision and history of Kīlauea for the American public. In concert, the fantastic recounting of the volcano along with

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<sup>54</sup> Volcano House History indicates that Twain wrote this in *Roughing It*, which he published in 1872. This writing is not in chapters regarding his trip to Hawai‘i. It is possible these sentiments were written in the logbooks of the Volcano House.

the scientific measurements and reasonings for its shape and size and activity, created and supported visions of Hawai‘i’s wilds, and control—through comprehension—of them.

Of course, these histories and makings omitted others’, as well as longer and broader effects of both pulu trade and the National Park for kama‘āina in the region. In the 1800s, pulu trade and Park opportunities were not necessarily shunted by the Puna population, which was at the time largely Hawaiian. The “need” for cash had been created via the 1848 Māhele and 1850 Kuleana Act,<sup>55</sup> which compelled *kama‘āina*<sup>56</sup> to earn cash to purchase, lease, or rent land to work, as well as to pay taxes (McGregor 1999:7). In the “need” was born the lack—of wage earning jobs in Puna in the mid-late 1800s)—as well as the shortcomings of subsistence living. Pulu thus became a solution. In other words, in need of land to continue subsisting upon, men supported the trade by joining pulu picker camps, and working to process, dry, and haul the material for export.

Yet the pulu trade did not come without undesirable effects. Homes were broken up as men left their families to dwell in the forests and collect pulu, and by staying for long periods in makeshift shelters in the cold and wet elevations of the volcanic rainforest, many became sick with colds and illness (Thrum 1929:82). And, along with the reverberations of the failed pulu trade came the emergence of the idea of Kīlauea as a place for sight-seeing, scientific study, and military training. As a landscape in which potentials lay in what could be made off and of it, the dispossession of people from their lands and the development of landscape to fit the needs of whatever American needs might require was deemed ethical. Early tourist accommodations in

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<sup>55</sup> The 1848 Māhele shifted the ahupua‘a system of land use—where typically pie-shaped land divisions that contained resources from mountain to sea, held in common by the people and overseen by bigger and lesser chiefs—to a system of land purchase and ownership. The 1850 Kuleana Act established fee-simple ownership, separating plots of land from the greater ahupua‘a (land division) and thus saleable to parties with no historical ties to place.

<sup>56</sup> nvi. Native-born, one born in a place, host; native plant; acquainted, familiar. *Lit.* land child, child of the land.

1866, a geological science facility near the rim of the crater in 1912, and Kilauea Military Camp (KMC) on 50 acres of the park in 1916, were erected. These constructions, and the subsequent expansion of the Park in 1932,<sup>57</sup> treated land as *terra nullis*, even though village protests and Hawai‘i National Park officials at the time argued how “it was wrong of the Federal Government or the park service to dispossess the Hawaiians of their homes, their land, and their traditional way of life” (Matsuoka et al. 2008:48) through the thieving of these lands under the National Park system.

*We, I think. Here.* On the crater tour, the lot of us make our way across the uneven pavement, aside which webs of Pele’s hair—thin strands of volcanic glass blown out in the wind during an eruption—glint beneath the hapu‘u. We walk until we reach the overlook at Kīlauea Iki, and are told about the geological history of the smaller, companion crater. The guide draws out a folder of photos from the early 1900s, of more explosive, fantastic views of the crater and of men in suits and women in dresses and hats witnessing and celebrating Halema‘uma‘u.

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<sup>57</sup> In 1932 the park expanded to include the ahupua‘a of ‘Apua, Kahue, Kealakomo, Panaunui, Lae‘apuki and Kamoamoā in Puna, and Pulama, Poupou, and Keauhou in Ka‘ū. It expanded again in 2003 to include 115,788 acres of Kahuku Ranch in Ka‘ū, increasing the property of the park by 56%. Kahuku pali is said to be the location where Pele chased two Ka‘ū chiefs on hōlua sled after their refusal to compete with her in a race; this devastated the growth in the area and created Nā-pu‘u-a-Pele, the (blackened) hills of Pele (Westervelt 1963:23-26 *in* Pukui et al. 1974:67).



Hawaii National Park Dedication Ceremony, 1922<sup>58</sup>

Perhaps the audience sees themselves, in history. When the tour takes a break to make time for photo opportunities, I lean my elbows on the metal pipes that form a protective barrier on the crater overlook, and watch steam push up faintly from cracks in the crater floor.

Pele is everywhere, and missing.

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Scholars assert that our spaces are materially and symbolically produced through human thought and action (Lefebvre 1970), and the way spaces are produced have political, economic, and social effects that are unevenly distributed across classes and races of people (Said 1978; Smith 1990). How places are produced—how they are taught to be seen and interpreted through discursive, material, and legal means—have reverberations that ultimately affect the social life

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<sup>58</sup> NPS photo archive, Hawai‘i National Park Dedication Ceremony, Rim of Kīlauea Caldera, 1922. [https://www.nps.gov/havo/learn/news/20160718\\_pr\\_augus\\_events.htm](https://www.nps.gov/havo/learn/news/20160718_pr_augus_events.htm). Accessed December 2016.



possible within it (Lefebvre 1970). In the case of a National Park, visitors often look to guides and Park authorities, as well as formal documentation and formal and informal sources of information, to guide their experience of their surroundings. How places and people are narrated can thus guide and change the way people come to view, experience, and know the environment.

Translations of place often begin from the assumption that “nature” is separate and opposite from “culture,” and that these categories are universally such (Strathern 1990). Anthropological literature supports the idea that our natures are continuously being created, not resting apart from culture but evolving with social, poetic, aesthetic, moral, and political apprehensions and representations of them. As Raffles’ (2002) illustrates, intimate, affective relations can have discursive reverberations and material effects through time; histories that are made, even by individuals’ apprehensions of them, have political and material consequence in the present. And, as Haraway asserts, natures are always already coconstitutional naturecultures (Haraway 2003:3)—evolving relations between all kinds of conditions through time. Spaces, places, cultures, and natures are made through conception, perception, interaction, and interpretation of them.

Too often, narrations presented in scientific conservation endeavors, and the preservation efforts of National Parks, reiterate larger ontological and epistemological logics about market, Nature, and indigenous people, where valuations of resources are made through their contribution to biological diversity, ecological necessity, and economic valuation. Use or reasoning of resources that lie outside of these bounds—particularly non-market use of resources and unrecognizable forms of labor—are resultingly considered undiscerning, illogical, primitive, and prior (West 2005:634; Povinelli 1995; 2002). As West shows through illustration and analysis of Gimi worlds, (mis)translation can be an attempt to ease the rift zones of translatability

between parties, incommensurabilities that otherwise defy easy elucidation (West 2005:633).

And, translation that curtsies to scientific (and legal, and economic) schema to satisfy needs of what is perceived as the ontological leaning of the liberal public, including market valuations of Nature, indigenous primitivity, and multicultural liberalism, contribute to the ongoing material and representational dispossession of native people (West 2005; West 2016)—as well as, in the case of the latter, the neglect and harm of some for the “good” of others (Povinelli 2016).

Moreover, (mis)translations “often miss the fact that human relations with the natural world are aesthetic, poetic, social and moral” (West 2005:233), and in failing to account for the ways the natural world is changed through our repeated interactions with it, including through the entrenchment of liberal epistemological and ontological leanings (West et al. 2006:252), contribute to the erasure of (the value of) these possibilities. Given the iterative and dispersing nature of (mis)translations,

[o]n-the-ground knowledge and practice begin to look like the outside renderings of them, thus erasing the [local] vernacular and creating a situation in which local social structures begin to conform to imposed models and ideologies... This has material consequences for people and their environments. (West 2005:233)

In other words, translations—narratives—can result in the displacement of practices and vernacular important to the sustenance of hybridity and diversity of local life, removing people from places another step beyond the material dispossession of them (*see also* Alfred 2002).

Translation thus has broad-ranging consequences, including the maintenance of human diversity and imaginative possibility through generations (West 2005; *see also* Gegeo and Watson-Gegeo 2001).

Stories of how “We” got “Here” are thus significant, because they end up defining all kinds of things—who matters in the “We,” how the “We” matters for “Here,” how “Here” is delineated, narrated, brought into being. The stories being told in the Park iterate beliefs about

Nature, science, value, and labor in ways that encourage ongoing material and representational dispossession of indigenous people and late liberal leanings that manage difference toward the life of some at the expense of others. The existence of Hawai‘i Volcanoes National Park as such is a story of continued dispossession, in a slew of dispossessions of land and of self-determination from Hawaiian people. Easy justification of taking 333,000 acres of land in the (also stolen) Territory of Hawaii to be “perpetually dedicated and set apart as a public park or pleasure ground for the benefit and enjoyment of the people of the United States” (64<sup>th</sup> Congress, Session 1, Ch. 264 1916)—how the “We” get to be “Here”—invisibilizes how the Park’s expansion was met by firm protest as it overtook village and community lands to ensure that sea-fronting lava lands could also be spectacle, and part of the comprehension of place, Nature, and people. In other words, unproblematized, “Here” remains unproblematic. National Parks are, simply, preservation of Nature. And preservation is a “good,” and can be a good, because indigenous people are not included in “the people of the U.S.” for whom benefit and enjoyment are paramount.

The story of “becoming” a National Park hushes the ways that Park policies have, through generations inhibited and discouraged native peoples from utilizing resources of Kīlauea for subsistence, prayer, ceremony, embodiment, and relationship with Pele through the very delineation of lands as a National site. Embedded in the story of the pulu trade and the making of the park is an assumed right of man over Nature, not to mention over those men and women who are, to use West’s (2016) term, “twinned” with primitive, elemental, Nature spaces. The value of “aesthetic, poetic, social, and moral” conceptions of hapu‘u, or uses of the park such as for prayer or ceremony—actions that do not look like labor—are also quieted under tellings of the capital value of hapu‘u pulu as trade good, through the “creation” of the area as a park, and

today, through records of job creation and wage earnings in the Park. In this telling, non-capital-earning productions in space are not even mentioned. They are forms that remain valueless, and as such, they can be framed as allowances made to a Native public rather than essential practice/labor for the ongoing health of a particular natureculture.

The creation of the National Park as a preservation measure has shifted conditions so that there is increasing remove of Kanaka Maoli from thinking of the Park lands as native lands. Survey and interview studies on fishing, plant collection and Pele worship have shown that activity and use of the park by Kanaka Maoli is limited.<sup>59</sup> In the assessment, the author writes, “Three of the respondents added an unsolicited comment that they avoid collecting in the Park unless they cannot find the plants anywhere else” (Langlas 2003). This remove means the park is not being cultivated as a relation, that bodies are not in relationship to the lands of Kīlauea with freedom, and perhaps with any frequency. This is not sheerly, as late liberal frames are wont to portray, a matter of disappearing cultural forms due to a realization that these forms are no longer useful. It is, rather, a making of the world in such a way that capital earnings are required for survival, and as people are swept into the conditions of this world—materially through the direct harm and neglect of indigenous life in the late liberal state, and also through the repeated narration of only particular versions of the world, where legal, market, and scientific measures remain the only respectable forms of power—it becomes more and more difficult to see new (old) possibilities for flourishing.

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<sup>59</sup> The research reflects on why information might not clearly represent the entirety of activity in the Park, including the inappropriate nature of sensitive questions (especially about Pele) being asked in mail-out surveys and the privacy of these practices and specific family sites of worship, as well as the fact that surveys were sent to plant collectors that had left their contact information to receive a collection permit, rather than to sign up for research. His most successful contact was with Kalapana fisherman, who he interviewed face-to-face.

The kinds of loss that are made possible by the preservation of Nature for the “public” are not beyond those for whom preservation means loss of life. A Kanaka Maoli man, who grew up in Ka‘ū prior to Hawai‘i becoming a State, enumerated sentiments about the Park, beginning with recollections of riding his grandfather’s model-T up to Halema‘uma‘u in the middle night, whenever Pele was erupting. His grandmother would wrap him in a blanket and he would stand in the dark, overlooking the crater, shivering, watching the molten lava lake and his grandmother, chanting to Pele. Now, he said, this is impossible—strict Federal regulations guide human activity in the Park, especially around the crater when lava is erupting; and ballooning tourist crowds make ceremony into spectacle. He said,

I look at that [the National Park] as every day sticking a finger in my face. A big fuck you. Because it pimps my religion. It takes my spiritualness and charge people money for it. And then dictate how I should practice... You stand on Sunday at a Catholic Church with a clipboard running people through that kind of ridicule? Or just a Hawaiian going to the park saying I just going see Tutu Pele and [Park staff saying] Oh, oh, whea, what part, oh you know you cannot use the bathrooms [if you do not pay]. Your superintendent tell you that’s how you treat Native peoples? We were here long before you came! \$10 bucks or no use the bathrooms.

...Am I defending my church, per se? And is church just one building? What about my soul, what about the inside of me, and not just the object of it, what do I lose? Let’s not go get medicine, cut off. And you have Hawaiians who are not conditioned to think that, and go and defend it. Then you realize the Western conditioning is slowly deteriorating a race, by having the Hawaiian think so much of what he is and he’s so shallow, so low tide, you know, never gets covered with the real water and nurture.

This man expresses so much in his thinking about the National Park. He recognizes the layers of taking—the original dispossession of lands from Native people through the creation of the Park, the ongoing control that Park officials exert on Native people through policy requirements, the treatment of Native people as a lesser citizens, and non-paying, as lesser Park guests—and the layers of loss—the material loss (through the loss of desire to collect medicine), the personal loss of embodied, relational, spiritual fulfillment, the broad loss of Hawaiian culture to “Western

conditioning” through the deterioration of relationship with nature and human family (“real water and nurture”).

While there are multiple potential causes for increased distance—loss or lack of present resource, undesired sharing of information necessary for permitting purposes, revulsion of the United States as an entity that steals and then regulates activity via law, or in the case of Pele worship, unwanted spectators observing ceremony as exhibition—the linear tracing of cause to effect is less important to clarify than the seeing of the effect itself: that from the distance created by the delineation of the area as a National Park ensues loss of potential for relationship, and then potential for intimacy—by which I mean a close, personal, deep, embodied relationality that is a knowing of other through the knowing of self. This distance ripples through generations of separation, until dispossession itself becomes unrecognizable, in late liberal logics, at least, as anything but individual choice, group (cultural) loss, and the eventualities of 21<sup>st</sup> century accounts of unilineal evolution. The “We” in the story necessarily excludes the story of colonial overthrow and takeover, settler states, and the complication that, under the governance of Late Liberalism, the suffering and exclusion of some is vital to the happiness of others. The narrative erases the indigenous body to feed conceptions of the lawfulness of the state itself—ordered, bright (*see* Wolfe 2006).

“We.” “Here.” It seems like an innocuous story in the mid-morning at Volcano, the briefest of exchanges that builds rapport with the visiting crowd and situates them in the fantastic space of Nature in which they stand. And, it cements into place principles people think they know to be true: the ongoing event of Kīlauea as a National location of wilderness makes “something” from “nothing”—i.e., making of a place of geological, historical, and cultural significance from lava fields—through the very imagination of space as such. Imperialistic,

colonial, settler colonial, capitalistic takings are but ingenuity meeting opportunity. Nature is “out there,” the remedy to overly refined and civilized places (*see* Cronon 1996), and the preservation of this antidote is ethical, virtuous, and noble for the majority of (what might be considered) the “public.” It is thus “good”: it may take *from some*, but it preserves *for all*.

How “we” got “here” to volcano-as-National Park is not only a story of how the residual infrastructure of the failed pulu trade endures as national tourist site doubling as protected space of local natural treasures. It is a story of how the making of protected places remakes space as it draws others into more homogenized versions of it, and remakes the ways people think about and act in it. In managing space as a National Park, Park officials produce conceptions of nature and enables particular understandings and experiences of it. In the representations borne by the park today—through tours, placards, art, brochures—the stories of Pele and Hawaiians themselves become commodified forms that promote the uncomplicated beauty and innocence of nature and the primitive while concealing the historic and contemporary fracture that is being lived by Kanaka Maoli who still bear relation to place. In her everlasting place, Pele is at once home and not home; she is seen and is also represented in ways that preclude any openness to seeing and knowing her. The National Park, as event, as practice of sustainability and preservation, forecloses potentials for Hawaiian life.

*She*

As stated at the outset of the chapter, this is not only about the effect of figurations of Pele on and for indigenous Hawaiian life. It is also about the effects of a biontological bias and distribution of power that places the importance of biological forms of life over and above geontological forms, rooting beliefs about the purpose and usability of resources to support

human interests in some perfect division between life (that needs to survive) and nonlife (that exists to support survival). This bias is intertwined with American notions of sustainability, deployed in the romanticism of wilds denoted and produced by the National Parks, and in movements “back to the land” that uphold White settler claims to space in lower Puna (covered more thoroughly in Chapter 3). Pele—as a manifestation who/which, in materiality and representation, lies between what might be considered life (as bios) and nonlife (as geos)—signifies potentials for an otherwise: for movement into somewhere new.

Figurations of Pele are integral to the geothermal development project, because Pele continues to exist with potential for rupture of this divide. The way she is represented in official documents about the geothermal force, and in lay exchanges about Pele, lava flow, and geothermal energy development in Hawai‘i, are modes of thought that produce modes of thinking about how relations with and being in relation to forms—human, nonhuman, bios, geos—can be pursued. And yet, and always, Pele and her worshippers embody and promote *hulihia*, an overturning of the established order (*see* Kanaka‘ole Kanahahele 2011; Kanahahele yr; Ho‘omanawanui 2014). Charlot (1998) expresses *hulihia* through what he calls the “Pele movement”:

[I]t remains oppositional, challenging fundamental ideas and practices of Hawaiian culture. The Pele literature in many ways is an expression of protest, remarkable for its voicing of disruptive anger. This characteristic has enabled the Pele religion to survive the eruption of foreign influences into Hawai‘i... The keepers of the Pele traditions continued to teach, the hula academies continued to perform her chants and dances. ...Pele followers were active in the resistance to the early missionaries and up to the present day have opposed westernizations of Hawaiian society and culture, such as the sale of land to foreigners, housing developments, and the use of the volcano for geothermal energy. (Charlot 1998:58)

In Pele’s full expression is the dissolution of what is, and creation of new spaces, into which movement is possible.



In the example of the National Parks, I sought to show that conceptions that produce Pele as a mythical figure from a “prior” cultural period bleed out to figure indigenous Others who believe in and rever Pele as relics. Naturalization through iteration of hierarchies of models of human life and its relation to nature demean and dissolve possibility for contemporary people to live and flourish beyond the limits of late liberal imaginations of space, time, and relationality by making the pursuit of life beyond these bounds untenable, unbearable, life-ending.

More about the sophistication of epistemological systems maintained through the figure of Pele and her beloved sister, Hi‘iaka, and the Pele and Hi‘iaka myths in Kanaka Maoli ontological systems, are explored in Chapter 4. In this chapter, I want to focus on how productions of Pele insist on making her either as geological form (nonlife) or as Kanaka Maoli delusion, thereby supporting the case for geothermal energy development as necessary, good, and sustaining of “life,” and how Pele people contest these notions, retelling of her life through their own lives. To clarify how notions of Pele are deployed to support the division between life and nonlife and how this division makes space for the (late liberal) management of difference through extinguishment of Kanaka Maoli life and the enhancement of the idea that geothermal energy, and earth’s resource generally, is nonlife in service of life, I examine how Pele is invoked and regarded through a lava flow into lower Puna. What assumptions are held in figuration of human relation to (molten) earth through the life/nonlife divide? How is Pele molded to fit assumptions about life and nonlife? How does the standardization and promotion of some instance of life over other instances, and over nonlife, promote ideologies of distance and domination that late liberal and market formations need to survive? And how do these ideologies form and limit the relationships we have with other beings?

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Outside of the Park system, Pele is watched, but not with the same easy awe. Broadly, she is the character of magmatic flows: unpredictable but not arbitrary, ultimately uncontrollable. Unlike simplistic understandings of Pele among the largely White lower Puna community as irrepressibly angry, “bitchy,”<sup>60</sup> and wrathful, Hawaiian literature paints a complex picture of her—highlighting her intense emotionality: in love, in grief, in jealousy, in care, and in responsibility for growing the island earth (*see* Charlot 1998; Kanaka‘ole Kanahahele 2011; Ho‘omanawanui 2014). Her unpredictability gets attributed to what is, truly, wild: *noho Pele i ke ‘āhiu* (“Pele stays (in the) wild”) (Emerson 1915:206 *in* Charlot 1998:57). In Hawaiian systems of knowing, Pele is not a neutral geological force; she is a human form—a beautiful young woman, and old, ragged woman—a white dog, even a man (*see* Nimmo 1986:128). In these forms, she hitchhikes, makes entreaty for food or cigarettes, or simply appears, to tell of coming eruptions. She is an ancestor, blood and bone, family; she is god form, figure of religious worship; she is heat principle.

Human, nonhuman, life, nonlife, are cultural categories that do not find easy translation into Hawaiian ontology. The distinction between beings is not through these silos, but rather between those beings who have *kino lau* (*lit.* many bodies) and those beings who remain in one body (Goldberg-Hiller and Silva 2011:431). I highlight this difference not to insist on adoption of Hawaiian ontologies into a worldview that is supposedly more inclusive, but rather to illuminate how simplistic understandings of the relationships Kanaka Maoli have with Pele reveal assumptions and conventions of ‘life’ and ‘nonlife’ devised by, and supportive of, late liberal, scientific, and market ideologies. To fit Pele into these categories is to devise her as a cultural construct for a nonliving, geological form and force, preferencing scientific

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<sup>60</sup> Said to me in conversation around the 2014 lava flow and its potential and past activity in the lower Puna area. The man who referenced Pele in this way was a diver from the continental U.S. who was lamenting Pele’s “taking” of Queen’s Bath in Kalapana in 1987.

understandings of Nature and natural phenomena, promoting inclusion through assimilation and homogenization, and allowing for shallow appropriation, misinterpretation, and commercialization, of the force and form through conventions of use of nonhuman things.

The estimation of Pele as (cultural interpretation of) *just* the forces of the volcano, the forces as *just* a natural resource, and natural resources as *just* for human consumption, is a theme that runs through geothermal productions such as Environmental Impact Statements (*cf.* Thermal Power Co. 1987, *especially* 11.3, 317) and Hawai'i State declarations on geothermal extraction (*cf.* Inouye 1990). This is absolutely necessary for the use of the geothermal resource by the late liberal state. As part of its guise is lawfulness, order, equality (*see* Wolfe 2006), it can act to inaugurate and establish, but can never admit its acceptance of, the suffering of others for the advancement of its own existence. To make Kanaka Maoli life an untenable proposition, to make Pele impossible, is thus fundamental to maintaining the geothermal project as not negative—not unethical, harmful, murderous.

Telling, too, are the beliefs and actions of entities not directly connected to capital market, as they reflect, make possible, sustain, and illuminate the guise of lawfulness and order of late liberal governmentality. They also make apparent the layers of colonial entreaty on the formation of relations between people, and things, even as these relations seem intimate, first-hand, self-created. The distance between Pele and residents of Puna—individuals and families whose lives remain intertwined with the activity of Pele—are perhaps frequently observable in passing. However, in August 2014, when an overland flow from the Pu'u 'Ō'ō vent of Kīlauea advanced out of the Kahauale'a Rainforest toward Wao Kele O Puna and the town of Pāhoa, the incorporation of Pele into residents' lives were articulated, displayed. Lives, livelihoods, belongings, were at stake.

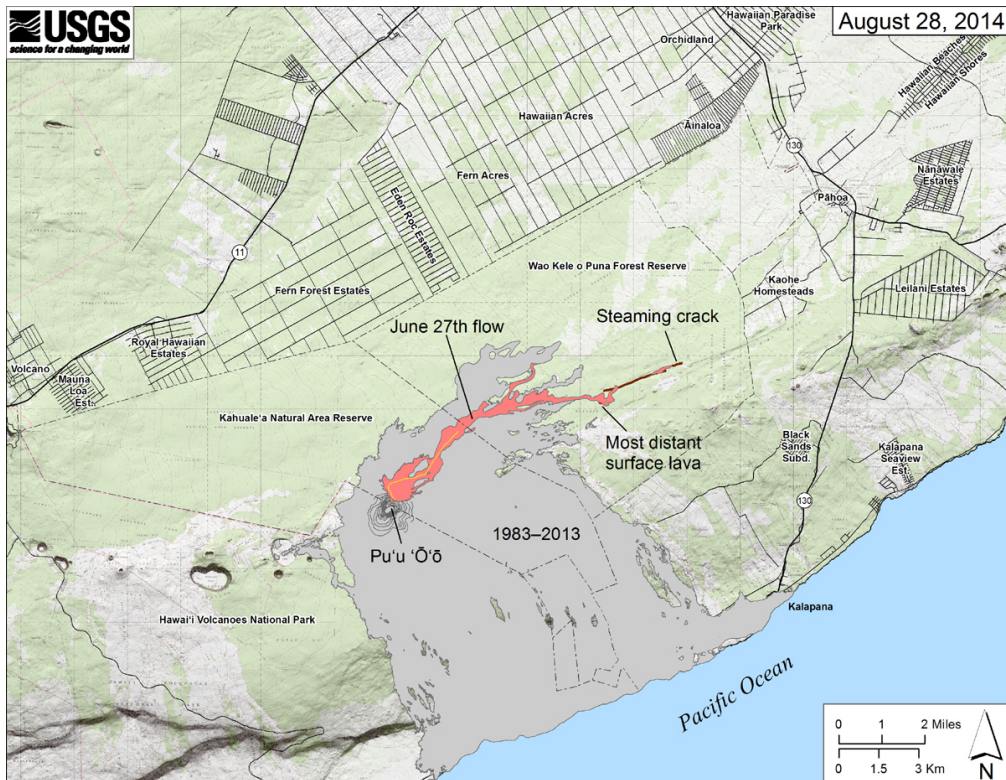
Since June 2014, USGS and Hawai‘i County Officials had been watching an eruption from the Pu‘u ‘Ō‘ō vent on Kīlauea’s flank, along the SE Rift Zone. By August, they issued a public announcement that a faint glow and steam from a ground crack indicated that lava flow from Pu‘u ‘Ō‘ō was no longer flowing south toward Kalapana, where it had headed for the past three decades, but had switched direction and was flowing East, advancing toward occupied subdivisions in lower Puna: Ka‘ohe Homesteads, Pāhoa, Nanawale, Hawaiian Beaches. The direction of the flow also pointed toward Highway 130, the sole road that connected lower Puna to the County center at Hilo and the people of lower Puna to basic provisions: medical services, food and household items, and ironically—because the geothermal plant could not disconnect from the grid to provide electricity for the community alone—electric power. If lava flow proved voluminous enough to continue, it would continue to the sea. The potential was that residential areas of lower Puna would be covered, and areas south of the flow would be cut off from essential services, or “islanded,” by lava.



Steam from ground crack near Wao Kele O Puna<sup>61</sup>

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<sup>61</sup> Photo: USGS HVO, Lava advancement of June 27<sup>th</sup> lava flow, Kīlauea East Rift Zone, as of August 28 2014. <http://www.bigislandvideonews.com/2014/08/29/hawaii-lava-flow-update-friday-august-29>. Accessed September 2015.



Lava Flow Map. Aug 2014<sup>62</sup>

The flow of lava into and over towns was nothing new—kama‘āina had lived with ongoing eruptive flows from both Kīlauea and Mauna Loa from the mid-1800s, and massive devastation in the 1980s and 1990s to Kalapana, an area in lower Puna which was host to a number of old Hawaiian families, kept the memories of loss fresh. Stories of the stoppage of flows, perhaps most famously through the narrative of Princess Ruth Ke‘elikolani halting a flow from Mauna Loa through prayer and saving the town of Hilo in 1881, still circulated. The County, too, had an ongoing history of unsuccessfully engaging with flows to occupied areas of

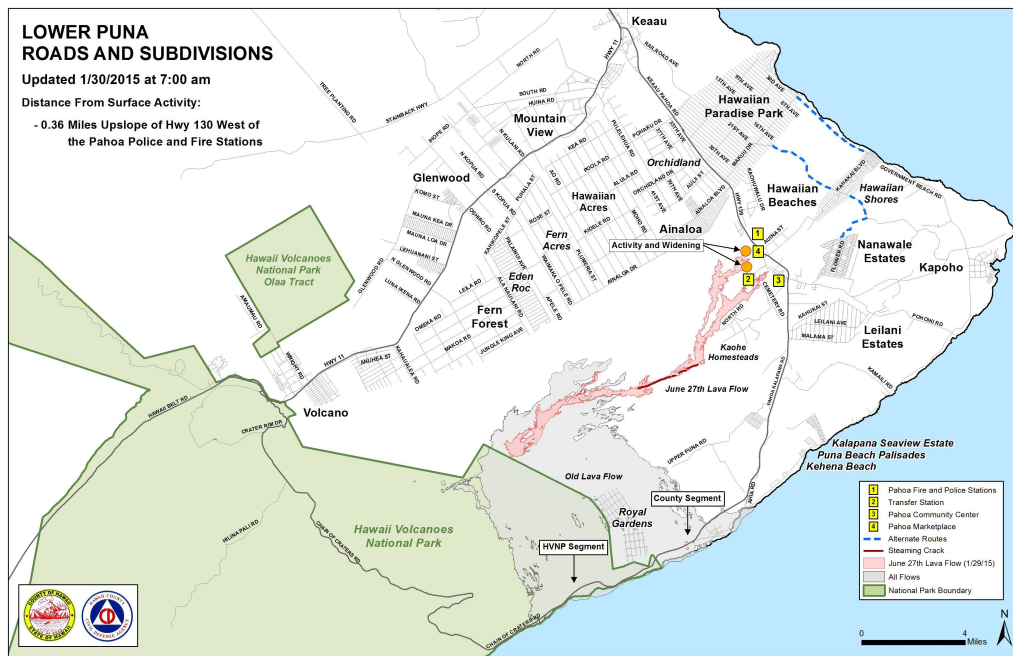
<sup>62</sup>Map of flow heading toward the Hawaiian Homesteading area of Ka‘ohe and the township of Pāhoā. The grayed areas on the map illustrate earlier flows, which had been running from the same Pu‘u ‘Ō‘ō vent to the south, to an area known as Kalapana. Map by USGS Hawai‘i Volcanoes Observatory, “Lava Flow Map of June 27, 2014 lava flow” as of August 28, 2014. <http://www.bigislandvideonews.com/2014/08/29/hawaii-lava-flow-update-friday-august-29/>. Accessed September 2015.

lower Puna; historical County Civil Defense efforts to divert or stop flows included aerial bombing, aerial (helicopter) firefighting, and berm and barrier building.

The flow from Kīlauea moved slowly and certainly, extending fingers in the direction of residential areas and the highway. The USGS, maintaining its mission to keep the public informed, released hourly lava flow updates on radio, TV, social media. USGS and the County held weekly, then biweekly, informational community meetings in Pāhoa, eventually setting up a semi-permanent “Incident Command Center” to serve as a continuous resource for the public. Hundreds gathered at the town meetings to listen to word, ask advice, and voice individual and public concerns. They sought “official” opinion—should they stay, should they leave? USGS volcanologists offered none, maintaining their position as finders and relayers of information. Would the state and county do anything to protect the people? Civil Defense, the Mayor, and other public officials offered their time and knowledge. The public was informed that lava would flow the path of least resistance, which was downhill. Advanced mapping technologies which predict lava flow directions based on detailed topographical measures and the current volume of lava in the system were shared on large projector screens in the humid Pāhoa cafeteria. It was emphasized that nothing was certain. Lava had been witnessed to flow around and between properties. To shift direction unexpectedly. To stop, when all factors indicated it should otherwise continue. The best advice any of them could give was to stay informed.

The flow advanced toward the town and some level of ruin appeared an inevitability. Schools closed. Stores closed. People preemptively evacuated their homes, moving elsewhere in Hawai‘i or back to the U.S. continent. Those who worked in Hilo renegotiated their jobs, lost their jobs, in advance preparation for the impossible commute to town. Amidst strong environmental and access concerns by the Department of the Interior, the State, County and

National Park negotiated a deal that made Chain of Craters Road, the 19-mile paved stretch which led sightseers through the park to witness sites of various volcanic features and activities, an emergency access route for the Puna public. And, the closer the lava came to town, the more people purported to know Pele. By the time the flow was just feet from the town, Pāhoā residents purported first-hand knowledge of her, had “experienced” her in their lives. They understood what it was to live “with” her. Souvenir shops in Pāhoā enjoyed an uptick in sales with visiting tourists who had come to see the live lava flow; they justified sales branded with Pele with projections that they would lose everything in her impending flow, and the additional income was thus a trade-off, an exchange.



Lava Flow Map, January 30 2015<sup>63</sup>

<sup>63</sup> Hawai‘i County Civil Defense, County of Hawai‘i. Overview Map, 30 January 2015. <http://www.hawaiicounty.gov/lava-related-maps/overview-maps/2015/01-january/>. Accessed November 2016.

But their understanding of her and relationship to her became most apparent in the ongoing community meetings, where White residents of lower Puna spoke to the Civil Defense Director and local USGS geologists, reminding them that this was an emergency, as the lava flow meant impending loss to property and livelihood which represented a “lifetime of earnings” or “a lifelong dream.” Despite being told again and again that lava diversion was not an option—because of state and county liability, the failure of previous diversion tactics, and a stated “cultural sensitivity” to Hawaiians who worshiped Pele—Haole settlers, in particular, lined up at the microphone to share their ideas about what could be done in the case of a volcanic eruption to save lives. Their comments ranged from claims that the USGS might import volcano experts from the U.S. continent to help Hawai‘i geologists learn more about available diversion technologies, to personal designs to bomb, extinguish, divert, and quell lava flow at the source. After a long line of suggestions about diversion, the Civil Defense Director restated the unacceptability of diversion in Hawai‘i, and that he would take no more diversion questions. A man stepped up to the microphone:

Obviously lava going over Highway 130 would be a very serious problem for lower Puna. ...So my question was, I agree that diversion as described is a pretty chancy maneuver. However, the flow has historically, for many years, been going to the south. So I’m wondering if any consideration, or even possibly planning, has been made to actually breach the south slope of Pu‘u ‘Ō‘o, to say, below the perched lava lake, to resume the flow back southward. I suspect this could be done fairly surgically, and it would avoid a lot of the uncertainty of diversion. This would be more of a breach than a diversion. I think they are very different concepts.

“Thank you,” Oliveira said, before calling for the next question. He and others who had lived through multiple eruptions and flows recalled the 1959 flow in Kapoho, where the county brought bulldozers to divert the lava and ultimately caused more homes to be destroyed. They recalled the flows in Kalapana, where the county brought helicopters to drop water on the lava,



and the lava shifted from going in-between homes to consuming them. To put things in perspective, a Hawaiian woman stepped up to the microphone:

Aloha. I'm Ihilani. And I was in line, but as a Native Hawaiian, you want to listen to what's going on. And when it first started, I didn't think it was appropriate. Now it's appropriate. About the diversion. Diverting the lava. As a Native Hawaiian, Pele doesn't work like that. Who is Pele to us, and I'm telling you guys this because it seems to not...it falls on deaf ears when you tell, we gotta be sensitive to this culture...to Native Hawaiians, Pele is our Kupuna, she's our ancestor. So. You wonder where all the Native Hawaiians are, some of us are here but we're home preparing for an important guest. That's what we do when an important guest or our kupuna is coming, k? We're at home preparing.

If Pele feels—cause yes, we own our own land, we pay our land tax, we “bought” our properties, that is not the Native Hawaiian concept, when in Rome, you in Hawai'i, you bought your land, you know where it is. I respect all of that. But the Native Hawaiian viewpoint is this: we will never own our land. This is Pele's home. And to come in and say Pele you go here, in her house, is *hewa* (wrong; crime). And we need to stop. Like my tutu said, *Knock it off already*. We do one thing: we keep the people safe. We do two things actually, we stay informed, and we keep the people safe. The visitors here, as well as us. So mahalo to you guys, but we not diverting her. As a Native Hawaiian I am saying, *A'ole loa* [no way, *lit.* big, broad no]. ‘Nuf already. This is her place. And if she feels she needs to clean her house, then let her clean her house.

Audience members clapped, and smiled, and for a few days the Honolulu media took time to uncover the secrets to the cultural understandings of Pele and lava flows. What warrants attention, however, is the fact that after Ihilani and other Hawaiians spoke, explicitly about Pele as a force to be respected *as a being*, Pele was figured, again and again, foremost, as cultural belief. The morality of the actions that followed thus hinged not on the fortification of flow, protection of purpose of Pele, but rather acknowledgement of multicultural difference under liberal settler political leanings.

Moreover, what Ihilani (and others) had said was neither that people need to agree with Hawaiian culture nor adopt new ontologies. She was saying, Pele is an entity, a being, kupuna, important guest, inhabitant and ruler of Puna—this was “*her house*.” The task was not to decide how to control the uncontrollable, but rather to accept, welcome, honor the wild, keep others

safe, and, as another important woman would point out, “[be] thankful that you had that many years on your land. And pray and thank God, or whoever you believe, that you had that opportunity to live in paradise.” As the flow came through the forest and manifested in the town, crowds gathered to watch it: broad-backed, a few thousand degrees, inevitably destroying that which existed, creating anew. Among people sitting and standing, watching the smoke on the horizon from Kea‘au-Pāhoa Road, there seemed a level of resignation in bodies—a sinking back into the haunches, down into the feet. From the meeting, people had gotten, at least, a loose grasp of a way to be humbled, in the face of something bigger.

Rock

*ho ‘okanaka: be human  
(do not act like a god)<sup>64</sup>*

Pele is multiple, overlapping things. Arrangements of power that exist at any given moment direct the circulation of narratives about her, and productions of materialities of heat, magma, lava rock. I argued above that what the National Park and lava flow illuminate are natural/cultural and life/nonlife binaries that work to support liberal undertakings of granting life to some, over others. In this equation, indigenous people who prescribe to indigenous ontologies and move in the world as such, and forms of Nature relegated to nonlife, are willingly extinguished, as they stand as impediment to late liberal and market projects that rely on land and natural resources—and their nonlife status—to continue to operate and flourish by taking from earth.

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<sup>64</sup> Mary Kawena Pukui. *‘Ōlelo Noe ‘au: Hawaiian Proverbs and Poetical Sayings* (Honolulu, Bishop Museum Press, 1993).

The becoming of Hawai‘i Volcanoes National Park is narrated as the opportunistic preservation of place following the failure of the pulu industry. I examine who constitutes the “We” and where constitutes the “Here” of the version of the story in which Natures are vast, virgin landscapes separate from human history, benign Nature where “malign civilization” enters only through official purchase of admission (Cronon 1996:20), *terra nullis*. In the consistent effort of the National Park to make itself as a foregone good through its sustaining of Nature-place, Pele and Kanaka Maoli represent a continuing foil to the imaginary that the National Park is ethical and righteous in and through its efforts to preserve wild spaces. On the one hand, Hawaiian existence refutes the imaginary that the 333,000 acres—about 1/7 of the acreage of the Island—was unoccupied at the time of taking, shattering the moral foundation of the Park through its colonial inheritance and continuance. Beyond this, Kanaka Maoli and Pele, individually and together, unsettle the very premise that nature is and has always been a separate phenomenon than culture, the nonhuman evolving as backdrop to and resource for human evolution. These erasures, and the historical “realities” produced without them, allow late liberal and market governance to continue its work, for underlying the viewing of Pele as spectacle and Hawaiians with relationship to Pele as pre-civilized prior is an agreement that the suffering of some things, for the flourishing of some human life, is an acceptable goal, an acceptable deed, an acceptable feat.

Thus, in the preservation of Nature the Park is an argument for the domination of it. Using, depleting, destroying that nature outside of the Park for Human development becomes all the more natural, all the more possible. And the more land outside the park is depleted, the more the Park itself shines as a moral and favorable event, in a landscape of histories and materialities where so little is safe from market. But in these circular becomings, the Park is part of the

colonial history of America and the contemporary structure of late liberal governance, where relationships to Nature are guided as attractions, frontier explorations, temporary antidote to market civilization. In such conception, land as relation falls further and further from potential as natureculture, as relation upon which life depends.

Outside of the Park, Pele's 'āhiu, and continues to move in ways that prove her uncontrollability to those who would pursue control over her. What the 2014 lava flow into Pāhoā illuminated was the way that late liberal logics about the ranked divisions of life and nonlife allow for the treatment of that which is viewed as nonlife. During conversation on lava diversion, what was articulated through snapshots of entreaties to the County was, first, how threat to human property might be treated when viewed as part of the condition of nonlife—as ultimately controllable, and controllable by force—and then, how late liberal moralities that rescues some forms of human life to life, over all other biological and geological priority, crumble when human life is decentered and the lines between life and nonlife, as made possible through the multi-form figure of Pele, are blurred. The latter entreaty, and those that followed, were powerful because they moved beyond late liberal ethics of cultural rights to geontological ones; the argument was for Pele's right to continue her existence, for the flow of lava to move as it moves, across and over human settlements. And the solution, given at least twice that night, was man over Nature, but human to human. A woman who had lived through and moved due to multiple flows said,

We living in one place where lava is still existent. Whether you believe it's Tutu Pele or you just believe in the scientific facts that it is lava, you cannot change the direction. It's mother nature. It's like me telling you, *Move the moon because it's too bright*. C'mon people be realistic. What we need to do is work together, help each other out. Not fight and tell where the lava for go, whose house the lava should cover. C'mon people. We human beings, we should be able to figure this out and work together.

Human intelligence and use for it, refigured. Reaction to save one's own property at the expense of others', interpellated. The habit of wanting to shift the forces of nature for one's own convenience, revealed. And, the understanding of the desire to respect the force simple as a cultural phenomenon, refuted. Whether ontological facings moved one toward seeing the flow as Pele, or as magmatic event, she/it was a figure over which the human had no control. Whether life or nonlife, this being, this thing, was one to which bodies in Puna bore relation.

\*

And [Lono] told [Pele], *This is who you are*. And this is your *kuleana* (responsibility), is to keep this fire burning. Because those things that I told you about, that are dependent on this land as a home—you will be the one to build their home for them.

### Chapter 3: SETTLER SPACES

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*Unlimited desires are insatiable by definition and insatiability is rightly considered a sign of morbidity. Being unlimited, they constantly and infinitely surpass the means at their command; they cannot be quenched. Inextinguishable thirst is constantly renewed torture.*<sup>65</sup>

As much as Puna is Pele, it is also Kāne—the preserver, god of water and life, light and enlightenment. In descriptions of Kahiki, the origin point of Pele’s journey, Kāne manifests as freshwater springs throughout the land and near-shore sea, and also in the form of light. The lands are thus lush and fertile, mythical god-lands of watered life and never-ending fruits that can appear and disappear depending on the onlooker, his character, and purpose (*see* Beckwith 1976:72-73; *see also* Ka’awa 1865:9 *in* Beckwith 1976; Nakuina 1904:22 *in* Beckwith 1976; Kamakau 1964:67; Fornander 1919-1920:17; Westervelt 1915:127-129). In fact, before Pele arrived it was said of Puna, *‘Āina i ka houpo o Kāne*: “the land is the heart of Kāne”/ there is no place more beautiful than Puna (Pukui: 1983:11 no.79).

Thus, many days in Puna are rain. On a day of rain in a string of days of rain, I found myself sitting across the table from a sailor—a man with the kind of leathery skin, water blue eyes, and wild white hair that made me believe in sailors. It was early July, early morning, gray, with water pouring from the sky. The café was warm and light. The sailor looked up from his plate of eggs to see me. He took a sip of coffee and asked if I was who he thought I was.

This would be the first of many chance meetings between the old man and I. We would find each other—outside the hardware store, along the sandy shore of the bay, at the back of geothermal and Puna community meetings—taking things in. On the day I left Hawai‘i, he

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<sup>65</sup> Emil Durkheim, *Suicide: A Study in Sociology* (J.A. Spaulding & G. Simpson, trans.) Glencoe, IL: Free Press 1951[1897].

would open the back of his truck and reveal a parting gift: a load of filing boxes covered in spiderwebs and frass, filled with binders and files of information on early geothermal development in Hawai‘i. Thumbing through, I would find handwritten memos, records of phone calls, official minutes of exchanges on the Hawai‘i Geothermal Project that would have otherwise remained private, internal, proprietary. When I asked how, and why, he would say, winking: “I knew you’d come along.”

The first morning we met, he was this way. Full of stories and secrets, from a long life spent on and near the sea. His ties to land and material things seemed almost incidental, and equally intimate. Every box we opened—the sea, the sun, electric technologies, government dishonesty, community planning—was something he seemed to know most things about. That morning over eggs and coffee he connected the enormous potential of solar power in Hawai‘i and off-grid living to fervent, concerted efforts by the state, the electric company, and the University to promote carbon-alternative, centralized, grid technologies *excepting solar*. Such as, fittingly, the costly, dangerous, and unsustainable project which was geothermal energy. And, despite continuous promises of lower rates for the consumer through wind, geothermal, and hydrothermal projects, electricity prices remained the highest in the U.S., with yearly increases for household consumers. The sailor explained,

[O]ne of the foul-ups that the authority has perpetrated is they keep the high line voltage down so there is more line loss. They actually lose about as much energy here as they deliver. And they went and enhanced that when they went into all the unoccupied subdivisions: Hawaiian Acres: 12,000 acres, 4,000 lots. 1100 people live there. They put power lines through the entire subdivision and lit ‘em up. Energy going nowhere. How do they make money? Because the ratepayer pays for total generation. So if you got ten people, ten people bear the cost of whatever total amount is drawn. That’s why we have 43 cent per kwh cost of electricity. You drive seven miles through Hawaiian Acres, and you go a mile and there’s a customer, you go another mile, there’s another customer...

He talked transformers, electric cars, solar developments, battery technology, Standard Oil, mechanical relays, death chants, geothermal blowouts, and being out on the sea, with his wife, two 15-watt solar panels, and no land in sight. “When you’re out in the middle,” he said, “the only thing you can count on is the sun is going to come up.”

After a few hours and several coffee refills our conversation quieted. The rain battered against the corrugated metal roof and streamed onto the wood porch, off the porch to puddle on roadside cinder. The asphalt steamed as the earth cooled.

“More coffee?” the waitress asked.

“I’m fine, dear,” the sailor responded.

I asked for the check. Looking out the window into the rain, he left me with a last thought, for the day. “We’re looking at an accumulation of wealth by a few people that we haven’t seen [before]. The environment, mother nature, she’s going to get even.” The waitress came and went. We thanked her. He went on,

We dodge the bullet because 500 miles out, there’s a cold water upwelling. That’s why the big storms haven’t come up here... And if you look at the history of the storm channel, like the last one, the storm coming right at us, then it went poof. The cold water upwelling and it killed it, disintegrated it. Didn’t have enough energy. But that can’t last, not the way it’s going. The moment it gets over 83 degrees out there, the door is open.

The clink of silverware on ceramic plates and the smell of coffee and syrup lingered on us as we stood to leave. He handed me an invitation to his 70<sup>th</sup> birthday party. “I’m the guy that teaches the free sailing lessons down on the bay,” he said. “Bring a friend.”

\*

One of the premises of sustainability and sustainable development is that it will sustain life for *us all*, through a specific type of economic development that attends to environmental and social needs and concerns that are meant to be universal. In the first and second chapters, the



thick intertwinement of market and government carried in the liberal ideology of sustainable development, and the ranking of the worthiness of existence via divisions of nature and culture, life and nonlife, are explored. In both instances, it is clear that what is sustained in and through the production of geothermal energy development and conservation of Nature is the potential of market, and the deepening embodiment of the late liberal belief that particular modes of human life and living are more worthy of flourishing than other forms. These decisions are not arbitrary or unpatterned, and they administer a willful averting of the eyes to the suffering of some, coupled as it is with the flourishing of others, in order to support what is posited as a “good” or better life. Sustainable development and the divisions between nature and culture, life and nonlife, can therefore be seen as part of the projects of late liberalism and capital liberalism which, in need of land and resources, have pushed that whatever has stood in the way to the margins, to rot.

Sustainable developments such as geothermal energy development often tug at this tension of uneven valuation of lives, as large-scale energy projects and other environmental and conservation endeavors often take control of place and resources from local communities, in order to achieve imposed scientific and conservation goals. Who matters in these scenes, and the scales of what matters, are highlighted in discursive and material productions that purport doing “good” for the largest number of people and things. In an era where human developments are seen as the cause for the shifting of climatic patterns and the end of the earth as a habitable residence for humans and life as is known, the communities that directly suffer as a result of developments become the accepted loss for the survival goals of the rest.

What I hope to do in this chapter is lay out the weight of lives, and the weighing of them, under the overarching rubric of sustainability. I take two instances—one, the settling of lower

Puna by a White continental American population carrying strong ideologies about sustainability, and two, a late summer hurricane that sets off an uncontrolled release at the local geothermal plant and triggers injury across the same lower Puna population—to understand how American ideologies of sustainability isolate communities, and pit them against one another in a seeming opportunity to survive and thrive under late liberal governance. This is not to be a mediation of ultimate “right” or wrongdoing of any particular group over any other, but rather an examination of how discourses of sustainability, within/under the forces of late liberalism, grant life, let die, and kill through a political imaginary that wishes for specific shapes of life to come into being, to be sustained, to flourish.

As has been shown in ideologies built up around “Nature” and biontological leanings in late liberalism, material and seemingly “logical” leads into better/best forms of living with the environment are easily molded to fit ideals that fit the lack, attraction, desire, and aversion of some, at the cost of others. In short, what form of social existence is good/better/best requires a point of view, and those points of view come from very specific angles on who and what should flourish and in what type of formation. The pattern here holds true: “‘Sustainability’ can quickly become a call to conceive a mode of (multi) existence that is pliant to our desires even as political alliances become very confusing” (Povinelli 2016:20-1). The goal, in this chapter, is to uncover what power looks like in formations where a singular settler community is, at once, the figure of colonial inheritance and continuance, *and* the profile of the marginal, the extinguishable. What becomes apparent about discourses of sustainability in and under late liberal governance that teach us what is at work, and how we might move, otherwise?

## Iselle

*...[Y]our own suffering and the suffering of others  
is not different. There are no Others.*<sup>66</sup>

The last thought of the old sailor was bright in my mind the morning of August 4, 2014. Over the first few days of the month, a series of hurricane threats—Genevieve, Iselle, and Julio—were named as storm gatherings over the Pacific. Having grown up in Hawai‘i, this pronouncement meant nothing significant—storms gathered every summer, particularly in years of El Nino, and nearly always missed the islands. On August 4, however, news came that the second storm, Iselle, had strengthened to a Category 4 Hurricane, and was projected to make landfall off the southeast coast of Hawai‘i Island in the course of several days. It would be the most severe hurricane to hit Hawai‘i since August 15, 1950, and was compared to Hurricane Iwa, a Category 1 that hit Kaua‘i, Ni‘ihau, and O‘ahu in 1982, and Hurricane ‘Iniki, a Category 4 that devastated the island of Kaua‘i in 1992. The latter was considered the deadliest and costliest hurricane to ever hit the islands in recorded weather center history (NHC NOAA 2007); ‘Iniki left the island without electricity for four months following, and caused an estimate \$3 billion in damage (Thompson 2014). Over the next few days the direct hit to southeast Hawai‘i became an inevitability. People gathered supplies and tied down things in the yard, boarded plywood over windows and moved cars to high ground, away from the sea. Schools and stores shut down; emergency shelters opened. Radio station music became an occasional disturbance between news and Civil Defense updates. Landfall was projected to be on August 7, 2014; Iselle would come, full strength, by noon.

The morning of August 7<sup>th</sup> I woke. Walked outside. The earth was still. There were no birds, per usual, chattering about in the papaya fields or tapping morse code on the electric wires.

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<sup>66</sup> Michael Stone, “Transforming Blame, Cultivating Gratitude,” audio, (Kelowna, BC, April 24, 2016).

The wind was quiet. The air, heavy and moist. I ran up to the high point in town, from which I could see the ocean. It looked perfectly calm.

My landlords called and asked if I wanted to come over to their home, to keep company. My friend called, to tell me I was welcome at their home if I needed companionship or beer. My Uncle called, insisting that I come to spend the storm with the family. I gathered water in every pot in the house, packed a small bag, and walked over. There was no saying no to the family. By noon there was still no sign of the pick-up of winds that accompany hurricanes. Everything remained still. We drank beer and ate warmed dried fish and watched the 9-inch television in the kitchen for updates. The cold beer, the warmed fish, the television—each felt provisional; they were luxuries that would soon be unattainable, when the electricity went out. No matter what happened, it was certain this would happen: we would no longer have power.

Hour after hour nothing changed. We exhausted ourselves in expectation. Around 5, my Aunty cooked a hot dinner and we ate, enjoying the warmth of it. At 7, in the dusk, the winds began whipping; it knocked the blinds off my Uncle's sea-facing windows, which crashed onto the kitchen table. The lights flickered. My aunty instructed us into the living room. As the dusk deepened, the lights went out. My uncle flipped on his fishing lantern and the battery radio and we listened to hurricane reports into the deepening night. Around 7:30, a Civil Defense notice reported uncontrolled release of H<sub>2</sub>S at the Puna geothermal plant and urged evacuation for anyone feeling ill. I took notes. Hours passed. My family and I stayed up talking, drinking, listening to the gusts, the trees, and the radio, until, at some point, with branches whipping against the side of my uncle's home, I fell asleep.

The storm technically made landfall at 2:30 am on the morning of August 8<sup>th</sup>. While upper Puna had not sustained major damage, in lower Puna the sea had surged onto the shore,

and there remained. Rooftops floated in water, homes had been washed through with sea. Boulders from the sea bottom now perched in yards in a surreal reinvention of lower Puna topography. Further upland, people were trapped in their homes by fallen albezia trees that once canopied the roads, as well as by live power lines that lay quietly in deep roadside puddles. Early City and County and news media reports missed all of this, initially—lower Puna, in other words, was off the map.

For days, the roads of lower Puna were impassable, and life seemed on pause. For residents of Pohoiki, Lani Puna, and Leilani Estates—three largely White communities that bordered the geothermal plant—life felt different. During the storm, people had experienced loss of consciousness, difficulty breathing, strange mucus discharge, skin rashes, headaches, and nausea. They described their experience as feeling close to death, feeling the collapse of their bodies. One man recounted,

From within 5 minutes of smelling the sulfur smell we started getting a low-pressure type headache, and scratchiness in the throat and heaviness in the chest. Then I saw on Facebook a notification from the Mayor, if you are feeling ill-effects you should evacuate. So we wrapped up the other couple people in the house, grabbed the dog and cat, and tried to flee, only to find that the roads were blocked [with fallen albezia]. We ran into the Fire Department and they were blocked into the lower part of Leilani as well. We tried to go a couple of different ways and ran into the Fire Department again, and at that time, I told them, “Listen, what do we do? I’m feeling effects, what do we do?”

[Begins crying.] Yeah I’m emotional. I’m remembering back to the night because I’m trying to take care of the other people in the house, you know the old lady in the house, she isn’t on the chart, she was panicked... [the Fire Department] said you have to go back and close the windows and the doors and that’s it, there’s nothing else for you to do. So we head back, basically a mile back toward the plant.

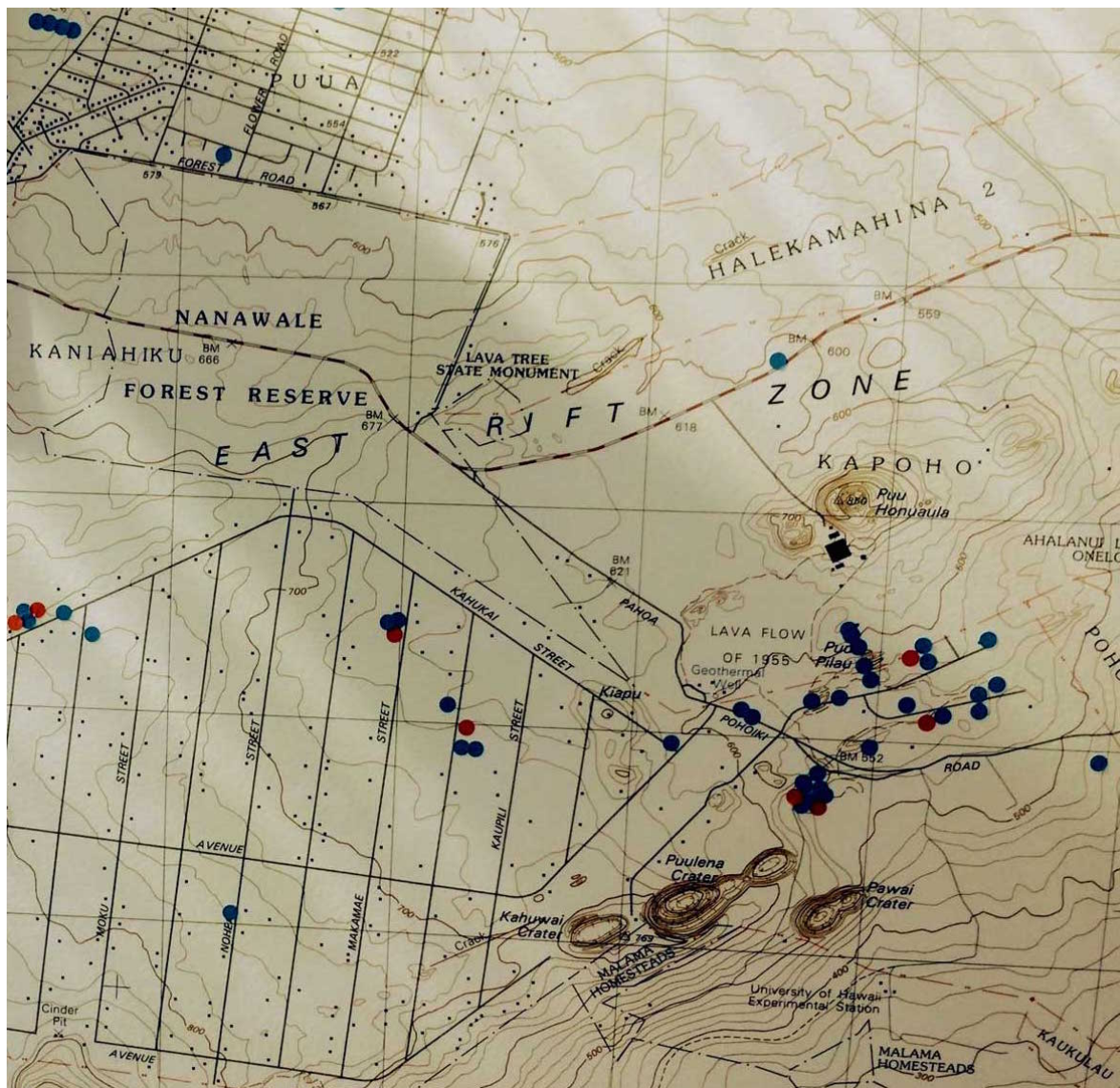
Immediately upon getting home, we close the windows, I’m running around trying to get everybody settled down, the old lady is saying *M, what are we going to do?* I’m saying *Well we just gotta bear down, that’s all we can do.* I really feel bad about that... Immediately we started to put our bed, some blankets down in the closet, a walk-in closet, so that we could be further away from the windows, and as I put the bed together it wasn’t within three minutes, or even a minute, and I was out, and I was out for twelve hours. My partner tried to wake me during the night, she couldn’t wake me. She tried to

shake me, I'm usually a light sleeper, she tried to shine a flashlight in my eyes, she said...I looked dead...

Another resident said,

I heard the loud noise from the geothermal coming up, like a jet, I heard two sounds, actually. And I stayed on my couch, I got really tired, I basically walked really fast into my bed, I lay down and I just passed out. It was about nine [pm] the last time I looked at the clock. And I woke up at five o'clock in the morning, I missed the storm...I wake up and I have really extreme heartburn...scratchy throat...my stomach, my colon, was like bubbling...I go down to the window because I have to spit out, I think maybe I can throw up acid or something, and so when I stood in front of the window my whole lips were numb, my whole body was tingling, I really couldn't breathe anymore and I felt really dizzy...I felt like I was coming in and coming out [of consciousness]...I was at the doctor and they were supposed to do a test testing for [hydrogen] sulfide, and they couldn't do it, they told me they were going to call me back.

These symptoms did not disappear; nausea, stomachaches, extreme lethargy, and difficulty breathing persisted across the community for weeks. Deducing that patterns of sickness were related to the H<sub>2</sub>S release at the plant the night before, people in the community—many of them retired professionals who had moved to Puna either as a return to the land or as flight from the continent—assembled their investigative and organizational skills to uncover the truth of what had happened at the geothermal plant that night.



Map, reported health impacts following geothermal release Aug 7, 2014.<sup>67</sup>

H<sub>2</sub>S is a colorless gas that is absorbed readily through the lungs. At low concentrations, H<sub>2</sub>S has the rotten-egg smell of sulfur, but at higher concentrations, olfactory fatigue, which occurs in as little as 2 minutes in concentrations over 100 ppm, makes the substance undetectable. It is slightly heavier than air, and thus sinks and accumulates in low-lying areas.

<sup>67</sup> Red dot indicates report of severe lethargy/loss of consciousness. Blue dot indicates lesser symptoms such as difficulty breathing, nausea, headache, and eye, stomach, and other irritations. Map by Puna Pono Alliance, September 2014.

Prolonged, low-level exposure can result in dermatitis and burning eyes, low blood pressure, headache and nausea, mucous membrane irritation, and spontaneous abortion; short-term, high-concentration exposure can cause skin and mucus membrane irritation, respiratory arrest, pulmonary effects, and most prominently, central nervous system dysfunction that leads to loss of consciousness, coma, respiratory paralysis, seizure, and death (ASTDR 2016). H<sub>2</sub>S is a component of geothermal steam, and has been a known toxin produced by plant and field operations since at least the 1970s; numerous technologies have been produced to mitigate release specifically surrounding geothermal development (*see* Joyce 1980).

Because of the dangers of H<sub>2</sub>S in prolonged exposure and high concentrations during well drilling, well venting, and “steam stacking”—venting steam during power plant shutdowns and outages—monitoring emissions is a chief concern of geothermal development operations, and research into technologies for H<sub>2</sub>S abatement are extensive. Puna Geothermal Venture, which sits in a residential area, has maintains four small, non-industrial fence-line monitors, which are often reported as non-operational. As community outcry over health concerns of geothermal, and geothermal operations generally, were raised following Iselle, the plant declared that all four had been out of commission due to the storm.

### *Denial*

All of this was part of a longer history between the geothermal plant and the Puna community. From inception of the plant, events had alarmed residents about the safety of operations, and the potential of the state to care for them over and above their concern for industry. In 1991, a series of blowouts had occurred with the drilling of production wells, in



which spaces of extraordinarily high temperatures and pressures had been found closer to the surface than expected (Thomas et al. 1991). Of the blowout, a summary article writes,

At 11:16 p.m. [on June 12, 1991], all hell broke loose. The drill had punched through to a fracture in the Earth containing hot (633 degrees Fahrenheit) geothermal fluids under extremely high pressure (up to 1,950 pounds per square inch). The well “kicked” as the fluids shot up the bore hole to the Earth’s surface. Residents in the surrounding area were jarred awake by the unmuffled roar caused by the steam shooting out the well – a sound likened to what one hears standing at the end of a runway when a jet taking off. Concentrations of hydrogen sulfide (the acrid smell of rotten eggs, noticeable by humans when it is in concentrations as low as 3 parts per billion) rose into the parts-per-million range in some areas.

Well KS-8 continued its venting for the next 31 hours. For the next four months, the underground blow-out resisted control. It was not successfully plugged until September, when PGV announced that the well had been “killed.” (“At Puna Geothermal Venture,” 1992)

The blowout caused the county to suspend PGV’s permits; yet in February of 1992, the newly minted Civil Defense Director Lorraine Inouye allowed PGV to resume drilling, which led to the KS-8 well “kicking,” at a reported 92 decibels<sup>68</sup> at the plant boundaries (*ibid.*). When a Third Circuit Court judge subsequently banned drilling at PGV, PGV ran a flow test to try to clear out an existing well to ramp up production, releasing H<sub>2</sub>S into the air at a measured 80 ppb. Plant claims indicate that H<sub>2</sub>S emission was neutralized with caustic soda, despite independent measurements in the community which indicate high concentrations of H<sub>2</sub>S leaked into the community. On November 1, 1992, lightning struck PGV’s transmission line, causing steam pressure to build in the pipes and pushing the metal well head—cemented to lava rock and to deeper well casings—up from the earth a total of 28 inches. Of this event, the sailor recalls,

I was looking right at it. It was about nine o’clock at night and we had had some friends over for dinner. And my house, the outer walls are all glass. And I was sitting on the chair and my friends were sitting on the couch, and the well was [viewable] between them. And I thought I was going to eat the glass. 4x8 shield glass just bowed in...and you got the 150 decibel screech.

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<sup>68</sup> In studies of industrial noise, 90 decibels has been described as a pneumatic drill at 10 feet (Sabine 1943), or a “heavy lorry about 7 m away” (Godlee 1992:111).

In the end they had to park two D-9 bulldozers over the wellhead to keep it from coming out of the ground. The whole well-casing. That's a concrete structure, the cellar.

I looked at it with binoculars. The blowout preventer was 3/8 steel plate and about twice the size of this table. The gate intended to be slammed shut lay about 100 yards away, just crumpled.

DLNR denied PGV's option to drill again, and forced the plant to shut down the well. As typical in the "retirement" of production wells, operators plugged KS-8 with cement down to 3,700 feet. Concerns were then raised by state engineers, who argued that in "stop[ping] your ability to measure what's going on in the well...you don't know if anything is moving behind the casing." Eventually, state engineers believed, high-pressure fluids would push up around the casing and cause large-scale contamination of groundwater that runs through the Kīleaua East Rift Zone. These were afterthoughts.

Through all of these events and for decades following, Hawai'i Country denied and then delayed funding for a comprehensive health study of geothermal effects in the community. Subsequent drilling and expansion projects at the plant were given a blanket allowance by the state land regulatory agency (DLNR), without so much as efforts at studies of environmental or cultural impact. By 2015, a bill was introduced that would preempt County regulation of geothermal activity, giving full control to Honolulu-based geothermal experts; their focus was to provide broad opportunity for geothermal energy development in order to help the state meet its 100% renewable energy goals by 2030.

This history meant that, on the night of the hurricane when Civil Defense alerted residents near the geothermal plant that an uncontrolled H<sub>2</sub>S release had occurred, the event seemed both implausible and routine. Implausible, that the plant would have made decisions to remain online despite meteorology reports, city and county urgings, and civil defense warnings,

that the eye of the hurricane would make certain landfall at lower Puna on August 7—coupled with the knowledge, at least throughout the communities of Hilo and Puna, that HELCO-grid electricity would, at some point, fail. On the decision, the ex-mayor, Harry Kim, questioned why decisions to remain online were being made by companies—HELCO, PGV—instead of the state, during a state-declared emergency. A retired naval submarine commander, who had recently settled in Puna, remained stunned that the plant would have been in operation at all, given the trajectory of the storm. He commented,

The point that has me really very, very emotional over this, the major point, is that that plant should've been shut down before Tropical Storm Iselle arrived. And the fact that the plant was operating at relatively high power when a hurricane came, when it was known that if there were transmission line failures it would result in a release to the community, when it was known that the community would be trapped in their homes due to trees, I find it incomprehensible that a group of public decision makers could make such a decision.

As unbelievable as the events seemed, all of this was also routine: because the company had never, in its history of operation, treated the communities in Puna as if they mattered. An instance of killing would be made to appear incidental—the inevitability of a body, in a life.

In the instance of Iselle, PGV, the State Department of Health (DOH), Civil Defense, and HELCO shared the same story, and kept quiet in the face of alternatives: no harm had occurred as far as they could tell; their operations were not to blame for any sickness in the community. PGV released the official statement that the emergency systems at the plant had worked exactly as intended: steam was released and the plant, itself, was saved. Their H<sub>2</sub>S monitors bore no readings, as the storm had put them out of commission, but their calculations indicated that there was probably no more than 25ppb of H<sub>2</sub>S—well below the danger zone of OSHA standards—through the “uncontrolled event.” They also reported that their workers, who were inside the boundaries of the plant, were all fine—alluding to the idea that proximity to the plant meant

increased hazard—but leaving out the fact that winds could have carried gas away from the plant to lower ground, and avoiding statement until directly asked, that every one of their workers had a full face-piece air respirator and a self-contained air supply. The DOH rendered that, “given that the concentration is very low, and given the assumption that winds were very high during this period of time, one would not expect any adverse health effects to have been caused by the release as we understand it.” Here, the assumption was made that winds would have dissipated concentrated pockets of H<sub>2</sub>S, despite the known fact that H<sub>2</sub>S was molecularly heavier than air. HELCO claimed that they had asked PGV to stay online to provide electricity to their customers for as long as possible, as electricity during emergencies was key for safety of the community. They also made sure to state that hurricanes were unpredictable till the end: “the storm could have veered north.” Civil Defense, of course, had done its job. It had announced the release and had not pursued action after PGV reported the release contained.

So many “facts” were refuted by the community, who had gathered their own information through the length of the storm. The 25ppb might have also been 1ppm, as reported to the Puna public by the fire department that night. Storm winds may have been recorded at up to 90 mph, but, as one woman stated, “my hapu‘u were barely moving”—indicating that, at the height of humans, air was barely moving. H<sub>2</sub>S would have settled in pockets around and below average human height. And, importantly, people were sick, in myriad manifestations of conditions related to H<sub>2</sub>S poisoning. The kicker, of course, was that laboratory reports for anyone who was tested for H<sub>2</sub>S poisoning by the local hospital or local doctors were mysteriously lost. The hospital indicated that the blood had been sent to the labs but not received; the labs indicated that they had never received the blood. After the hospital produced documentation of receipt by the labs, both together settled on the story that the vials had indeed been obtained by the labs, and had

been sent back to the hospital but must have never been received. Vital records for these same patients had also gone missing. There was all kinds of evidence, but no legally submittable concrete evidence, that would link the poisoning of the residents of Pohoiki, Lani Puna, and Leilani Estates to the uncontrolled emergency release of H<sub>2</sub>S from PGV.

### *Circular*

In general, record of the expanse and rapidity of temperature increases on land and in atmosphere and sea has led to consensus by international scientists and government bodies that warming of the climate is happening at a faster rate than would be expected by any record of earth-driven climate change variability (Karl and Trenberth 2003; Field and Barros 2014). As climate change itself has been traced to overwhelming accretions of greenhouse gases, including carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), and methane (CH<sub>4</sub>), and emissions of these gases have been traced to human activities such as consumption of fossil fuels for energy and transport, reduction of carbon sinks, such as forests, and off-gassing from large-scale agriculture, humans are heavily implicated in the change (Karl and Trenberth 2003; Solomon et al. 2009).

Studies of climate warming in relation to ocean health indicate that the ecological effects of generally warmer sea surface temperatures are significant, vast, and rapid, affecting resource availability and species survival in the oceans (*cf.* Hoegh-Guldberg and Bruno 2010; Stachowicz 2002; Domingues et al. 2008). In the Pacific, a recent site of research interest is the correlation between climate change and the increase in the number, duration, and intensity of tropical cyclones (Webster et al. 2005; Emanuel 2005). While the causal relation between climate change and increase in hurricanes remains up for debate,<sup>69</sup> one trend is that the number of category 4 and

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<sup>69</sup> This is in large part due to the fact that storm-tracking satellite data is only available beginning in the 1970s. Climatologists thus hesitate to make claims about longer-term trends.

5 hurricanes—the strongest hurricanes—have doubled between 1970 and 2004 (Webster et al. 2005). These trends are not spatially heterogeneous, occurring most significantly in the Pacific region (Walther et al. 2002), and have uneven political, economic, and social consequences, with economically poorer countries, communities, and individuals facing the greatest vulnerability (Mendelsohn et al. 2006; Stern 2006; Casillas and Kammen 2010).

Iselle was, for some, an indication of a shift in climate driven largely by human activity—in particular, the extraction and combustion of fossil fuels, and good reason for the transfer from human reliance on carbon resources to alternative, non-carbon resources, including geothermal energy. Discourses on the anthropogenic causes and solutions to climate change, and the urgency of change before irreversible and accelerated warming takes place, means that some communities have borne and continue to bear the weight of energy (and other environmental conservation) developments in their communities, ostensibly in order to maintain the suitability of the planet for the continuance and/or flourishing of whatever, at the time, is considered worthy of life. Intersections of race and class with environmental degradation means this bearing continues to be experienced unevenly by different communities; too often, those who have borne the weight of carbon industrialization now face the effects of it, and are called to make changes to the use and conception of “resource” and “responsibility” because of it.

What merits repeating here is that discourses seemingly saturated with beneficence toward nonhuman Nature(s) maintain and reinforce late liberal power through the management of social difference. People are called to approach the world through epistemological leanings of Science, Reason, and liberal economics. Nature is knowable as a single truth; capital market allows for incessant growth; sustainable social relations with nature support market growth and science. Biodiversity projections thus trump indigenous social (and aesthetic, poetic, moral)

relations with Nature (*see* West 2007); use and non-use of natural resources are governed by the late liberal settler state in favor of scientific knowing and market; the rank and abandonment of forms of life that stand in the way of late liberal formations push indigenous, non-scientific, non-capital instances of existence to margins, to be killed, or let to die. Again, these are but extensions of the divisions of nature and culture—where people and natures are not co-creative naturecultures but where nature is a comprehensible, recordable, knowable, manageable Other—and the biontologic bias that ranks overt forms of “life” over geontological “nonlife,” and values forms in order to, and because they themselves, subtend late liberal power.

What is so curious and ironic about the instance in Puna is that residents experiencing abandonment by the State had not always held it as an acute possibility, not least via the ethics of sustainability. To many, the geothermal company represented an instance of a mismanaged business that needed to be redressed by environmental law, rather than an instance of late liberalism, managing difference by exterminating life; in turn, many agreed that a “diversified” energy portfolio was ultimately more noble and sound than a singular, specialized one, and that geothermal energy in Hawai‘i was sensible—just not the way it was being done.

The absence of mention of Hawaiian and geontological stances from discussions on geothermal, however, were notable. Anyone involved in geothermal opposition in Hawai‘i would eventually know something about history of geothermal protest in Puna since the 1970s, and the enormous energy that coalesced around 1980s geothermal drilling in Wao Kele O Puna, an area which served as a cultural kīpuka for Puna kama‘āina, an area where “the sharing or exchange of food, preparation of traditional Hawaiian foods, singing of traditional songs and the use of traditional herbs and medicines,” and pervading ideologies of “Aloha, love of the land (aloha ‘āina), ohana (family), and respect for Kupunas” (Puna Hui Ohana 1982:70) prevailed. During

these battles, Kanaka Maoli gathering rights, cultural connections to place, and ties to Pele through religion and genealogy were used to underscore environmentalist claims to saving the Earth's rainforests. However, outside of the forest, claims about the detrimental effects of the company on "community" health did not address, or offer redress, for extensions of what might be thought of as "the community." Pele, here, was forgotten; danger to the extinction of heat at particular sites not addressed as potential death, with reverberations that would lead Kanaka Maoli into a different and total exile (*see* Kanahele 2006). Instead, the Haole Puna community held that resources were meant to sustain human needs and human desires.

The absence of mention of Hawaiians as part of the Puna community illuminated how sustainability and "back to the land" ethics figured the 'āina of Puna. . The seizure and appropriation of Indigenous lands and practices were glossed by decolonial, land-based movements, in which self-sustenance, sustainability, and affinity to Nature are imagined as inevitably counter-cultural. But, as Scott Morgensen (2011) writes,

Settler radicals desperately need to investigate this truth [that decolonization does not occur simply through the emulation of Indigenous affinities to Nature]. It is relevant in particular to those for whom anarchism links them to communalism and counterculturism, such as in rural communes, permaculture, squatting, hoboing, foraging, and neo-pagan, earth-based, and New Age spirituality.... Their participants have imagined that they act anti-colonially by "appreciating" Indigenous culture or pursuing what they imagine to be Indigenous ways of life. But using these methods to try to be intimate with Indigenous land and culture expresses settler desires without necessarily contradicting them.

Morgensen calls up the ways that particular groups of settlers imagine themselves distanced from the colonial project through their politics, especially with Nature, and that, through "oneness" or closeness with Nature and practices of nature-based spirituality, imagine themselves more closely connected not only to land but to Indigenous people and Indigenous ways of life. Yet in failing to question how their own desires to own and connect to land prevent return of land to



Indigenous people, settlers' own needs and desires end up ranking of higher importance than the needs of the people they "appreciate" and with whom they find affinity; they become "part of the normative function of conquest and settlement." In this way they actively (re)colonize: they emplace their desires on indigenous land (*see Memmi in Morgensen 2011*).

Wholesale emulation was not across the board; indigenous life was not always understood as such. This was described as "tremendous friction between different socio-economic groups": a clash between values embedded in the Hawaiian homesteading lifestyle—"with large extended families, chickens, dogs, and often unpermitted structures"—and "the values of newcomers, who want[ed] privacy, rising land values, and mainland standards of service" (Ellis 2015). Even on The Frontier, settlers desired county services "like grocery stores, waterlines, schools, clinics, [and] home mail delivery service" (*ibid.*), and considered its absence a withholding. In short, in and through the settling, firm ideas of what functional community, and state support, and indigenous life should and could look like guided visions of place and instantiations of power.

The point here, however, is not only to draw attention to harms that emerge from settler colonialism through a particular group of settlers, but rather to see how these acts can be viewed as a function of late liberalism, as an embodiment of ideals that govern difference through "making live, making die, and letting die" (Povinelli 2011:29). And difference, here, was not merely a matter of race, or class; it was a matter of land: the ways people saw it, and themselves in relation to it. Acts of conquest, then, were also matters of productions of space, produced and circulated by visitors and settlers coming upon the lands from the 19<sup>th</sup> century. Renderings of Puna made lands as treacherous, wild, and lawless, with thick jungle, rocky, sharp earth, deep earth cracks, and little by way of civil authority (*see Cooper and Daws 1990:263*). The lack of

transportation infrastructure, lack of grid electricity and County water, and lack of district medical and emergency facilities, served as a counterpoint to industrialized, governed, market-centric life—and made appearance in settlers’ lives simultaneously as the hard confrontation with inhospitable nature, and as the beautiful potential for personal redemption and life. These barren, desolate, and bewildering wilds were thus understood as a Frontier: a space at the margins of civilization, where people came face to face with their own moral confusions,<sup>70</sup> desires, and the possibility, in the very Otherness of unclaimed Nature, of redemption (*see* Cronon 1996). Too, then, productions of Puna and proclaimed affinities for Nature by the haole Puna community are not separate from the divide of Nature and Culture, which cultivated, in the presentation of an irreducibly and profoundly nonhuman Other, the solution to capitalist use of lands and resources: returning to an imagined primitivity; coming “back to the land.”

It is important, too, that these stories about the dearth of frontierlands could persist, in the midst of—or perhaps over and above—Kanaka Maoli existence, and visions of the Pele and the Kāne of the same lands. Hawaiians in Puna considered the area rich with resource and “highly productive of things necessary for the practice of traditional Hawaiian culture” (Puna Hui Ohana 1982:74); it remained a landscape supportive of thriving Hawaiian life even through widespread decimation of the Hawaiian population, missionization and land tenure shifts (Kame‘eleihiwa 1992), annexation, immigration, and economic integration with the U.S., and extensive post-statehood development (McGregor 2007). In other words, it was not seen as a subdivided lava field with “no irrigation, no roads, no essential utilities, no beaches, no buildings” (Porter *in* Cooper and Daws 1990:266). The lands were inhabited, and abundant in ways that provided for all.

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<sup>70</sup> Cronon specifically cites passages in Exodus, Mark, Matthew, and Luke in the King James version of the bible, where wilderness is seen as punishment, exile, temptation,

From kama‘āina perspective, the influx of U.S.-born, continental, White settlers into Puna represented *the* enormous shift in continuum of life in the area. In 1958, two men from Colorado had purchased 12,000 acres in Puna, and subdivided the acreage in to 3-acre lots, selling each for \$500-\$1000 each (Cooper and Daws 1990:259). The developments offered little to no site improvement; electricity, roads, and water were neither provided nor planned for. Some of the subdivisions sat atop Kilauea’s east rift zone and were covered by lava within a decade; some “beachfront” properties were underwater at high tide. Legislators looked the other way, approving developments without regulation because many had business or personal ties to developments, and stood to profit economically or politically from them (*ibid.*: 266). The County, too, earned monies through property taxes that went to support development in the County center at Hilo.

The subdivisions were problematic, in that they created sparsely populated areas with scarce infrastructure in a zone that was below the rift zone of a highly active volcano. However, through widespread print advertisements in U.S. mainland papers, speculators heightened attention to beautiful, cheap land in Hawai‘i during the postwar economic boom, drawing U.S. mainland haoles to the area (Cooper and Daws 1990:260). From 1970 to 1980 the haole population quadrupled, and then doubled every decade following. This meant that from 1970 to 2000, the haole population went from 1,237 to 22,010, coming to significantly outnumber the combined populations of every other ethnic group in the area (*ibid.*)

In Pāhoa,<sup>71</sup> this meant that there were higher numbers of haoles (37% vs. 24%) and Hawaiians (11% vs 7%), as well as part-Hawaiians (33% vs. 20%), than any other area in the state (COTF 2003). There were also far fewer Asians (16% vs. 42%) than across the state (*ibid.*). The effects of the influx were felt strongly. One Puna-born Kanaka Maoli said,

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<sup>71</sup> This includes Kapoho, Kau‘eleau, Kehena, Kaimū, Puna, and Kalapana (COTF 2003).

When new people came in, some were hippies, some were regular haoles. They learned how to subsist because we taught them how. That's the aloha spirit. We gave to them because we were taught to. We respected them, but they didn't respect us. They used and abused us. The same thing happened with hunting. People came in and shot the pig and left it. It hurt us very much because that is our food. (Matsuoka et al. 1997:112).

This was not beyond kama'āina of the area, who saw White Puna settlers as

loud and obnoxious and full of their own ideas, and [they] don't want to listen to you, and...these people from somewhere else, they brought all the baggage with them and they just can't figure out how to live in Hawai'i. They're all armed, packed for the apocalypse...

Relations were not reciprocal; convictions not equally heard. To kama'āina it became clear that incoming settlers had strong ideas about their own beliefs and the accuracy of them, as well as the dangers—and solutions to dangers—they faced in “The Wild West.” Through decades, direct confrontation of “Punatics,” as they were called and called themselves, was not common; more than once it was explained to me that no one wanted to make trouble. One man explained, “The Hawaiian way is humility. We all in one canoe. You start a big fight, everybody gotta get involved because you in a canoe. You don't start trouble, because trouble going follow you around.”

But once in a while, the articulation of what was actually occurring in the community with environmentalist settler radicals did occur. In a geothermal opposition meeting in 2013, where a large number of self-proclaimed Punatics and radical settlers gathered, a Hawaiian man who had been involved in geothermal opposition from the 1980s was given the stage to explain the history of geothermal in Puna. Instead of starting in on the history at Wao Kele O Puna, which everyone expected, he said:

How many people who live in Hawai'i understand the history of Hawai'i?...Now as a Hawaiian I'm saying, I don't have much voice in the community anymore. I don't have much voice in government anymore. The census show us at number four on population equal to Filipinos. As a Hawaiian in my home my voice is nothing. It don't mean nothing no more. And as everybody knows historically we are, it has been, the statistics show,

that we are being eliminated from these islands by race. We are the fastest dying population in the state. We are the most incarcerated in the prisons today.

...[You] like the music. [You] like the food. But [you] don't like the people, hah? Environmentalists? We got lot of 'em, huggin' trees. Do they hug people? Why? We don't count? You so busy saving all the rest of the natural things in Hawai'i but you don't save the people, you don't care about the people, you can exist in Hawai'i without Hawaiians. We came with this environment. It wasn't empty when you got here.<sup>72</sup>

For so many of these settlers, their affinities for Nature and rejection of industrialization aligned them with “Native” aims, or at least environmental ones, and absolved them from investigation into how differences between these aims allowed making and management of difference to provision the biopolitical objectives to make live, let die, and make die.

All this to say that the absence of Puna Kanaka Maoli in geothermal conversations elucidated the settler-colonial politics of erasure of indigenous life in Puna; it was not mere mistake or oversight of Kanaka Maoli presence, nor ignorance of their relationship to land or Pele, that allowed elision of Hawaiian ties to the geothermal force to remain in conversation on the problematic nature of geothermal energy development in Hawai'i. It was a layer of late liberal existence, where apathy to the differential suffering of others failed to fit reason, and where geontological perspectives were, for the most part, caught in cultural religious beliefs about Nature. What Hurricane Iselle threw into relief for White Puna settlers was a consequence of the biopolitical, biontological leanings of late liberal life: it cost everyone something. It could kill, or let die, in myriad ways.

#### All Together

*[My mom], she already told,  
she said, you folks going build this [geothermal plant]?  
The lava going come and take everything,  
and we all going suffer.*

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<sup>72</sup> see BIVN 2013.

*Not just you. The whole entire community  
going suffer. She would go to the meetings and say this.  
And sure enough, when the lava flow came  
it covered the geothermal plant.*

In 2014, decisions were made between the electric utility, a private geothermal interest, and the County government to keep the geothermal plant online, despite all evidence that a hurricane would make landfall near or at the area of the plant and place the Puna community, as well as the geothermal plant employees, at risk for death. Then, in blatant complicity, the County, the utility, and the geothermal plant went on to deny all wrongdoing, justifying their decision by asserting concern over safety of a larger “community,” randomly estimating H2S emission measurements, erasing medical records, and avowing that everything had gone as planned.

In the conditions of Hawai‘i, longer histories of immigration and plantation labor fed race-based divisions in which Haoles had assumed power. What made the gloss over Puna health hazards by the state possible, at least in part, was that areas of lower Puna complaining of H2S poisoning were largely White, settler communities—distanced from the ‘local’ concern through productions of difference: new age spirituality, drug use, litigiousness, *waha*.<sup>73</sup> There was a lingering antagonism born from the belief that the young and old hippies came with conceit of knowing more and knowing better about what ways of life were good for the body and the planet. They had taken what they found most beautiful: hot steam baths, cold, clear, freshwater pools along the sea, claims to knowing Pele, and “life” in Puna. Capitalizing on these tacit undercurrents, the state, county, and geothermal plant officials made arguments riddled with

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<sup>73</sup> literally, “mouth”; used in reference to one who talks too much, who is “all talk,” who “does himself what he has condemned others for doing” (Pukui-Elbert 1986).

holes, shrugged, and left. What made abandonment achievable was that others agreed to not care, to look the other way.

In the same breath, however, the hippies and spiritual seekers, eco-activists and off-gridders, homesteaders and marijuana farmers<sup>74</sup> who had arrived with a strong sense of human relationships to Nature and delight at the opportunity to purchase land “away from it all,” had allowed their environmentalist leanings to rank indigenous ways of life as ancillary to the objectives of biodiversity and sustainability. In the lack of acknowledgement of Hawaiian concerns from community health risks under geothermal energy development, in the lack of acknowledgement that renderings of land and people complicated settlers’ own entitlement to place, the incommensurability of belief was made grounds for Native elimination—or at least, tenured moralities that made elimination acceptable.

What is apparent, here, is not only the levels of suffering offered by late liberal governance, not only the failure of people, pitted against one another. It is the human embodiment of the logic of late liberal governance, where difference becomes a measure by which one or another thing can be reasoned as worthy of life, or worthy of death, or not worthy of either, in arbitrary but not unconditional decisions by those in power. Who is in power seemingly shifts, but if and as multicultural liberal settler logic remains the same, some forms and ways of life will always be understood as more valuable than others; the existence of all things, together, will be placed at risk: not even capital growth can sustain itself without planetary resource. And, to tack back, these philosophies and embodiments of late liberalism are deep—they are emplaced in relationships with human and nonhuman others, in our affinities and

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<sup>74</sup>At its height in the early 80s, Marijuana and ice (methamphetamine) exceeded tourism and agriculture as the largest industry in Hawai‘i, grossing over half a billion dollars (Newsweek 1982; Hawaii Business News 1982 *in* Cooper and Daws 1990:276). Much of the crop came from Puna.

usual attentions to the biological, over geologic, atmospheric. What serves as redress, here? Are ideas of sustainability at the heart of a long reach down the wrong path?



## Chapter 4: MAU A MAU<sup>75</sup>

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*In the 1986 Contested Case Hearing  
for geothermal development in Kahauale‘a, Kilauea's East Rift Zone,  
the lawyer asked Aunty Pua Kanakaole Kanahele:  
"Is it your belief if this project proceeds, that Pele might destroy it?"  
"Well, it will go both ways," she answered.  
"Either she will destroy it or it will destroy her."*

The concept of ‘sustainability’ suggests something “good” on first hearing: the maintenance of resource, the reduction of carbon emission, the preservation of Nature, the ability to live “with” the earth. And yet, as shown through this dissertation, rubrics of sustainability have meant, in each instance, the sustenance of market, colonial inheritance and renewability, and the manufacture of narratives that erase forms of existence as convenient to self-sustenance and flourishing. Examinations of ‘sustainability’ in each instance thus reveal the pliability of material Natures in the face of human desire, and the structure of late liberal biases as suspended in love with the biontological—those forms, at least, which reflect, or are figured to save, the living human self.

The concept of Sustainability thus holds up and is held up by late liberalisms, which foster division and extinguishment upon the identification of a kind of difference that threatens or impedes late liberal and capital market. These threats and impediments to the suave and alluring forms of market and self-expansion have emerged, in this dissertation, as forms of indigenous life—Kanaka Maoli, Pele, and Kānekawaiola: earthen heat, waters of life, and people, who continue to see and fight for the forms as elements worthy of existence, outside of and alongside human life.

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<sup>75</sup> “Mau” is defined as “always, steady, constant, ever, unceasing...to continue, endure, last” (Pukui & Elbert 1986). “Mau a mau” has been defined as “continuum” (Kanaka‘ole Kanahele and Kanahele 2012).

In this final chapter, I want to tease out the differences between ideas about the continuum of existence (mau a mau) versus the sustaining of biological life. I do this not to compare and rank epistemological approaches or to commemorate the “noble savage” through grades of “traditional indigenous knowledge,” but rather to gather insight into an Otherwise, an embodiment of thinking and living not caught in and detained by the conviction that investment into late liberalism and capital market will, one, save the best and biggest of us, and two, succeed in manufacturing an earth—or an escape to another planet—upon which continuous expansion and repugnance at difference that does not serve one’s own desires is still possible. In the shifting patterns of the pocketed earth and the carbon atmosphere, in and through and with the ‘āina of Pele, is an opening: is movement, into somewhere else.

Ke Ea

*If we stop dancing and participating  
in the forest in terms of our exchange with vegetation,  
if that dies, or if we’re not allowed to do that,  
then we die.  
People say our tradition dies,  
but that’s not the truth of it.  
The truth of it is that we go into total spiritual exile.<sup>76</sup>*

The Pele traditions form the basis form some of the strongest cultural and religious traditions in Hawai‘i, not least because Pele is a form that is still readily visible and thus continues to bear relation to the people of Hawai‘i (Kanaka‘ole Kanahahele 2011). Pele’s eruptive force contributes to the formation and growth of Hawai‘i Island and the archipelago, sustaining the claim that Pele maintains the life of the islands in material ways, at least. There are also ways that stories of her journeys from Kahiki to Hawai‘i, her challenges and battles, and her intense

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<sup>76</sup> Kekuhi Kanahahele Frias, “Face of America: Hawai‘i,” Video, Published July 13, 2006, 3 minutes 18 seconds.

love affairs continue to serve as a force around which Hawaiian life is maintained. This is viewed in readily accessible ways in examination of Kanaka Maoli art and scholarship practices (*cf.* Trask 1994; Silva 2007; McDougall 2008, 2011; ho‘omanawanui 2014), and prominently through the hula tradition, “the sinew by which Hawaiian culture has survived” (Kanaka‘ole Kanahele and Kanaka‘ole n.d.). As hula has been central to religious and cultural practice related to Pele, Pele—and her youngest and most beloved sister Hi‘iaka—have been central to it.

During early contests against geothermal development in Hawai‘i, arguments about the connection of the use of Pele for commercial resource to the extinguishment of Kanaka Maoli life emerged. Extraction of resource was told as the rape and sacrilege of Pele, the severance of social and genealogical ties, the unevenness of religious freedom in America, and the violation of native gathering rights through privatization of State conservation lands and subsequent restriction of resource collection—foods and medicine—on those lands. In a general sense, this was colonial and settler colonial continuance: the expulsion and extinguishment of indigenous people through degradation of earth.

Indigenous scholars of the U.S., Canada, and the Pacific argue that the profound trauma and dissociation caused through original and ongoing colonial and settler colonial practice has direct relation to psychological and physical degradation of indigenous lives. Scholars connect contemporary health indicators to the dispossession of, as well as long-term separation from, land bases upon which cultural survival on both individual and community levels relies (Alfred et al. 2006; Simpson 2013, Mila 2009). Alfred et al. (2006) and Simpson (*see* Simpson and Klein 2013) also regard the ongoing pollution and extraction of land and elemental resources as occurs through development as perhaps more insidious and damaging than legal taking, as it permanently alters the landscape and nature of lands and resources, and insists on a particular

mode of interaction with these forms. Thus arguments about the life of people connected to the life of land are not only about land ownership or legal process, but the effects of a lengthy to permanent disconnect between these forms by which people once studied and knew the nature of existence. By altering the kinds of re-membering<sup>77</sup> upon which this knowing is built, the pollution, destruction, and obliteration of land and resources that occur through development projects, because of their permanence, can be even more degrading to cultural practice than the change of legal title of the land base (Alfred et al. 2009; see also Alfred 2012).

Specifically in Hawai‘i, unrelenting dispossession, killing, and letting die of Kanaka Maoli has been explored extensively in work by Kanaka Maoli scholars and others who address shifts in land use, the historical and contemporary life of Kanaka Maoli, and the links between dispossession and the decimation and governance of the Kanaka population. In academic scholarship these are addressed through modes of tracing legal and material dispossessions, emphasizing the illegality of land transfer and the history of resistance to transfer and the new systems of governance by the Kanaka Maoli population (Silva 2004; Osorio 2002); the transfer of lands into foreign hands and the effects of that transfer on the physical, psychological, and social makeup of the people (Trask 1993; Tengan 2008; Kauanui 2008); indigenous erasure through racial and blood quantum politics of U.S. governance and settler colonial practice (Hall 2009; Kauanui 2008; Saranillo 2013) and most recently, the importance of return to land for the continuance of Kanaka life (Goodyear-Ka‘ōpua 2014; Goodyear-Ka‘ōpua, Hussey, and Wright 2014; Oliveira 2014; Beamer 2014). Albeit with different emphases, each of these works threads arguments about ties to the land through to Hawaiian sovereignty, re-membering histories of Kanaka Maoli in Hawai‘i to understand conditions and foster openings for different ways to live.

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<sup>77</sup> Re-membering is a term used by Tengan (2008) to refer to the way Kanaka Maoli look back for knowledge, gather and make sense of multiple facets of life, and are put back together in the process.

Demographically, State of Hawai‘i studies show that contemporary diseases such as diabetes, hypertension, depression, and excessive drug and alcohol use continue to plague the Hawaiian population more than any other population in Hawai‘i (Office of Minority Health 2015; Hixon et al. 2012). Hawaiians continue to die at a higher rate than all other ethnic groups in Hawai‘i (*ibid.*), and continue to experience the highest levels of houselessness<sup>78</sup> in the state. For the kanaka, these are not simply health statistics, but patterns related to the way that it has become difficult to exist in the contemporary settler state, embodying values that do not align with late liberal politics and capital enterprise. The earth was not made in the fashion of man, but rather, through attention to the earth’s movements, man learned to fashion an existence. Skippy Ioane, a long-time Kanaka Maoli activist and musician, articulates:

For the kanaka now, in our ways, the earth was god. So that our government, the government of the people would move with the earth. So when the fishes behaved certain way, so did the people. When the flowers behaved and the ‘ulu, behave in the certain monthly, yearly, timely manner, so did the people. But when we became indoctrinated and 50<sup>th</sup> stated, shit went downhill...And then you know nowadays with the problem of ice [methamphetamine]...[t]he reason why I feel eh, not only kanakas, but all a lot of people doing the ice, is cause where they from, is in a shitty position. So they venture to altered states to feel good, and they no like come back to the shitty positions.

What Ioane elucidates is the distance between the ways relationship to land was once possible and what was now possible under the State of Hawai‘i and the U.S. government, and the link of the desynchronization of people with the earth to the willful degradation of the indigenous body.

To take Pele’s breath for the purpose of selling it as energy for industry and nonessential electric light threatened ‘Ōiwi existence. This would occur through the severance of material and social ties upon which life was made and measured, and the reverberations of that separation over generations. Resistance to geothermal development, and the strength of it, was indicative of

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<sup>78</sup> This term was coined by Uncle Skippy Ioane, musical performer and well-known Aloha ‘Āina activist from the 1960s. The term ‘houselessness,’ as opposed to ‘homelessness,’ is a political and practical stance indicative of his ideas that Hawaiians in Hawai‘i are inherently connected to their earth home, although many remain without houses as shelter.

the strength and intensity of Pele traditions, and the significance of the continuance of these traditions to ‘Ōiwi and others across the island chain. In protest was Pele. Here.

### *Tradition and ‘Authentic’ Life*

Tradition, as has been told through academic anthropological and historical lenses—as well as by others who hold the power to produce, instantiate, and disseminate knowledge-as-Knowledge, has guarded identification of indigenous peoples and has thwarted broad potentials for indigenous becoming. The affection for alterity—and the practice of searching for fantastic versions of it—continue today to incorporate claims about the indigenous other and continue to delimit, as Linda Tuhiwai Smith writes, “who is a ‘real indigenous’ person, what counts as a ‘real indigenous leader’, which person displays ‘real cultural values’ and the criteria used to assess the characteristics of authenticity” (1999:72). Too often, too, research completed by non-indigenous peoples has obstructed the diversity of contemporary indigenous peoples and their efforts at becoming by recognizing difference as indigeneity only in particular shapes and ways, marginalizing and leaving exposed to death and violence the bodies and lives of indigenous people who do not fit a version of acceptable difference and instead represent “repugnant” difference that precedes the moral acceptability of killing and letting to die that which is Otherwise (Povinelli 2002; *see also* Tuhiwai Smith 1999:72; Bessire 2014). Moreover, the politics of recognition under late liberal law—where rights are disseminated on the bases of acceptable, provable, “traditional” difference—celebrate the achievement of “authenticity,” and foster impossible standards of authentic indigenous life (Povinelli 2002; *see also* Povinelli 2011). How tradition is understood and employed thus matters; it can kill or nurture potential for the continuation of human ways of life.

The traditions of Pele, which included the worship of land, land features, and elemental forces as gods, are often understood and portrayed as relic, expired tradition, and even, a devious tactic of employing multicultural “rights” in order to thwart legal and government attempts to succeed in capitalist endeavors. The mockery of land-based religious practice in media and the legal impediment to it through law and governance makes traditions as unanimous and constant forms, recognizable because of their likeness to whatever has been recorded in academic and scientific literature. As scientific renderings do not necessarily match indigenous understandings of practices and their significance to a people, “traditions” become a site of the application of power, where late liberal logics determine reasonable Truths as law. An example of the ease with which Truths are made is as follows, in the Environmental Impact Statement (EIS) of the current geothermal venture in Puna, where ‘Ōiwi claims about direct impacts to Native life via geothermal development were refuted:

Testimony of some indicated...that they believe geothermal exploration and development will threaten and probably prevent the continuation of all essential ritual practices associated with Pele and thereby impair the ability of Pele practitioners to train young Hawaiians in the traditional Hawaiian beliefs and practices. They believe, therefore, that Hawaiian religion and culture will not be conveyed to future generations and will, therefore, die. ...However, Mr. Don Mitchell, a noted author on Hawaiian history, does not believe that ancient Hawaiian beliefs were specifically against the use of steam, but *that it is only a recent interpretation of Hawaiian theology*. ...Steam was not referred to in early discussions of Pele (*emphasis mine*, 11-7-8).

As the EIS was laid out, research knowledge—alongside knowledge that had been shared about Hawaiian practice and belief through legal proceedings where Hawaiians hoped to gain recognition in courts of law—were used to falsify claims people were making about the effects of geothermal development on their lives and the continuation of their ways of life. The EIS went on: “early Hawaiians did use geothermal steam for cooking food for non-religious purposes”—implying that steam could be used for non-religious purposes and hence geothermal

development—and that “traditional religious practices were officially abandoned by the alii, or ruling class, following the death of Kamehameha I in 1819, and most Hawaiians had converted to Christianity by the end of the nineteenth century (*sic*. 11-8)”—signifying the prior nature of Hawaiian religion and thus deflating claims that Pele worship was actually still taking place. These refutations fell straight in line with those from the previous decade, in another instance of the defense of contested geothermal development, where the late Senator Dan Inouye stated to the Senate floor,

The Hawaii Supreme Court ruled that the State’s geothermal development plans did not infringe upon Pele practitioners’ freedom to exercise their religion. It was undisputed that they had never actually used the premises for religious practices, and presented no objective evidence of harm to the practice of their religion. (4)

In this floor statement, in the EIS, and in the broader community that accepted these statements as reasonable interpretations of Kanaka Maoli tradition, expertise on “history” usurped lived experience of relationship. The mark of “Tradition” in these settings, to those who studied and knew Others, contained the comprehensible, recorded Other.

And, also, confusion around what “tradition” could mean was, at least partly, understandable, as the term was used to signify, broadly, the connection of particular actions to past conventions—even though the function of the past in the present was distinct from Western logics of the same. This became apparent in conversations on practices of hula in the Pele tradition, where strict forms and movements were told as the enduring containers used to train practitioners, so that relevant ways to tell stories that are still ongoing could emerge. Nālani Kanaka‘ole, kumu hula of an eight generation hula lineage in the ‘ai ha‘a style of Pele, says, “When you are born into a hula family, you either have a choice or you don’t have a choice. Most times, you don’t have a choice, and you have to own it in order for you to have it.” To which her son, Kuha‘o Zane, continues,



Since it was a tradition, you never questioned it, and you never said, “Why I gotta do that,” or something, so you just kind of did it and told yourself that maybe later I’ll understand it. And majority of the time, a couple years down the road, you understand why you needed that certain discipline. And I think that that unquestionable [acceptance] builds up a certain level of rapport between you and the tradition, and it also brings up a level of respect for that tradition. (Zane 2011)

To follow without question, to practice unrelentingly, to embody, is the thing that then allows for play (Zane 2011; Kanaka‘ole 2006, Ioane 2006). In this frame, creative forms are understood as a result—not a break—from “traditional” forms.

Thus, there is a strong tie to that of the past, but that “past” is made new through its new embodiment, and the capacity of that individual and/or group to grow deep into the tradition. That embodiment is carried into interaction with other things, whatever crosscuts a life. In explaining land-based religious practice, an ‘Ōiwi said to me:

You lose traditions, you lose yourself. Hawaiian tradition is site specific, it’s got sacred geography... We are part of the environment, it is here [in the heart]. Then we learn, we learn how to incorporate things into us as if it was ourselves. Dance, music: now it’s part of us, in celebration, in storytelling, in song-making, in implements, in dress and all the farming and ocean shoreline fishing. I can’t produce a tree. Flowers. Medicine. So [I] have reverence for all of that.

Meanings of words are slippery, and the significance grave if and when the term “tradition” becomes shorthand for ‘that of the past.’ Here, the term points to how a method of knowing becomes a method of knowing *anew*; relationship with things in one’s surroundings is incorporated into the body, and becomes an approach to life, thus imbuing life with a quality of Earth. In other words, an old way guides a manner of living through a new instance of life. Reverence, in this frame, is borne of tradition, but not merely as reproduction of what was known to have been practiced; rather, through realization of the remarkable ability of all things, and realization of the self as of and in relation to them.

To make mention of the Pele traditions here is to call forth this latter understanding of “tradition,” which is not to delimit or define Otherness and as a function of the Past but rather to denote teachings that guide an understanding of existence and the self—so that a way of life might continue. This is not merely the sustaining of a thing—not merely keeping a thing alive in a particular state. It is maintaining conditions for continuum of a *way*—of approaches to understanding the self and others, including geontological others as extants that matter alongside, and beyond, human life.

### *The Beautiful Tā-Vā*

In the decades of battles over geothermal development, courts, state officials, and geothermal industry researchers scrutinized Hawaiians and Hawaiian traditions as a means of making a case for the morality of development. Protesters and demonstrators seemed like the problem because they appeared to be the variable; Nature appeared fixed and knowable in its undeniable materiality, and the earth seemed to be speaking of the need for changes to human methods of consumption—especially energy consumption, which had driven carbon into the atmosphere at a rate and to an extent that it was causing global warming.

Nothing, however, was brought to question about the ways that developers and state arms had approached development—histories of relationship between development arms and people in Hawai‘i, relationships between development arms and the geothermal force. It was clear, at least, that the state and developers viewed land as a supply resource, as space to be used in the vision of Man for the purpose of perpetuating the existence of human systems; geothermal energy was one of several opportunities for energy independence and self sufficiency, and, as Senator Dan Inouye stated, “the most technically and economically feasible, and environmentally safe energy

source Hawaii has *at its disposal*' (Inouye 1989:8, *emphasis mine*). It was less clear, to the general public, at least, how patterns of development had repeatedly extorted relationships with people, and ignored relationships between people and places, in efforts to advance potentials for development.

One early instance of geothermal in Puna sent a group of 'Ōiwi to Aotearoa (New Zealand), to to examine the potentialities of geothermal development and to evaluate the impacts of geothermal on the Puna community. One of the people sent on exchange to Aotearoa recalls,

When [geothermal development] first was in its infancies yeah, they [the developers] sent a group of youth, young adults, adults, and kupuna to Aotearoa. And we were the Puna Hui 'Ohana at that time. That was the name of our organization.

...[W]e went to different parts of Aotearoa: Huntley, Wellington, Taupo, Rotorua, all these different areas to look at the effects of geothermal within their community. So what we saw was there were areas like Rotorua, Taupo, that the steam was just all over the place, so they didn't have to drill much. And they had the natural springs there. So everything was just there. And then we went to Huntley, to all these different areas, where the Maori community were displaced because of the geothermal and that's because they had to drill. And when they drilled, when there was no more steam or energy, they left. The company left the holes, the wells. And then they also left the brine, the debris. And the community was unable to sustain itself. So the whole community, the native peoples, had to relocate.

And so we had to think about what kind of a community were we like in Aotearoa. And we realized that we didn't, where we were, we didn't have that kind of steam that was accessible. We knew that they gonna have to drill.

So the other component was what kind of jobs did it provide for the local community. And we found that within the areas that had planny steam, it was the families that had these warm ponds, they were the ones that were able to benefit. So the community thrived because it was already accessible to them. Whereas the other community, they were displaced, the jobs were not given to the local community, or if the locals had the jobs it was like cleaning, you know, not good kine, not high-paying jobs. And they [developers] had to source out anyway, they had to go hire engineers from someplace else. So we looked at that. That was more of the situation for us.

So when we came back with the information we strongly agreed that we didn't want the geothermal in our community. And we gave them the evidence, we gave them the information.

...And in spite of our findings they decided to still go ahead. And at that time we began to protest.

In this case, it was not merely that the community felt rebuffed. The geothermal company itself had asked for input, and had then blatantly ignored that input, given that it did not match their ideas of what was possible with development. Puna community members watched, as well, what appeared to be collusion between the state and developers—as permitting regulation was loosened around geothermal development, specifically, so that drilling and mining geothermal did not require community—and later Hawai‘i county—oversight. Of Kahauale‘a development, one man said, “Those guys [developers] just came in, threw money at the state. [The state said] Oh yeah, you don’t have to do the EIS, we’ll waive this, waive that. Money money jobs jobs...”. It became understood in the community that the state would continue to fabricate geothermal as beneficial to the community, while assisting developers to skirt federal and state regulations that would ultimately protect environmental and community interests.

In broader histories of energy development, too, exploits that sought to overrun all existing life in an area was not unusual. During scoping for a wind-farm on Moloka‘i, a Hawai‘i Island-based, Moloka‘i-raised man recalled,

They [developers] just came in and said they were going to do it [put wind farms] here [on Moloka‘i]. And here is Hawaiian Homelands. The wind is whipping up because the forest is stripped by the cattle and the goats and its been all changed and made nasty anyway. And there had been a group that had gone in and put up berms and started planting, and they were bringing kids down and doing shoreline education, and they were starting to have community events there, and there is a little pavilion, there’s a source of fresh water, they can barbecue to their heart’s content. And they’ve built it out and then these guys just come in and [start] putting up gates and saying, “We’re going to do a wind farm.” *And they no even ask.*

And you know what? While acknowledging wind is going to be a good thing for us—No. It’s our land, that’s Hawaiian Homelands. Oh, oh, we’ll give you more money, we’ll create jobs. No. No. Get outta here. You didn’t ask nicely, you didn’t ask at all! Go away!

Developers move with certainty of control and authority over a space, and lack of attention to the relationship of things in that space; therefore, meetings between the local community in question and developers feel less like inter-action and exchange, and more like contact—where developers enter into an area with the idea that the molding of a specific place into everyplace is the goal of ‘advancement.’ The recurrent promise of money and jobs illuminates how developers’ worldviews align with late liberal and neoliberal ones, where potential for market growth and optimism for something better than endurance condition what is called “life.” These blind and clumsy movements of people into place also sidesteps of deeper forays toward understanding what is necessary from development in a given community, in order to reinforce the life already there. Opposition to development does not drive developers to reflect on their patterns of action and interaction, but instead gets interpreted as local people “not wanting change.”

Oftentimes, developers come from “outside” the islands, but even across islands the treatment of people and place differs. Governing forces on O‘ahu, the most populated island and host to the seat at Honolulu from which “outer” islands are governed and run, have often lost sight, too, of the ways that communities have remained connected and tied to land bases. A Ka‘u man, recalling the multiple attempts to set up satellite rocket launches to space from Palima Point in the southern district of Ka‘u on Hawai‘i Island, said to me,

They [people in Honolulu] could give a damn what we doing out here on the outer islands. Sitting in an office on O‘ahu, Hawaiians and all. Hey, let’s put rockets at South Point. Hey, that’s a great idea. They come out hea [here], say *Eh you Hawaiians, we going put rockets*. [They] never ask us nothing! This O‘ahu-centric mentality, keep coming to the outer islands and imposing industrial bullshit.

The distance between O‘ahu and Hawai‘i can also feel great, when there is a lack of attention to relationship, and what might matter differently, to people who seem to be the same. In each of

these instances—the geothermal development where input was disregarded, the wind farm development where input was not solicited, and the rocket launch pad where central government looked out, toward the needs and promises of NASA and other bidders versus the needs of the people of Ka‘u—relationships to development, and between the state and Hawaiian and ‘outer’ island communities, were being built. Geothermal opposition was not simply wariness to change, as developers, the state, and the media would portray. It was a study of patterns of relation under late liberalism and the reign of market. It was a determination made with the consideration of how developers and the state moved in relation to space, and in relation to Kanaka, over time.

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While not explicitly Hawaiian, Oceanic concepts of *tā* and *vā*, translated literally as “time” and “space,” gesture toward similar conceptions of relationality between and among things that have been patterned through time (Māhina 2002). *Vā*, and to a lesser extent *tā*, has been utilized in contemporary theorizations of Oceanic philosophy and governance (Hau‘ofa 1993; Māhina 2010); transnational social ties (Ka‘ili 2009); human health (Mila-Schaff 2009; *see also* Tuhiwai Smith 2009 *in* Mila-Schaff 2009<sup>79</sup>; Māhina 2002, 2004); architecture (Refiti 2005, 2013); practices such as seafaring and tattooing (Ka‘ili 2009; Wendt 1996); and art (Wendt 1976). The emphasis on contextualizing space between people and people and things in and through time remembers the two concepts as inseparable, at least for understanding context for a relationship at any given moment (Taufe‘ulungaki 2005:117 *in* Mila-Schaff 2009).

The concept of *vā* finds root in Tongan, Sāmoan, and Maori (*wā*) understandings of space and relation that recognize the quality of a space between things in conditions (Māhina 1999, 2002). *Wā* as translated in Hawaiian can reference a period of time or an epoch, as in *i ka wā*

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<sup>79</sup> Unpublished manuscript referenced in Mila-Schaff (2009). Linda Tuhiwai Smith, M. Hudson, S.J. Tiakiwai, and M. Hemi. “The Negotiated Space.” *In* Te Hau Mihi Ata: Mātauranga Māori, Science and Biotechnology. Waikato: Waikato University, 2008.

*mamua* (“in past times”), as well as space, an “interval, as between objects or time” (Pukui & Elbert 2003). Oceanic scholar-poet-artist Albert Wendt defines *vā* as:

[T]he space between, the betweenness, not empty space, not space that separates, but space that relates, that holds separate entities and things together in the Unity-that-is-All, the space that is context, giving meaning to things. (1996:402).

Ka‘ili (2009) emphasizes that the *vā* is a space of connection, a space between two or more identified physical points, such as the expanse of sea between islands (in Tongan, *vaha* or *vahanoa*), as well as space beyond the physical world, as referenced in the Tongan word for “internet”: *vahaope* (89; *see note 108*). *Vā* is also the space used to describe spaces of human connection, between both individuals and groups. This is not limited to geographical space, but rather informs genealogical and social connection. In the recognition of *vā* there is a care and nurturance of it (Ka‘ili 2009; Mila-Schaff 2009), which can occur during major shared community events such as marriage, birthdays, and funerals, but can also be strengthened through everyday practices of generosity (Ka‘ili 2009).

Māhina includes the concept of *tā* in his “*tā-vā* theory of reality” (see Māhina 2010), foundational to theorization of Oceanic (Moanan) relationality (*see* Refiti 2008:2). *Tā*, which means “beating” (Pratt 1862), refers to the rhythms and patternings of a *vā*—the decisions and actions as well as uncontrollable events that occur to shape a relationship between people and between things and between people and things. Even when *vā* is referred to in the literature without explicit mention of *tā*, *vā* is described as a space embedded in time, for example as a space that reflects genealogical and historical ties into which one is born (Wendt 1976).

Relationality is this shaped space, unseen but felt (Mila-Schaff 2009), flexing into and out of that which is experienced as beauty, equilibrium, calm (Māhina 2010:185). In works of art and architecture, the shape of this space is related to aesthetics (Mila-Schaff 2009; Refiti 2013); as

Mila poses, this is not separate from the “aesthetic balance” of human relationship (Mila-Schaff 2009:138).

In contrast to notions of space in which space is understood as empty (*see* Ka‘ili 2009) or produced through material and discursive constructions that rest upon and represent social status and power at a given point in time (Lefebvre 1991[1974]:14), Oceanic space is always already relational, not only connecting objects in space but objects in space through time, with an ethic of being in relation pointed toward beauty. The *tā-vā* includes ties back through lines of the deceased through genealogies and bonds to the spirit world, and extends to animate and inanimate surroundings not bound by reaches of the human in Euclidean space, but across Oceanic spaces through recognized relation. In other words, “space” is not simply made, but kept, and inherited; it is not a function of the human acting on a world, so much as a human acting on and in a world which is also acting on her. As Wendt (1999), Mila-Schaaf (2009), and others remember, in this scene the *vā* must be tended, and through generations, and continually. These relationships—spaces between—form “one’s sense of belonging and interconnection [and are] considered the essence of identity” (Mila-Schaff 2009:135); they are the basis for the unlocking of knowledge (Kekipi *in* Meyer 2001). Tending the *vā*, here, is tending the self. In the beautiful *tā-vā*, in the space which has been tended well, patterned carefully, there is “an optimal and equitable balance of reciprocity” (Mila-Schaff 2009:135). There is a realization of interdependence made manifest through enaction of that interdependence; the making of space is a responsibility; in *vā* action is directed—toward reciprocity, which becomes beauty.

The *tā-vā* frame is instructive for rethinking the ways relationships are approached and upheld in Oceania because it shifts the scales and direction of attention to the ways relationships are formed in space and over time. Spaces between include relations between human, nonhuman,



and ancestral worlds; conceptions of space are thus neither solely human nor are they forms of life always recognized or recognizable as biontological life. Temporal scales of relation are both long-term—through multiple lifetimes—and moment-to-moment; space may be patterned over the course of generations and can also be changed, and turned, through individual interactions. Thus, space is ideally tended, and tended toward beauty—a concept rendered by Mila-Schaff (2008), in the context of *vā*, as *reciprocity*. The beautiful, aesthetic space between is not one's idea of what should or should not be in space, how space should be represented or of whom it is most representative, but how well a space reflects a giving and a giving back between a person and her surroundings: people, places, spirits, things. The inclusions of Oceanic philosophies of *tā-vā*, like Hawaiian understandings of relationality, thus require consideration of thick, lengthy, individual, and moment-to-moment ties between people, places, and things. Both momentous and minute matter in the production of space between; reciprocal relationships build propensity toward beauty.

To rethink the shaping of the spaces between geothermal energy development and Puna communities through the *tā-vā* frame is to witness a patterning of relations between people and each other, people and the geothermal force, people and place. These relationships have collapsed because they lack actual relating; they are, instead, methods of homogenization where communities are told that development will improve their lives through modification of their environment into market, market will bring them trickle-down riches, and erasure of difference will bring them into the 'modern.' Renunciation of these late liberal promises by communities in which development is proposed causes no reflection in developers themselves. Instead, people of the community, and of the land, become understood as ignorant, foolish, and unreasonable,

characteristics that will make them artifact. And, given enough license by the state, developers exploit the lands and resources they desire.

### Bend Down Low

*Eia Hawai‘i, he moku, he kanaka.*  
Here is Hawai‘i, an island, a man.

Throughout geothermal development and resistance action at Wao Kele in the 1990s, Kanaka Maoli underscored the fact that Pele’s force was not for human use. Therefore, although Pele was certainly connected to Kanaka Maoli life and ways of life, Kanaka did not always figure centrally and foremost in Hawaiian arguments about why the resource should be left alone. This came through arguments that “Pele’s power is not ours to share. It belongs to her. She’s not for sale, she’s not for tapping” (Aluli *in* Nā Maka 1989), and through a plea sent out by Pua Kanaka‘ole, kumu hula and Hawaiian scholar, matriarch in a matrilineal line that traced direct descent from Pele and that had maintained relationship with Pele for eight generations:

This energy of geothermal belongs to a deity. It belongs to a deity who has lived for hundreds of years, and has been the only deity that has come down to us for generations and is still very much alive. Still very much visible. Still very much worshipped and thought of and believed at all different levels, and respected. And if all of the things around us which they have taught us to respect—the forest, the ocean, the eruption, the fact that Pele lives—all of these things around us die, then they die, and I die as a Hawaiian. (Nā Maka 1989)

This was not an argument that fit easily into the legal frames of the courts, which made decisions based on traditional cultural rights such as hunting and gathering and access, on religious freedoms under the First Amendment, and on environmental rights under the National Environmental Policy Act. It was about the rights of the geological to exist, apart from the bickering of humans about ownership or right to it. This is what was being called “tradition.”

From the perspective of those who carry on practices through generations, traditions are not those things built in political relationship to the West (*see* Keesing 1991) or that which remains unchanged through time, but rather practices that gather ancestral memories in order to maintain the potential to constitute the conditions for present existence. Tradition, in this instance, is a practice born from passion about a thing in a particular space over a prolonged period of time: an enduring attention that forms the basis of relationship. This enduring attention includes what Kanaka‘ole Kanahele (2012) terms a protocol. She says:

Protocol has to do with your treatment of other people, your treatment of the land. The land’s treatment of other creatures. Creatures treatment of creatures. The treatment of the elements to the land, or for the land. And then back to you.

Protocol is a space between things: things in a given place at a given time, and through generations. It is an attitude of approach, marking a humility that recognizes all places do not belong to the human, for the human; it is a notion that certain places are not fit for entry by certain people, or certain people at certain times. It is the embodiment of the idea that things depend: on each other, on generational histories, on place, on one’s place in space at any given moment. And precisely because everything depends, protocol requires asking, waiting for an answer, and listening to the answer given; it requires the work of relationship.

This is one of the gifts of Pele. It is carried in the body, and transmitted by the voice; it sits in the earth, in the rocks; it sits in the sky.

## OPENINGS

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*The Hawaiian cultural knowledge one possesses,  
along with the clues presented in chants,  
creates a stage for enlightenment—  
a junction where memory and na ‘au meet  
and produce instantaneous moments  
where ancestral knowledge is reborn again.*

*Know your culture and language well enough  
so these special moments  
do not flee without recognition.<sup>80</sup>*

Concurrent with my research on geothermal energy in Hawai‘i, movements opposing telescope development on a neighboring volcano, Mauna Kea, had come into the public eye. Like many development battles across the island chain, these had been ongoing for decades; on Mauna Kea, over the course of forty years, different astronomy interests from across the world had been in and out of quasi-legal and legal court settings to defend their right to build at will atop the tallest and most sacred peak in Hawai‘i. In 2014, constituents of the Thirty-Meter Telescope (TMT), the largest proposed ground-based observatory in the world and the latest astronomy venture to seek investment on Mauna Kea, sought to build in a conservation district at the summit. At the summit, the erection and operation of thirteen other observatories had degraded the environment to such an extent that the “substantial, adverse, and significant” impact of further development to cultural and natural resources had come to be viewed as simply additive, rather than initiatory, and therefore acceptable to the state arms appointed to care for the area: the University of Hawai‘i and the State of Hawai‘i Department of Land and Natural Resources (DLNR) (See NASA Keck Outrigger EIS 2005; TMT FEIS 2010). With express

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<sup>80</sup> Pualani Kanaka‘ole Kanahele (2011) p.xvi

approval of these bodies, TMT continued development in direct violation of statutes to protect lands in Hawai‘i’s conservation districts.

Beginning with disruption of a blessing ceremony for groundbreaking of the TMT development, young Kanaka ‘Ōiwi gathered and stood as protectors of Mauna Kea. As the movement grew, individuals spent days and nights atop the mountain, carrying on their lives between cars and the cinder at 10,000 feet elevation. Deliberation between TMT corporation, the University of Hawai‘i, and the State of Hawai‘i went on for months, as the entities strategized how to continue development in morally acceptable frames set forth by a late liberal condition. The arguments were not unfamiliar: figures of Indigeneity and Science became bookends to measures of time and progress: one past and one future, one stagnation and one innovation. In TMT’s assertion, it was clear which should perish.

During these months, time on the mountain stretched—across deep and freezing nights, and bright blue and blinding days. Life was made close to the sun, close to the stars; over time, intimacy with snow, mist, the red of sun and cinder, and the glacial waters at Wai‘au, grew. On days when trucks did not come up the mountain, hours expanded. Time was filled with conversation and teaching. One morning, following the first day of arrests, a navigator and canoe-builder talked to me about the dry regions of South Kona, and the ways that farmers manufactured the landscape with trees and terraces to “catch” rain. He went on, “The reason why anthropologists get it wrong is because they look from land. You cannot see all this from here [all the land from the land]... We see from this way [from the sea, facing towards the land].”

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On the one hand, it seems so rare for perspectives to shift, completely: from seeing, for instance, as land creatures, land bases from the perspective of sea creatures; from being in the way of an event, or a moment, or a person, or a thing, that overturns what is known to such an extent that we are called to reevaluate something we have considered previously as self-evident. On the other hand, it is readily apparent that everything in front of us is just this opportunity for opening, if we are given to look closely enough, sit long enough, and give up versions of ourselves as things and people around us give themselves to us.

Through this dissertation I have used geothermal development as an entry point to begin to explore and overturn widespread ideas about the inherent “good” of sustainability, by looking at how ideas and practices enacted to sustain biontological life support the dissemination and embodiment of late liberal power. Chapter 1 assessed the idea of geothermal energy development as clean, renewable, and reliable—a pretext that somehow persists despite evidence otherwise: scientific record of the release of toxins hazardous to biontological life into the earth and air and groundwater; industry record of the extinguishment of pockets of earth’s heat in 20-30 years; the danger and failure of plants and plant technologies in the face of other forces of earth. Chapter 2 explored how the Nature/Culture divide and biontological preference is renewed through the material and discursive preservation of Nature in the National Park system, and how productions about Nature and Western and indigenous cultures in this setting serve as methods of inheritance and reenactments of late liberal attempts to manage difference. Effects of the biontological bias over the geontological in the case of an extended lava flow into a populated area of Puna underlines the effects of divisions between life and nonlife, and the reverberations of (capital market) convictions that the domination of Nature is natural. Chapter 3 investigated the White settler spaces of Puna, where alternative energy production, as well as U.S. continental-born

ideologies about self-sustenance, sustainable living, and coming “back-to-the-land” were shown as tied into late liberal methods of ranking forms of existence, and then granting life, killing, and letting die. How a single community governs and is governed is meant to illustrate the guile with which late liberalism operates, where optimism for something better for oneself allows for abandonment: the acceptance of the loss of anything not conducive to one’s own happiness. Last, Chapter 4 addressed the idea of sustainability through the concept of Tradition. What I sought to show here was how liberal and late liberal instances of governance continue to produce methods of being informed by the past as concretized in the past, parlaying a notion of linear time into an impression that these methods of knowing are themselves defunct. Examining tradition in Hawai‘i through concepts of *tā-vā* and relationality, I demonstrate how Hawaiian and Oceanic practices serve to cultivate different attentions to space and time, and remain an approach to being in and of the Earth.

What I hope to have shown through this work is how ideas of sustainability harbored in bodies and minds easily slip into late liberal enactments of power, where lives and ways of life are ranked and marked for flourishing or death. Too often in manifestations of sustainability, that which is most life-giving to Science, to Market, and to Governance are granted continued existence. These particular formations, however, are nourished only insofar as, and so long as, they feed the powers that grant life. Assimilation toward late liberal living thus feels life-giving—even as that life remains threaded and tenuous. And, it sustains a form of governance that may ultimately extinguish us all.

Sustainability, like late liberalism, also harbors a preference for biontological life, refiguring the geontological as mere resource, to be used for the sustenance of human existence. The ethics that surround biological existence as potentially extinguishable and therefore morally

problematic to extinguish do not hold for geological and atmospheric forms. The continuance, reiteration, and enactment of biontologic bias and geontologic neglect allows for abandonment of these forms to market, even as our attentions are called through discourses on global warming, climate change, and the Anthropocene, to the ways that humans and rocks are related. As an active, earthly, unpredictable, wild, geontologic force, Pele embodies the potential for huluhia—an overturning, a renewability—of mind, of body, of life, and a way of life. People who have maintained practices of being in relation to her, which includes study of her chants and forms, embodiment of her movements and power, communications with her, protocol toward her, and retellings of her stories, present an instance of relationship that cuts through geontological disregard. To stay open to the possibility that humans are not, and have never been, in control of earth and all its beings, will allow for continuum—with all the change, creativity, and spontaneity borne in the spaces between what exists.

Aloha

*...It's a seeing is believing kind of thing.  
So they [our grandparents] would always tell us,  
you gotta watch. You gotta feel  
the wind. The wind tells you something  
to watch the birds. The birds,  
certain times, certain birds fly, means certain things.*

*...I started to grasp the power of that relationship  
we can have with nature. You know, to the point  
where...all you gotta do is chant the chants,  
pray the prayers, and these elements will come,  
they will hear you.*

One Uncle says people go to altered states because they cannot handle the 50<sup>th</sup> state that they are in.



Another Uncle says he's been sober for thirty years. He sips his coffee. He is talking cocaine and heroin. Sometimes, he says to me, you think about how hard it is to be a Hawaiian in this situation and you can't do shit about it. And sometimes, he says, I look at the Hawaiian sitting under the coconut tree drunk and sometimes I think he's better off than me.

There are many Uncles with many stories and I meet them in succession. The stories vary slightly but only slightly, every one has a harpoon in their side.

On days that are not too hot me and Uncles take walks past the Bay and we talk about the bodies we see strung out under the banyans, or on the bleachers near the canoe shed. Uncle says it is not better but it is not worse, to live life this way. Uncle says the greatest enemy is ourself. We killing ourselves.

One day the sun is blazing and we make it to Longs for some air conditioning and some ice cold water out of the Longs refrigerators. It is early in the month. As we wait in line to pay, they talk to the lady buying four gallons of \$8.99-a-gallon vodka and a carton of cigs, and make her laugh.

Uncle says he sees the patterns. He says,

Why is the kanaka in Iraq, when that's the same thing wen happen to the kanak? The Americans wen do that to the Queen, and now they get the Hawaiian so bamboozled, he going over to Iraq, for help the hao[le]—the Americans. And the price of gas, going up. So too, they going kill us in Iraq, they going take over the oil fields, and they going raise the price of gas. How's that? The greatest con man in the world.

Anyhow.

\*

The sea is most of the time the Uncles and I find no reason to continue conversation on the 'hypocrisy of democracy,' as one uncle likes to say. Where we go there are fish, so it is

places where the pele is a cliff that drops off into the sea. The sea beats on the cliff; it is a hallowing sound.

The uncles fish and tell stories about falling off cliffs into the sea. In another narrative, this is a metaphor. It is “falling off a cliff”: near-death by Army combat in ‘Nam, near-death by drug and drink, near-death by assimilation. In this story, it is also literal: getting knocked off a cliff by a wave into the sea. Knowing that no one else knows that you are currently adrift.

Don’t fall off, Uncle says. He points out to a place below the water, where he sees fish, and I cannot. Cast there, he says.

By midnight I have only pulled up hage and am thus relegated to picking kupe‘e from the rocks where the tide has come in and gone out. I am given a headlamp and a bucket and wander to a far stretch of shore where the cliff has been worn down and there are tidepools. I look for the shells, black on black rock. They are so abundant there is no skill involved; just looking and bending and picking. I see kupe‘e stacked on each other. They are making love. I leave them on the rocks.

Soon I start leaving all the kupe‘e on the rocks, even though my bucket is still light and I know the Uncles want them to fry them in the pan on the gas stove with butter and garlic. I leave them because I cannot not. When I return to the high cliffs in the 2am dark I tell Uncle I must be no good at picking kupe‘e. He laughs and says you from Honolulu thas why, and grabs the bucket from my hand to carry back to camp.

There is fishing into the dawn, and some cold canned meat and diet coke for breakfast as the day rises and the aweoweo stop feeding. We walk along the rocks, just to be as close to the water as we can get. Uncle says when you pick limu kohu, you gotta leave the roots, I had to scold one lady the other day. Taking the roots. How she think it grow? Back at camp we survey

the catch; we walk the distance to the tidepools to clean fish. He tosses guts and heads into the pools. Watch for puhi, Uncle says. I no like get bit. We listen to 70's Rock on the battery-powered radio. The wind picks up. By the time we are done we are mostly quiet and looking out, at the sea which makes us feel so free.

We pack the fish on ice and pack the cooler in the truck and begin to leave. Slowly by slowly, Uncle says. The other Uncles will stay another night. When there is nothing left to pack we thank the earth and the sea and the sky and the other Uncles and start driving away in the truck. Then we hear one Uncle yelling. Then another Uncle. We look back worried that someone has fallen off a cliff. Uncle is waving his arms, pointing at the water. Uncle cranks the hand break and we hang our torsos out the windows to get a better look. The engine is still running. Just offshore, so close, so large, a whale. Her broad, dark tail waving hello, goodbye.

‘Eli‘eli kau mai!

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## Appendix A

Table of Kīlauea Eruptions, 1918-1979, and intrusions (1959-1980). Table taken from Fred Klein, 1982, "Patterns of historical eruptions at Hawaiian volcanoes." Journal of Volcanology and Geothermal Research, March 1982.

**TABLE 1**

**Kīlauea eruptions (1918–1979) and intrusions (1959–1980)**

Event	Starting date	Duration (days)	Location and type of event <sup>a</sup>			Days since last eruption	Days since last intrusion	Erupted volume (10 <sup>6</sup> m <sup>3</sup> )	Deflation (tilt at HVO, in microrads)
			S	ER	SWR				
1	2/23/18	14	E	—	—	—	—	0.2	—
2	2/7/19	294	E	—	—	349	—	27	—
3	12/21/19	221	—	—	E	317	—	49	—
4	3/18/21	7	E	—	—	453	—	7	—
5	5/28/22	2	—	E	—	436	—	?	—
6	8/25/23	1	—	E	—	454	—	0.1	—
7	5/10/24	17	E	—	—	259	—	ash	—
8	7/19/24	11	E	—	—	70	—	0.3	—
9	7/7/27	13	E	—	—	1083	—	2.5	—
10	2/20/29	2	E	—	—	594	—	1.5	—
11	7/25/29	4	E	—	—	155	—	2.8	—
12	11/19/30	19	E	—	—	482	—	7	—
13	12/23/31	14	E	—	—	399	—	8	—
14	9/6/34	33	E	—	—	988	—	8	—
15	6/27/52	136	E	—	—	6504	—	51	—
16	5/31/54	3	E	—	—	703	—	7	—
*17	2/28/55	88	—	E	—	273	—	95	—
18	11/14/59	36	E	—	—	1720	—	40	- 45
*19	1/13/60	36	—	E	—	60	60	119	-300
20	2/24/61	1	E	—	—	408	408	0.2	< 2
21	3/3/61	22	E	—	—	7	7	0.3	- 6
22	7/10/61	7	E	—	—	129	129	13	- 8
*23	9/22/61	4	—	E	—	74	74	2.5	-166
24	12/7/62	3	—	E	—	441	441	0.3	- 18
	5/9/63	1	—	—	I	—	153	—	- 32
	7/1/63	2	—	I	—	—	53	—	- 20
25	8/21/63	3	—	E	—	257	51	0.8	- 11
*26	10/5/63	2	—	E	—	45	45	8	- 79
*27	3/5/65	11	—	E	—	517	517	18	- 84
	8/25/65	1	I	I	—	—	173	—	+ 8
28	12/24/65	2	—	E	—	294	121	0.8	- 45
*29	11/5/67	251	E	—	—	681	681	84	- 11
30	8/22/68	5	—	E	—	291	291	0.01	- 54
31	10/7/68	16	—	E	—	46	46	7	- 60

32	2/22/69	7	—	E	—	138	138	17	- 46
*33	5/24/69	875	—	EP	—	91	91	185	- 24
	11/3/69	1	—	I	—	—	163	—	- 6
	1/22/70	1	I	—	—	—	80	—	- 6
	2/3/70	8	—	I	I	—	12	—	- 4
	4/5/70	5	—	I	I	—	61	—	- 9
	5/15/70	2	—	I	—	—	40	—	- 8
	6/11/71	3	—	—	I	—	392	—	- 4
34	8/14/71	1	E	—	—	812	64	10	- 16
35	9/24/71	5	E	—	(E)	41	41	8	± 12
	12/24/71	6	—	—	I	—	91	—	- 3
*36	2/4/72	455	—	EP	—	133	42	125	- 2
37	5/5/73	1	—	E	—	456	456	1	- 23
38	5/7/73	187	—	EP	—	2	2	2.5	< 2
	6/9/73	1	—	I	—	—	33	—	8
39	11/10/73	30	—	E	—	187	154	3	- 14
40	12/12/73	222	—	EP	—	32	32	30	- 2
	3/24/74	1	—	I	—	—	102	—	- 5
41	7/19/74	3	E	—	—	219	117	10	- 17
42	9/19/74	1	E	—	—	62	62	11	+ 25
*43	12/31/74	1	—	—	E	103	103	15	-155
*44	11/29/75	1	E	(I)	—	333	333	0.2	-221
	6/21/76	1	—	I	—	—	205	—	- 7
	7/14/76	1	—	I	—	—	23	—	- 7
	2/8/77	1	—	I	—	—	209	—	- 6
*45	9/12/77	20	—	E	—	653	216	40	-109
	5/29/79	1	—	I	—	—	624	—	- 3
	8/12/79	1	—	I	—	—	75	—	- 2
46	11/16/79	1	—	E	—	795	96	0.4	- 8
	3/2/80	1	—	I	—	—	107	—	- 3
	3/10/80	1	—	I	—	—	8	—	- 16
	8/27/80	1	—	I	—	—	170	—	- 7
	10/22/80	1	—	I	—	—	56	—	- 2
	11/2/80	1	—	I	—	—	11	—	- 6
	1/19/81	2	I	—	—	—	77	—	- 5
	1/24/81	16	—	—	I	—	5	—	± 20
	6/24/81	1	I	—	—	—	151	—	± 11
	8/10/81	2	—	—	I	—	47	—	-107

\*Location codes: S = Kilauea summit caldera or its margin; ER = east rift zone; SWR = southwest rift zone; Event codes: E = eruption; I = intrusion with no surface lava; EP = major phase of Mauna Ulu eruption of 1969–1974. Data are complete through October, 1981.

\*Largest eruptions: volume exceeds  $70 \times 10^6 \text{ m}^3$ , or deflation exceeds 70 microradians.