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Aidan Fife April 7, 2019

Cultivating the grassroots: Deep ecology and community networks in Latin America

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Abstract

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The dominant influence of human activity on the environment has prompted some scientists to consider our current time to be a new era of the Earth's history. Climate change and decreases in biodiversity are global phenomena that are a part of this impact. Yet on the local level, anthropogenic threats to the integrity of ecological systems are unique to each social and biological context. In my thesis, I will examine how grassroots networks of individuals and organizations in two communities in Latin America have begun to innovatively respond to local environmental threats particular to them. The first case-study is based on an agricultural community in Cerro Punta, Chiriquí in western Panama, where farming on steep slopes has generated concerns about water conservation and severe soil degradation. Farmers and community leaders, recognizing these anthropogenic threats, have begun implementing sustainable farming techniques and encouraging others to follow suit. Through qualitative data from personal interviews, I describe how farmers and NGOs participate in horizontal resource-sharing networks to protect their local environment. The second case-study tells the narrative of the environmental activism of the Mapuche people in south-central Chile, who have defended the integrity of their land from the exploitation of logging companies. The Mapuche have demonstrated the way in which a long-lasting tradition of resistance and negotiation can reinforce networked efforts to protect land. This exploration of two instances of how grassroots community networks developed a local consciousness for pressing local ecological issues offers reflections on ways forward for global environmentalism.

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List of abbreviations

AMIPILA – Amigos de Parque Internacional La Amistad

Amisconde – Amistad: Conservación: y Desarrollo

ANAM – Autoridad Nacional del Ambiente

CONAMA – La Comisión Nacional del Medio Ambiente (Chile)

CONADI – La Corporación Nacional de Desarrollo Indígena (Chile)

FUNDICCEP – Fundación para el Desarrollo Integral Comunitario y Conservación de los Ecosistemas en Panamá

FUNDESPA – Fundación para el Desarrollo Sostenible de Panamá

GORACE – Grupo Orgánico de Agricultores Cerropunteños

IDIAP – Instituto de Investigación Agropecuaria de Panamá́

IPCC – Intergovernmental Panel on Climate Change

MIDA – Ministerio de Desarrollo Agropecuaria

PILA – Parque Internacional La Amistad – International Park of Friendship, a binational protected area between Costa Rica and Panama

UNESCO – United Nations Educational, Scientific, and Cultural Organization

"La Madre Tierra —militarizada, cercada, envenenada, donde se violan sistemáticamente derechos elementales — nos exige actuar. Construyamos entonces sociedades capaces de coexistir de manera justa, digna, y por la vida, juntémonos y sigamos con esperanza defendiendo y cuidando la sangre de la tierra y los espíritus."

[Mother Earth—militarized, fenced-in, poisoned, where fundamental rights are systematically violated—demands that we act. Let's construct societies that are capable of coexisting righteously, dignified and for life. Let's get together and continue with hope, defending and guarding the blood of the earth and its spirits.]

Berta Cáceras, Honduran environmental activist

Introduction

The human impact on the global environment has become so compellingly visible that it now is considered to rival the forces of natural systems that have been in existence for millennia. In disciplines ranging from science to philosophy, there is a growing concern about the widespread and increasing impact of human activity on the environment. Paul Crutzen, a prominent atmospheric chemist, has been a prime witness to these circumstances through his study of climate change and the human destabilization of ecological systems. On account of the accelerating changes he observed, Crutzen coined the term *Anthropocene* to describe a new geologic epoch of widespread human influence upon Earth's systems and their functioning. The concept of the Anthropocene suggests that the current Geologic epoch, called the Holocene, is now transitioning rapidly to a new era dominated by the environmental impact of human activity (Steffen et al., 2011). Climate change, the extinction of species, and the impairment of ecosystems are all indicators of this new era, which has had global reach, yet at the same time unique local impact.

On a local level, humans have begun to mobilize against the challenges of this new era of the Earth's history through the efforts of environmentalism. Arne Naess, an environmental philosopher and another witness to the devastating effects of human activity on ecological systems, offers one particular approach to environmental thought, a notion called *deep ecology*. The deep ecological worldview questions the fundamental assumptions of Western anthropocentrism and focuses on a consciousness that the biosphere does not consist of discrete entities but is rather a larger whole (Nelson, 2008). The ideals of Naess's deep ecology are present in many local-level movements toward environmental protection all over the world - two of which will be the subject of this

investigation: groups of farmers focused on conservation in western Panama and Mapuche activists resisting logging in south-central Chile. In each of these case studies of environmentally-engaged community networks in Latin America, there is evidence of collaboration to address concerns of threats to the local environment which is, in part, generated through a holistic consciousness of interconnected natural systems.

Looking at the history of human communities from a lens which incorporates this view of the environment, the narratives of Latin America are particularly interesting. As Shawn Miller writes in his *Environmental History of Latin America*, "nature and culture deserve equal billing" in the story of the Neotropics, the bioregion of tropical and subtropical America that extends from Mexico down to South America's southern cone (2007). Furthermore, Miller asserts that cultural attitudes toward nature ultimately set the tone for human relationships with the environment in this region (Miller). Starting with a story that draws on personal observations of farmers addressing ecological concerns in western Panama and then moving to the historically-documented narrative of the Mapuche indigenous community, I intend to show how the history of humans interacting with the environment in Latin America presents an opportunity to view environmentalism on a community level. Arne Naess's concept of deep ecology is a common thread among the networks of people involved in western Panama and south-central Chile, offering compelling stories of ecologically-conscious human interaction taking place in these two different Latin American communities.

While these two community networks are separated geographically, they represent similarly innovative approaches to confronting the threats that correspond to the

increasing impact of human activity which characterizes the Anthropocene. In each of the separate communities, the networks that I will be discussing have encountered anthropogenic threats to the environment, addressed government disjunction with pressing local issues, and connected to a network of environmentally-motivated individuals and organizations - all the while honoring and challenging the complex social contexts of rural Latin America. In examining the networks, several questions arise that are pertinent to this investigation:

- *Overarching question:*
    - Through the development of a holistic environmental consciousness, how have grassroots community networks innovatively responded to local anthropogenic threats to land and ecosystems?
- *Primary questions:*

  In each case study,
    - What pressing anthropogenic threats to local land and ecosystems have prompted community concern?
    - How did a consciousness for the nearby environmental issues take shape?
    - In what ways have grassroots community networks innovatively responded?
    - How does the history of each community influence its capacity to respond to these threats?

Methods and Theoretical Framework

In order to answer the questions of this analysis, I intend to combine qualitative primary source information and previous scholarship to better understand the stories and contexts surrounding the two case studies. The case studies are located in two different communities:

1) The farming community of Cerro Punta, located in the highlands of the Chiriquí province in western Panama
2) The Mapuche, an indigenous community in south-central Chile

(1) For the first case study, my analysis is based on a qualitative research study of perceptions of soil and water conservation issues in the community of Cerro Punta. For this research project, I interviewed thirty farmers, five leaders of community organizations, and four government officials from the area, using a semi-structured interview format (see Appendix I). The study took place over four weeks and initially intended to determine obstacles to implementing soil and water conservation practices. Through ethnographic observation, however, the original study evolved to explore the ways that individuals and organizations were able to effectively collaborate to address threats to the local environment. Additionally, I observed initiatives operating on a government level, which prompted new understandings of the conventional strategies for environmentalism in Cerro Punta. Reflecting the exploratory nature of the study, my research began with conversations with farmers about their personal perceptions of conservation issues and culminated with research into community collaboration taking place to counteract local anthropogenic threats to the environment.

As for the methodology of the study, interviews with farmers began by establishing the parameters of their experience as landholders in Cerro Punta. The semi-structured conversations included questions about how long each farmer had owned their land, the size of their farm, and the most important crops grown on their farm. I then asked questions concerning their agricultural practices and the ways in which their farming strategies were being adapted to address anthropogenic environmental issues they perceived in Cerro Punta. Over time, I observed a subgroup of farmers who had expressed concerns about pressing soil and water conservation issues which they identified to be threatening local ecosystems and land integrity. Further interviews led me to an awareness that the subgroup of farmers was part of a discrete network of individuals and organizations attempting to address soil and water threats through new farming strategies. After familiarizing myself with this network, I interviewed government officials and leaders of environmentally-related organizations and NGOs in the area to understand how this network was formed and how they fit into the larger context of their approaches to environmentalism in Cerro Punta.

Further understanding of environmental initiatives taking place in Cerro Punta emerged through the interviews with community leaders and government officials. I interviewed leaders of the aforementioned organizations and NGOs that are directly involved in conservation and agriculture in Cerro Punta including: Grupo Orgánico de Agricultores Cerropunteños (GORACE), Amigos de Parque Internacional La Amistad (AMIPILA), and Fundación para el Desarrollo Integral Comunitario y Conservación de los Ecosistemas en Panamá (FUNDICCEP). I additionally spoke with government officials from local offices in Cerro Punta and in the nearby city of Volcán who have jurisdiction over the

farmland in Cerro Punta. The government offices included: Instituto de Investigación Agropecuaria de Panamá (IDIAP), an agricultural research group; Ministerio de Desarrollo Agropecuaria (MIDA), the Ministry of Agriculture; and Autoridad Nacional del Ambiente (ANAM), the National Environmental Authority in Panama. The combination of qualitative data from community members, conservation groups, and government officials tells a narrative about how community networks went beyond the scope of the government to address soil and water conservation issues in Cerro Punta.

(2) In comparison to the network of farmers in Cerro Punta working on soil and water conservation, the Mapuche community of environmental activists in south-central Chile is much larger and geographically extended. The history of this group in relation to the land, likewise, is much more extensive and reaches further back than that of the community of comparison in Cerro Punta. Thus, for the second case study I begin by examining the long history of the Mapuche with the land, especially in terms of their conflict with outside threats to their way of life and connection to the land. The Mapuche history described in this study begins with resistance to the expansion of the Inca Empire in the fifteenth century and chronicles the conflicts successively experienced by the Mapuche with the Spanish, the republic of Chile, and the Pinochet dictatorship. Using the Mapuche record of resistance and negotiation to understand current land disputes, I investigate the rise of extractive practices on Mapuche land. I examine closely the ecological impacts associated with logging that began proliferating at a scale that caused alarm among local activists in the 1980s, during and after the dictatorship of Augusto Pinochet. The historical response to the logging industry by the Mapuche is well-documented and serves as a useful parallel to the story of environmentalism in Cerro

Punta, Panama. The parallel is productive in understanding how the comparatively longer history of the Mapuche community has influenced their capacity for grassroots activism. In this case study, I will explore the various groups which have participated in the environmental network of the Mapuche resistance to logging and the way the history of the Mapuche has informed their efforts.

In the case studies, I tell two stories of community networks in Latin America which implement, in their own way, the principles of Naess's deep ecology. Throughout this investigation, I describe these networks as "grassroots." As a descriptor for social organizing, the term grassroots has its origins in the United States in the early 1900s yet has seen widespread adoption among social movements world-wide. When describing environmentally-focused community networks in Latin America, the word is not only compelling as a visual representation of the value of growing ecosystems but also because of the implied connotation of origins from the ground up. In the context of this project, the term grassroots has been defined as: networks of activists and organizations generating bottom-up solutions for sustainable development, solutions that respond to the local situation and the interests and values of the communities involved (Seyfang & Smith, 2007). I use the term as a descriptor for community actions to emphasize a distinction from businesses, government projects, and outside conservation groups.

With the Anthropocene and the concept of deep ecology as a backdrop, I intend to examine the actions taken by Latin American community networks to counter detrimental human exploitation of land. While the actors in these two case studies of environmental activism may not explicitly label their actions as part of the philosophical tradition of deep

ecology, I hope to show how environmental consciousness and a holistic assessment of natural systems are, indeed, a part of their practice. In each case study, Naess's concept of deep ecology is suggested as a way of understanding the inspiration behind the environmentalism of the communities in response to local anthropogenic threats to lands and ecosystems. Admittedly, the motivation for community's environmentalism does not solely rest on Naess's ecological philosophies and is in part influenced by an interest in the maintenance of land for human use. However, I would argue that the principles of deep ecology still apply. Throughout my investigation, I explore ways in which Naess's philosophy suggests new interpretations for holistically assessing the value of ecosystems and land, ultimately generating a heightened awareness of the fragile interdependence of ecological systems. Through the lens of deep ecology, I will focus on the development of community consciousness of their surrounding environment and the ways in which this holistic awareness leads to the creation of meaningful connections and promotes environmentalism over time.

Confronting the Anthropocene

"Let's stop it," said Paul Crutzen, interrupting a meeting. "We are no longer in the Holocene; we are the Anthropocene."[1] This moment, as recalled by Dutch chemist Paul Crutzen himself, was a powerful interruption in the way humans have largely considered the history of Earth. His comment came during a meeting of scientists in which the chair had repeatedly referred to the current epoch as the Holocene, which is the officially recognized geologic era of the present. The Holocene, whose time Crutzen had declared at an end, is said to have started 11,500 years ago as a series of interglacial climate phases. During this time, the climate and other physical characteristics of the landscape allowed Earth to support human activity on an increasingly larger scale. Many of Earth's sedimentary surface characteristics formed during this epoch, creating river deposits, deltas, and coastal plains. In this new hospitable landscape for human activity, human population proliferated exponentially (Zalasiewicz, 2011). In the context of this paper, the ecological impact of the increasing levels of human activity is recognized as the principal threat to natural systems and land integrity.[2] The interruption of the Holocene, as Crutzen

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[1] Since Crutzen's interruption of this meeting and his later related publication in the journal *Nature*, the term has been rapidly introduced to academic literature (Kolbert, 2011). While Crutzen's coining of the neologism "Anthropocene" was a notable event in recent scientific discussions, the notion that human activity has outpaced natural processes is not new. In Crutzen's writing on the subject, he credits G. P. Marsh for publishing "The Earth as Modified by Human Action" in 1864 as one of the early recognitions of the dominance of human activity over natural systems (Crutzen, 2006).

[2] To be sure, there are other ways to define the progressive acceleration of human activity over time. For the purposes of this paper, I specifically examine the ways in which the associated consequences of an exponentially growing human population has damaged ecological systems. Such examples of ecologically detrimental human activity and intervention, intentional or unintentional, are my focus here.

suggested, recognizes the resulting widespread and fundamental change that humans have imposed upon the planet. Indeed, Crutzen was not the first to call attention to the profound influence of humanity on the Earth, yet his announcement of the human disruption of Earth's ecological processes continues to spark new dialogues concerning the impact of human activity … and a growing consensus that "we are in the Anthropocene."

The symptoms of the arrival of the Anthropocene have become increasingly self-evident. Scientists point to the way in which humans have taken carbon that was buried underground over the past tens of millions of years and released it rapidly in a matter of decades – contributing extensively to the warming of the global climate. In this way, humans have dramatically altered the previous pace of physical processes within Earth's atmosphere. Looking at the marked increase in temperatures on the Earth's surface provides evidence that the planet is changing at an unprecedented rate. The Intergovernmental Panel on Climate Change (IPCC) has reported that the period from 1983 to 2012 is likely the warmest 30-year period of the last 1400 years in the Northern Hemisphere (Pachauri et al., 2014). This dramatic change in temperature signals a point in which human activity has outpaced the Earth's natural processes – the Anthropocene.

This explosion of human activity and ecological intervention, which initially indicated progress, is now increasingly understood differently.[3] Along with dramatic

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[3] Progress in the sense of human activity is not unilateral nor does it often result in equitable outcomes. Here, I mean the Western anthropocentric notion of progress in terms of technological development and the cultivating of natural resources for human use, which often can instead be seen from a retrospective lens as exploitative and environmentally degrading, as I discussed earlier.

climate change, there are widespread alterations to the land which are perhaps the most visible planetary evidence of the Anthropocene. Our single greatest land use is for agriculture and food production: an estimated 12 percent of the Earth's surface is devoted to cropland and another 26 percent for the grazing of animals (Stein, 2018). While necessary to feed the ever-growing human population, industrial-scale agriculture has had unintended effects. As an important example of human impact on other species, agriculture contributes significantly to enormous losses in the Earth's biodiversity. To cite one estimate, approximately 80 percent of all terrestrial bird and mammal species that are considered "threatened" by the International Union for Conservation of Nature (IUCN) are at risk from agriculturally driven habitat loss (Tillman, 2017). Evidently, widespread agricultural practices represent a significant portion of humanity's ever-growing impact on the planet.

I mention these examples in order to give some idea of the daunting challenges that have provoked action to protect natural resources and ecosystems in the Anthropocene. Global ecological processes form a fragile "net" that supports life on Earth, and any tearing of this net threaten human survival. Mobilization against "tears" in the ecological net, which are now seen to be occurring on a global scale within the Anthropocene, can be understood as environmentalism (Frank et al., 2000).[4] Environmentalism constitutes all efforts to shift

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[4] The theories and arguments which support environmentalism are diverse, resulting in vastly different approaches to action, and are important to the study of environmental philosophy. Here, I propose a definition that attempts to encompass the aims of global environmentalism. To quote Frank, "[environmentalism] asserts the priority of a global entity-an ecosystem that operates according to universal laws in a tangled web of planetary interdependencies; and it refers to a worldwide social process – world-level discourse and activity that together have reconstituted nation-states and individuals" (2000).

human impact toward a more positive intervention on behalf of the environment. In the context of this investigation, I define environmentalism as the human voice for sustainable management of Earth's resources and ecology.[5] While this definition of environmental advocacy and its goals seems straightforward, there are varying approaches that have emerged to address these aims, and this is what I wish to explore in what follows.

One particular approach to environmentalism is a concept called *deep ecology*, a philosophy first articulated by Arne Naess in 1972. Deep ecology refers to a particular kind of consciousness toward the environment and operates as a philosophical platform which can be applied practically to bring about concrete changes in policy and the way humans interact with their local ecosystems. Bill Devall and George Sessions, who have developed Naess's ideas in their book *Deep Ecology – Living as if Nature Mattered*, write:

> This is the work we call cultivating ecological consciousness. This process involves becoming more aware of the actuality of rocks, wolves, trees, and rivers – the cultivation of the insight that everything is connected. It is learning how to be more receptive, trusting, holistic in perception, and is grounded in a vision of non-exploitive science and technology (Devall & Sessions, 2007).

The principles of the deep ecology philosophy pinpointed here by Devall and Sessions lay out how ecological consciousness may lead to holistic approaches to environmentalism.

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[5] Using Naess's notion of deep ecology and the concept of community networks, I narrow down the global concept of environmentalism described here to a local level, which is applied throughout this study.

Like Crutzen, Naess interrupted a conversation that he saw as unproductive regarding the understanding of human intervention on Earth and its consequences. Naess saw environmentalism straying down a path which he calls "reform environmentalism." He characterized this line of thinking as work towards the broader goals of the essential protection of Earth's natural resources, but one that was bound within the "confines of conventional political processes of industrialized nations" which were focused on short term solutions (Devall & Sessions, 2007). Deep ecology offers instead a holistic approach toward sustainable development that avoids exploitative technological growth and is grounded in philosophical arguments regarding environmental consciousness. While the theoretical basis of deep ecology is necessary for understanding its value as an environmental philosophy, in practice, I argue that its application does not require acknowledgement of the philosophy itself. Instead, the value of deep ecology lies most importantly in the implementation of both a holistic assessment of Earth's natural systems and the awareness of the role of humans as a part of these fragile systems.

Taking the global nature of pressing environmental issues and the holistic approach of deep ecology as my point of departure, I envision a lived connection between the two that plays out on a local level. From a climate science perspective, present-day climate change is a global process. Yet people commonly experience the reality of the impacts of the Anthropocene in local contexts (Krupnik, 2018). By looking at grassroots environmental networks in Cerro Punta in western Panama and in Mapuche communities of south-central Chile, we can identify and learn from innovative approaches to addressing the challenges of the Anthropocene in a local context.

Chapter 1: Cerro Punta

A community vulnerable to environmental threats of agriculture

While conducting an independent research project during the Spring of 2018 in Chiriquí, a province in the highlands of western Panama, I very quickly recognized the compelling profile of the Anthropocene which was visible on particularly vulnerable tracts of the area's agricultural land. Advantageous environmental and historical factors in the late nineteenth century led to an increased scale of agriculture in the area which had a marked effect on the land, leaving the mountains carved with small farms (Candenado, 2010). Because of these favorable factors, farming became a central part of life for Chiricanos, the residents of the region. But now, the tangible impact of agriculture which exists at the intersection of the human and natural landscape calls for new approaches to addressing the environmental challenges of this particular Anthropocene environment.

Historically, Chiriquí became a hotspot for agriculture as a result of its fertile land and economic potential. The province possesses rich volcanic soils and has a consistently rainy climate, both of which have proved conducive to the production of vegetables and meat (Aguilar & Fernández, 2014). The economic practicality of the region comes from its convenient location, equidistant from important markets in Cartago in Costa Rica and Panama City, Panama (Candenado, 2010). Owing to the fertile land and economic potential, agricultural production since the early twentieth century has developed steadily. Presently, Chiriquí produces almost eighty percent of the vegetables in Panama and has been described as the breadbasket of the country (Shah, 2006).

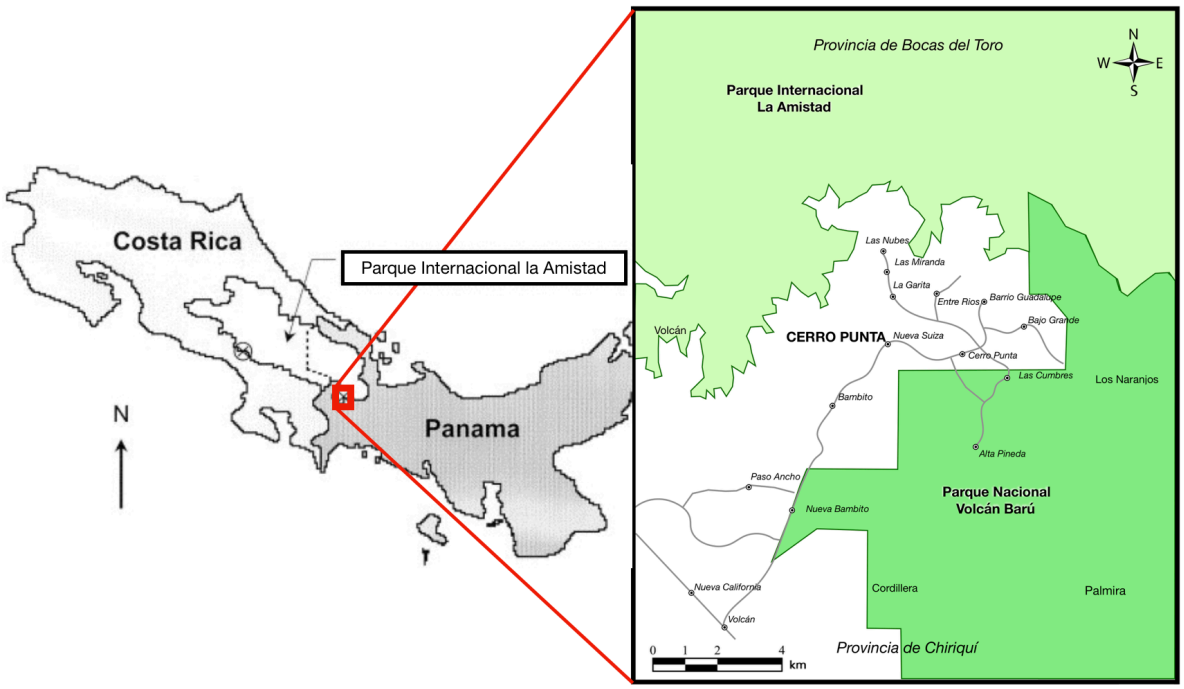

Figure 1. Map of Cerro Punta with respect to the surrounding Parque Internacional La Amistad, locating in the western highlands of Panama (Candenado, 2010).

Cerro Punta, a small community located in the highlands of Chiriquí (Figure 1), is representative of the region's historical development through agriculture. In the 1930s, a road from the nearby town of Bambito to Cerro Punta was built, and large tracts of land were purchased for agricultural purposes. Since then, the community of Cerro Punta has grown considerably, developing numerous commercial and family-owned farms (Sanchez, 2011). Currently, farms in this area generate most of their profit from the cultivation of vegetables, especially onions, cabbage, and potatoes (Jones, 2006). The community of Cerro Punta is an archetype of the agricultural tradition of Chiriquí and produce grown there significantly contributes to the regional market for vegetables.

While Cerro Punta reflects a context for agricultural production that is generally similar to that of the surrounding region, there are several characteristics that make it uniquely vulnerable to anthropogenic forces. The most obvious are the extreme slopes on which local farmers cling to produce their crops. The community is situated only five miles from Panama's tallest peak, Volcán Barú, which stands at 11,401 feet above sea level. Studies that have investigated the metrics of the agricultural slopes have estimated the angles of the agricultural landscape to be approaching 45-degree angles in some areas (Figure 2) (Happ, 2014).

Figure 2. Typical farms in Cerro Punta, characterized by steep slopes, adjacent forested land, and the use of terraces to fight erosion. April 23, 2018.

The sheer difficulty of holding soil on this degree of slope has led to extreme rates of erosion which is exacerbated by intensive farming. Agricultural practices that may have only a negligible impact on soil loss on flat lands here lead to drastic consequences. In this way, the anthropogenic threats to the environment take hold to an elevated degree on the areas surrounding Cerro Punta.

Figure 3. Erosion from nearby fields can be seen on local roads, spreading the run-off of agrochemicals and sediment to nearby watersheds. April 26, 2018.

Given the steep slopes that characterize Cerro Punta, the dangers of sediment and pesticides entering the local watershed through erosion are further increased, thus making the region even more vulnerable to damage from human intervention. Water erosion can cause various chemicals and sediment to enter streams, leading to pollution and sedimentation (Figure 3). The water pollutants contained within the agricultural run-off can lead to mortality among various fish and aquatic invertebrates and thus may put in motion cascading ecological damage. Additionally, sediment alters landscape characteristics and can reduce wildlife habitats in streams (Blanco-Canqui & Rattan, 2010). Moreover, while sedimentation and pollution may seem to be issues of a local scale, soil

erosion has been found to contribute to global climate change. Large amounts of carbon are rapidly oxidized during erosion, prompting the release of carbon dioxide and methane into the atmosphere (Lal, 2003). The considerable potential for damage coming from the steep slopes of Cerro Punta demonstrates the particular vulnerability of the area occasioned by its physical characteristics.

Cerro Punta is located in close proximity to an area with tremendous biodiversity, escalating the risk of intensive agricultural practice causing detriment to local species. The farms located in Cerro Punta directly border Parque Internacional La Amistad (PILA), a binational park with approximately 2.5 million acres of protected forest which is shared between Panama and Costa Rica and hosts an estimated 4% percent of the world's species (Figure 1) (Duke et al., 2014). The park is highly valued for these exceptional levels of biodiversity and was declared by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) as a "biosphere reserve" and a World Heritage Site in 1982 and 1983, respectively. Unique types of ecosystems which exist nowhere else in Central America exist within PILA, including cloud forest, tropical humid, and wet forests. As part of the ecosystems, migratory species found in the area depend on the region as a land-bridge between North and South America. Human activity within the land bridge may interrupt the migratory journey of species as habitats are eliminated along their path (Clark et al., 2006). In a region where this ecologically important park is at risk, caution is clearly needed on the local level to protect the value of the nearby biodiversity.

Given the steep slopes of the region creating a particularly vulnerable zone for soil erosion and the proximity of the community of Cerro Punta to biodiversity,

environmentalism is called upon to play a crucial protective role in order to maintain the integrity of this land. Taking on this role of environmental advocacy in the face of this pressing danger are several organizations sprung from a consciousness of these issues. The collaboration between the organizations, Grupo Orgánico de Agricultores Cerropunteños (GORACE), Amigos de PILA (AMIPILA), and Fundación para el Desarrollo Integral Comunitario y Conservación de los Ecosistemas en Panamá (FUNDICCEP), will be the focus for the following discussion of grassroots approaches to environmentalism.

The environmental actions of these organizations is perhaps best encapsulated in an excerpt from *Living in the Anthropocene: Earth in the Age of Humans*:

> Strategies being applied by local players, such as small municipalities, town mayors, nongovernmental organizations (NGOs), and citizens' groups are increasingly taking matters into their own hands by promoting alternative energy sources, reliance on green technologies, horizontal networking, resource sharing, and reduced pressure on vulnerable ecosystems (Krupnik, 2018).

The individuals and organizations that are a part of the grassroots network in Cerro Punta have taken the vulnerable circumstances of their region into their scope of consciousness and are currently working to apply management practices appropriate to their local circumstances.

A network of organic farmers: Responding to threats to soil and water health

Intensive farming practices coupled with poor soil and water management practices have had a strong detrimental impact on the ecologically vulnerable farmland of Cerro Punta. Erosion carrying sediment and agrochemicals is one of the primary ways in which local rivers of Cerro Punta have become contaminated, and farmland has experienced steady degradation as a consequence. Interviews with local farmers and government officials suggested that the farmland was experiencing heavy use of chemical fertilizers and pesticides as well as rapid deterioration in areas in which erosion control methods were not being implemented. The conversations also hinted at a growing consciousness of the damage being experienced by local ecosystems as a consequence of intensive farming.

In general, the use of pesticides and artificial fertilizer on farmland contribute heavily to the contamination and environmental degradation of soil and water. Pesticides can have a directly toxic effect on various organisms, which can have a cascading effect on other organisms within an ecosystem (Liess & Von Der Ohe, 2005). Chemical fertilizers can enter ground and surface water via surface run-off and can cause bodies of water to be oversaturated with nutrients, contributing to a process known eutrophication (Jorgenson & Kuykendall, 2008). As a result of the elevated nutrient levels – rivers, lakes, and other bodies of waters can experience toxic algae blooms, events characterized by the exponential growth of algae. The algal blooms which originally began with an excess of chemical fertilizers can then cause enormous stress on surrounding organisms, often depriving entire ecosystems of vital dissolved oxygen levels in water (Hallegraeff, 1993). The detrimental effects of agrochemicals mentioned here became part of growing evidence for the degradation of natural systems due to increasing human activity in Cerro Punta.

Through my investigation of the methods that farmers from Cerro Punta employ to conserve the soil and water, I became familiar with a larger effort to reduce the environmental damage from poor farming practices. In the process of inquiring about the use of various conservation techniques, I encountered group of farmers who had entirely discontinued the use of agrochemicals, begun using crop rotation practices, and created their own natural fertilizers. I first became aware of the group in an interview with a farmer named Ramón, whose affirmative responses to my questions regarding conservation practices starkly contrasted with previously uncertain reactions to concepts such as crop rotation or use of natural fertilizers that I'd heard in previous interviews.[6]

Ramón showed me his extensive farming operation which hosted a large seed bank and implemented a natural fertilizer known as "bokashi", a type of organic fertilizer which is made by fermenting specially selected ingredients often including rice bran and animal waste products. Bokashi is traditionally used by Japanese farmers to improve soil fertility and to supply crops with nutrients such as nitrogen, carbon, and phosphorous (Inckel et al., 2005).[7] By investigating the spread of bokashi between farmers, the grassroots network that exists within Cerro Punta can be clearly traced both to individuals and organizations

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[6] Crop rotation, as a practice, is an ecologically-friendly farming technique in which the planting of certain crops is continuously alternated. Farmers and policymakers have examined crop rotation as a means to minimize the unintended effects of intensive agriculture on the environment. In the alternation of certain crops and legumes, crops can receive additional sources of nitrogen, avoiding the use of artificial fertilizers which commonly are intended to reinforce nitrogen levels in soil (Stevenson & Van Kessel, 1996).

[7] To counter the potential damage from chemical inputs, studies suggest the use of organic materials for fertilizer. Organic matter can increase the soil biodiversity, which can increase the number of soil biota nearly three-fold when transitioning from synthetic fertilizers to fertilizers containing non-synthetic inputs (Piminetel et al., 2005).

using the natural compost and thus becoming involved in the conservation of soil and water. As both a symbol for environmentalism and a practical means to exercise it, bokashi represents the way in which international recipes for sustainable farming can take hold on a local level. I gradually learned that Ramón's organic fertilizer was widely distributed among several other farmers, who also were collaborating in other ways, such as supporting an extensive seed bank and collaborating to sell produce. These farmers, in this way, were part of a larger network within the small farming community of Cerro Punta.

Following the trail of bokashi, I was led to Roger, a farmer who in his late-seventies exhibited an impressive knowledge about organic means to promote land conservation. It was in Roger's company that I learned about the formation of GORACE, Grupo Orgánico de Agricultores Cerro Punteños [Organic Group of Farmers of Cerro Punta], which had taken shape at the very table where I spoke with him. The farmers that were a part of this group were distributed throughout the farmland of Cerro Punta but had organized at this central point in 1997 in small but critical numbers. Roger and several members of the group whom I later interviewed, described their formational meetings fondly and rebelliously as the gathering of "once locos y una loca" [eleven crazy men and one crazy woman]. The farmers who were using bokashi had started doing so after learning the technique from existing organic farming literature during their GORACE gatherings. The organizing at the table in Roger's home represents a small yet important example of a grassroots organizational structure addressing the concerns of an ecologically vulnerable region.

GORACE is a prime example of the strategies to which I referred earlier: local players increasingly taking matters into their own hands through horizontal networking

and resource sharing in an effort to reduce pressure on vulnerable ecosystems (Krupnik, 2018). The horizontal networking of the group primarily can be seen in the way in which this group of organic farmers share both seeds and organic fertilizer. Resources, in this way, are shared on a grassroots level, rather than coming from or requiring outside or government support. Globally, seed sharing worldwide is an innovative initiative often adopted as an important element of food sovereignty. Over time, farmers' ownership of their seeds has been gradually eroded through growing monopolies in the seed industry and smaller farmers have been looking to seed banks as a means to maintain rights to seeds.[8] In this way, GORACE's seed sharing project is a part of a larger movement that acts despite the economic forces that characterize large-scale agriculture and instead is based on action by a community network as a way forward.

Currently GORACE continues its work in promoting horizontal networking of resources, supporting a common goal of distributing their organic crops. Each of the farmers in the group has been certified by Agencia Certificadora BioLatina, a multinational certification recognized exclusively in Latin America. Many of the farmers associated with the group are in the process of being certified by Certificadora Pública Nacional ACERT for selling nationally in Panama (Appendix II). GORACE, as an organization, is based on close relationships between farmers in Cerro Punta and holds regular meetings at a central warehouse and meeting place, where they store their seed bank and supply of bokashi

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[8] Often in the monopolization of seeds, large agrochemical companies bind transgenic seeds to specific pesticides, thus complicating the process of finding viable seeds independent of the influence of agrochemicals. Primary agricultural producers around the world have confronted vertical seed monopolies, attempting to create their own seed banks for the sharing of this resource (Kloppenburg, 2014).

compost. Membership is open to both farmers and non-farming community members alike. Their mission statement is:

> To be a consolidated community network recognized at a national level, in the production and supply of 100% organic products through strong relationships that are distinguished by their quality, costs, and competitiveness, strengthening reliable and healthy networks for our customers.
>
> [Ser una red comunitaria consolidada y reconocida a nivel nacional, en la producción y abastecimiento de productos 100% orgánicos a través de relaciones comerciales sólidas que se distinguen por su calidad, costos, y competitividad, fortaleciendo redes confiables y saludables a nuestros clientes.]

In this way, GORACE identifies itself as a network of farmers, consumers, and community members that are focused on conservation issues. The network, however, is not limited to the members of GORACE and connects to other groups, both locally and internationally that act against the damaging anthropogenic forces that threaten the community of Cerro Punta.

The larger network of environmentalism in Cerro Punta

The farming collective of GORACE is historically and geographically oriented within other conservation projects in the highlands of Panama, or more accurately the areas of human activity adjacent to Parque Internacional La Amistad (PILA). The most prominent

previous conservation effort in the region is called Amisconde, standing for Amistad [Friendship]: Conservación [Conservation], and Desarollo [Development].[9] Amisconde was coordinated from 1992 to 1997 by Conservation International, an international non-governmental organization (NGO), from its office in Costa Rica. The mission of Conservation International is to "conserve the Earth's living natural heritage, our global biodiversity, and to demonstrate that human societies are able to live harmoniously with nature" (Garnett et al., 2007).[10] The organization primarily focuses on sustainable development projects through land conservation, asserting that unsustainable development is the greatest threat to biodiversity.

The central goal of the Amisconde project was to form an ecologically-friendly buffer zone between agricultural activity and the protected area of PILA. The communities that formed part of the Amisconde initiative on both the Panamanian and Costa Rican side

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[9] The Amisconde initiative is considered an Integrated Conservation and Development Project (ICDP), an umbrella term that represents a focus on both human activity and biological conservation. ICDPs have become increasingly employed as means to solve local conflicts between biological conservation and natural resource use (Alpert, 1996).

[10] Conservation International, an NGO based in the United States, receives support from various other internationally reaching companies, university, and organizations. The Amisconde project acquired funding and support from McDonald's Corporation and Clemson University, and later from Texas A & M University. Private partnerships of this nature have gained popularity in recent decades with the decrease in overseas funding for implementing ICDPs (Miller, 2003). The corporate social responsibility program implemented here by the McDonald's Corporation to support the mission of Conservation International raises questions about the validity of referring to organizations associated with Amisconde as "grassroots." My use of the term, as indicated earlier, is meant a descriptor to distinguish the environmental network in Cerro Punta from businesses, government programs and top-down conservation projects. In the context of this paper, the term can be applied to local offshoots of the Amisconde program, but not the initial 5-year project itself.

of the protected area had similar assets in terms of biodiversity and ecological value. The impetus for conservation was based on the desire to preserve forested zones in Costa Rica and Panama as a land bridge for fauna which travel between the countries (Miller, 2003). The aims outlined here by Amisconde intended to protect the local land for the preservation of species, implicating the interconnected ecological systems of the area.

In addition to the rich share of biodiversity and species which is common to the areas around PILA, there were also shared anthropogenic threats associated with the large-scale human activity that prompted the Amisconde project. Human population growth, road-building and clearing for agriculture were concerns that conservationists hoped to address (Gorman, 2003). At the time, studies in rural Costa Rica suggested that there was a growing concern and consciousness of environmental issues among community members. In response to the question, "What is your most important environmental concern?" – half of respondents mentioned climate change and a loss of ecological integrity in local ecosystems (Kennedy, 2000). The motivations for protecting land and water resources near high levels of biodiversity were the spark for the Amisconde project, which operated beyond the scope of government institutions involved in environmental issues in the region, to create the network that exists today.

So how did the Amisconde project become incorporated in Cerro Punta on the Panamanian border with PILA? The Amisconde project in Panama formally began in 1993 and lasted for five years in the community of Cerro Punta. The project had government support through an organization called FUNDESPA (Fundación para el Desarrollo Sostenible de Panamá). FUNDESPA helped to form a team of local leaders, many of whom

are currently involved in the region to implement conservation projects (Duffy, 2001). According to one of these leaders now serving within an NGO in Cerro Punta, the initial projects were weakly organized without much planning [eran poco inicipientes sin mucha planificación].

The projects that started with Amisconde, however, gave way to grassroots initiatives after the departure of financial support of Conservation International. Leaders from local community members took over the organizations and have since gained official status as non-governmental organizations (NGOs). Some of these NGOs include Fundación para el Desarrollo Integral Comunitario y Conservación de los Ecosistemas en Panamá (FUNDICCEP) and Amigos del Parque Internacional La Amistad (AMIPILA). These conservation groups have continued many of the objectives initially identified by Amisconde and vestiges of the organization are visible in the daily operations of the new NGOs (Figure 4). The transition after Amisconde to the work of other organizations is perhaps best described by one of the leaders of FUNDICCEP:

> At the end of the project, people of the community that participated in other organizations like AMIPILA, FUNDICCEP, and GORACE, and others, in addition to people who were not in these organizations, believed that it was necessary to provide continuity in the development of the area of Cerro Punta. When Amisconde finished its funding period, we who stayed working on the issue of community management thought it was necessary to adopt Amisconde as a philosophy in the community, continuing with work that was finished and maintain the processes that they had started, now without the resources but with the motivation of the people.

[Al finalizar el proyecto, gente de la comunidad que participaba en otras organizaciones como AMIPILA, FUNDICCEP y GORACE, y otras, así como gente que no estaba en organizaciones, pero creía que esto era necesario para dar continuidad al desarrollo en el área de Cerro Punta. Cuando Amisconde finaliza en su etapa de financiamiento, los que quedamos trabajando en el tema de gestión comunitaria creimos que era necesario adoptar a Amisconde como una filosofía en la comunidad, continuar con los trabajos realizados y mantener los procesos que se habían emprendido, ya no había recursos, pero sí motivación en las personas.]

Figure 4: The sign outside of FUNDICCEP pays a tribute to the Amisconde Initiative. April 16, 2018.

The community members involved with AMIPILA and FUNDICCEP participate in the larger network that I described in Cerro Punta. GORACE, the group of proud organic farmers that initially took shape around Roger's table in 1997, has strong ties to both organizations, making it possible to leverage their connections to confront anthropogenic issues of soil and water conservation. AMIPILA, an organization closely associated with the

protected area of PILA, specifically works on projects that can benefit the ecosystems within the adjacent international park. For this reason, AMIPILA has a distinct focus on the conservation of nearby streams, which are important assets for the species in the park, providing water, habitat, and sources of food for communities of organisms. FUNDICCEP has an emphasis on community development, offering workshops and providing support for the projects of AMIPILA and GORACE. The grassroots network functions through horizontal networking and resource sharing for farming, which on a basic level can be as simple as the use of compost materials instead of traditional chemical fertilizers.

To best illustrate the scope and capacity of the network of community members and NGOs which effectively participate in resource sharing and horizontal networks, the trail of bokashi, the natural fertilizer from Japan, can be mapped through the community network of Cerro Punta. The internationally-derived recipe for this ingredient for sustainable farming can be traced to local NGOs which share the natural compost among farmers. Much of the nutrient-rich bokashi is produced and sold by AMIPILA. Bokashi must be produced through a labor-intensive process which requires a complex combination of rice bran and animal waste products, which are sourced from local farmers, and the process takes several weeks to complete. In the operation of compost production run by AMIPILA, the bokashi is shared among farmers and promoted by FUNDICCEP as an alternative to conventional farming techniques (Figure 5). The bokashi that is produced at AMIPILA is sold throughout Cerro Punta at a reduced price to promote its use over chemical fertilizers. In my interviews with farmers, over half of those surveyed said that they had at one time purchased bokashi from AMIPILA for use on their farms. Evidently, groups of farmers

involved in conservation in Cerro Punta have been able to collectively implement practices that have permeated beyond themselves into other parts of this community network.

Figure 5. Bokashi being produced at AMIPILA, an operation which requires the intensive mixing of rice bran and animal waste products. April 16, 2018.

The grassroots network within the community of Cerro Punta has demonstrated a capacity for beginning to respond to the threats to biodiversity and the integrity of the land which have been generated from anthropogenic actions. The organizing that occurred at Roger's table in 1997 was a first step based in environmental consciousness that has since led to contributions from different NGOs and members of the community in Cerro Punta. The ties to these NGOs have further strengthened the capacity for farmers in the area to

engage in conservation practices that are meant to protect ecological systems. Horizontal resource sharing of seeds and organic compost are the mechanism by which this network can respond to a need that cannot be met from a top-down government approach, but rather can be best practiced from a neighbor-to-neighbor grassroots initiative. In this way, the various people and organizations in Cerro Punta that are working to mitigate the damage of harmful farming practices are innovatively confronting an issue which threatens the local environment through a holistic appreciation of larger ecological systems. Thus, the discussion provoked by the community of Cerro Punta sheds light on a unique confrontation of the Anthropocene on a local level based in deep ecology.

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Chapter 2: The Mapuche

A history of resistance

In this discussion of land, grassroots organizing, and the protection of the environment in Latin America, an exploration of the actions of the Mapuche people of south-central Chile elucidates another resonance of patterns of action that fall in line with principles of deep ecology. The Mapuche offer a glimpse into the way in which long-held environmental consciousness can lead to action amid threats from intensive human intervention in Latin America, which in this case come from outside the community. The Mapuche have a history steeped in negotiation and resistance that, over time, has developed into a larger narrative of actions to defend their close relationship with the land (Mallon, 2005). In this section, I will provide a brief introduction to the Mapuche history with the land, starting with their initial confrontation with Incan expansion, continuing through the colonial period, independence, and the emergence of the nation-state, and finishing with present land-rights disputes. The case study of the Mapuche intends to complement and contrast the story of environmentalism within the community of Cerro Punta in western Panama by offering a deep ecological approach that is part of a larger historical narrative.

The Mapuche have a long, complex history with the land that is embedded in their lifestyle and culture. In their language of Mapudungun, Mapu- means people and -puche means earth, so the identification with the land is quite literally inscribed in their name (Berdichewsky, 1975). The history of the Mapuche begins with their Pre-Colombian occupation of south-central Chile, a region which supported the Mapuche throughout their

history with an abundance of natural resources. The ocean as a source of seafood was close-by, rivers and lakes offered fish, and the Andes contributed the pine-nut, one of the staple Mapuche foods (Ray, 2007). Before the arrival of the Spanish, the Mapuche were described as non-urban dwellers, participating in both hunting and gathering as well as subsistence farming of fruit and vegetables – not yet having developed a fully agricultural society (Langer, 2003). Without a strong agricultural presence, the pre-Colombian organization of the Mapuche was primarily based on kinship networks and did not develop other significant institutions (Langer). However, as outside threats entered the realm of the Mapuche, they were quick to adapt their way of life to these new challenges.

The Mapuche story of resistance to foreign invaders began during the expansion of the Inca Empire in the fifteenth century.[11] During that time, the troops of the Inca emperor Topa Inca Yupanqui exerted political control over the inhabitants of what is now northern Chile through a series of military victories. The Inca, however, were unable to conquer central and southern Chile, the lands occupied by the Mapuche, who were constantly harassing the Inca warriors during their expansion. The Inca were stopped at the three-day battle of Maule in 1532, a skirmish which historians have conjectured ended indecisively and which left the Inca unwilling to commit greater resources to fight the Mapuche in their

[11] The history of the conflict between the Inca and Mapuche is subject to debate and is largely extrapolated from scattered accounts of Incan expansion. Garcilaso de la Vega, a late sixteenth century mestizo writer, asserted that Incan expansion ended at the bloody Battle of Maule. In recent scholarship, however, Osvaldo Silva Galdames has challenged this narrative arguing that the Incans stopped their conquest not because of military defeat but due to a lack of incentive to commit greater resources (Silva, 1983). For this historical overview, I use a functional explanation based on the ideas of Silva to describe the Mapuche resistance to Incan expansion.

expansion. The Inca were said to lack incentives to attempt to subdue the non-urban, uncontrollable Mapuche (Silva, 1983). The indomitable character of the Mapuche prompted the Inca to call them “Auca,” a spiteful Quechua term for barbarians. Some scholars have asserted that the term led to the Mapuche to be called Araucanos by the Spanish, who would have first learned of them from the Incas (Ray). The successfully thwarted Inca attempts expand their growing empire to the Mapuche lands of south-central Chile would serve as a primer for later resistance by the Mapuche to foreign invaders threatening the natural lands.

Soon after the Incan attempts to conquer Mapuche land, the Spanish began their attempts at Andean conquest in the mid-sixteenth century, inflicting diseases and firepower on nearby indigenous groups (Langer, 2003). Led by Pedro de Valdivia, the Spanish intended to control all of Chile, and established cities and forts down to the Straits of Magellan over a period from 1550 to 1553. Indigenous groups such as the Aymara in northern Chile were both unfamiliar with the battle tactics of fighting cavalry and the deadly impact of smallpox and influenza brought by the Spanish, which resulted in their quick fall to the control of the Spanish forces (Stern,1993). Unlike this and other cases of rapid suppression of indigenous populations in other parts of present-day Chile however, the Mapuche resisted the Spanish using guerrilla tactics and negotiation, quickly adapting to these new circumstances and to the new invaders. In the conflict between the Spanish and Mapuche, called the Arauco War, the Mapuche learned to work iron and ride horses. Led by their military leader Lautaro, an adept horse rider and tactician, the Mapuche would attack and destroy Spanish forts at unexpected times. By 1598, Mapuche warriors had destroyed all of the seven Spanish cities that had been established south of the Bío Bío

River (Cruz, 2010). Over the course of the Arauco war, the Mapuche successfully negotiated over thirty treaties or *parlamentos* with the Spanish, establishing the Bío Bío River as the border with the Spanish. The *parlamentos* were early forms of negotiation, in which the Mapuche maintained their use of their language of Mapundungun, while also learning Spanish, and organized to meet the Spanish diplomatically as well as on the battlefield (Dillehay & Zavala, 2013). In this unique recognition of sovereign indigenous territory, the Mapuche precariously held their ground and retained their rights to the land (Richards, 2010).

The Mapuche had resisted the Spanish invaders for more than three centuries, only to eventually capitulate to the newly-formed government of Chile in the nineteenth century (Ray). Mapuche land-sovereignty fell into question after the movement for Chilean independence (Richards).[12] The once-recognized border relations at the Bío Bío River were held until 1862, when they began to be threatened by economic and geopolitical interests of the new republic (Richards). The Chilean confrontation with the Mapuche was prompted by the desire of the newly-formed state to eliminate the territorial discontinuity of the country. The territory occupied by the Mapuche was regarded by the Chilean government as a threat to national integration and a potential strategic challenge in the determination of borders with Argentina. Furthermore, the economic ambitions of Chile demanded the

[12]The revolutionaries of the independence movement symbolically appropriated the history of struggle of the Mapuche, calling for resistance against the Spanish, a message not reciprocated by the Mapuche themselves (Richards, 2010). This is such a complicated and fascinating case of historical-cultural appropriation of a discourse of resistance by *criollos* who then failed to incorporate the Mapuche into the newly founded nation.

exploitation of lands for coal mining in the northern section of Mapuche territory (Langer, 2003).

As a result of a desire for territorial continuity, Chilean control of the Mapuche land near the Bío-Bío River became a national priority, which prompted a military campaign against the Mapuch and also led to racist propaganda targeted against them. Preceding the Chilean military conquest, Chilean propaganda began to negatively portray the Mapuche, representing them as savage, cruel, lazy, and drunken, stereotypes that still continue in the present (Fielding, 2018). During the "Occupation of Araucanía," two violent waves of military force pushed onto Mapuche land. The Mapuche resisted the incoming settlers and military posts occupied by the Chilean nationals. [13] The first wave of Chilean military invaded in 1869 and the second closely followed a Mapuche uprising in 1881.[14] The eventual outcome was the subdivision of Mapuche land (Bengoa, 2004). The subdivided land was used to settle Chileans and European immigrants, meanwhile forcing the Mapuche to reservations, aptly called *reducciones*. The parcels of land delineated by the Chilean government for the surviving Mapuche only made up 6.5% of their previous territory (Richards). The Mapuche conflict with the Chilean government persisted,

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[13] The Mapuche identity is well defined and rejects many of the Christian and Western values that are prominent in Chilean nationalism, thus excluding them from the label of "Chilean nationals", though current-day Mapuche reflect a wide range of resistance and assimilation.

[14] Mapuche war chiefs orchestrated several uprisings against Chilean colonists invading Mapuche land. The rebellions that occurred in 1869, 1874, and 1880 were said to be last desperate attempts by the Mapuche to regain cultural and territorial independence. Instead, the uprisings served as pretext for crushing the independence of the Mapuche nation (Lomnitz, 1976).

continuing the patterns of violence and reduction of Mapuche population and territory that characterize the Mapuche history with Chile (Figure 6).

Figure 6. The site of present-day Mapuche-related violence and resistance activity in relation to current Mapuche populations and ancestral Mapuche lands (Solis, 2017).

In an attempt to unify the country, Chile, like many other Latin American countries at the time, was focused on promoting *mestizaje*, a national ethnic identity based on the supposedly cohesive mixture of European and Indian influences and identity.[15] This meant,

[15] In Latin America during the twentieth century, *mestizaje*, or racial and cultural mixing, was a tool used by advocates for national assimilation to attempt to dissolve racial and

however, excluding or "othering" the Mapuche who had maintained their separate indigenous identity. As we have seen during Chile's project of assimilating the larger national population into a mestizo identity, the Mapuche suffered from the recruitment of European immigrants and the privileging of white settlers over the Mapuche in government policies regarding land distribution. Historians estimate that non-Mapuche settlers, in the period from 1884 to 1919, received an average of 1,235 acres of land per person while Mapuche received an average of 17 acres (Langer). The Mapuche were separated from Chilean culture by a host of characteristics – "language, historical memory, distinct religiosity and spirituality, specific relation with the landscape and territory, unique marriage customs, family organization, labor and product exchanges, communal solidarity networks" (Mallon). These distinctions between Mapuche and Chilean culture made the promotion of a national ethnic identity difficult, further complicating issues of land distribution and ownership. The deployment of *mestizaje* in the twentieth century had long-term consequences for the Mapuche who did not assimilate to Chilean culture.

In a brief reversal of the discriminatory trends of the twentieth century, the Mapuche did experience a period of government support, benefiting from agrarian reforms beginning in 1964 until 1973 which peaked under the Chilean President Salvador Allende (1970 – 1973). During this period, Chile's agency for agrarian reform was able to expropriate and redistribute approximately 59% of Chile's agricultural farmland. The

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ethnic minorities into a collective identity. *Mestizaje* was portrayed as an idealized fusion of cultures that was different from that of Europe, however was based in the erasure of indigenous identity, the inevitable consequence of these national and cultural projects. In the context of land rights and national relations to the culturally distinct Mapuche, the deployment of *mestizaje* had real consequences in terms of land distribution. (Richards, 2010).

majority of the land, approximately 41%, benefited peasant households and small-sized family farms (Bellisario, 2007). As the poorest indigenous group in Chile, the small injection of government support to the Mapuche was a well-needed reprieve from previous oppressive policies (Sznajder, 2003). The felicitous moment of government reparations was short-lived, ending abruptly with the United States-backed coup d'état in 1973 which placed General Augusto Pinochet in power.

During Pinochet's military dictatorship in the 1970s, the majority of the land that had been returned to the Mapuche under agrarian reforms was appropriated to large farming operations or deeded to logging corporations by the government. Pinochet's government implemented Law 2568, which allowed the possession of individual property titles on indigenous land – a break from previously-held communal systems of land-ownership.[16] The law additionally had provisions which allowed corporations like timber companies to exploit the ancient forests of araucaria, which is the sacred tree of the Mapuche. As a result of free-market neoliberal policies under Pinochet, the Mapuche were forced to contend with powerful outside forces to which they were vulnerable (Sznajder, 1995). In present-day conflicts of development since the re-democratization of post-authoritarian Chile, the issue of recovering land retracted by Pinochet is one of the principal aims of Mapuche activists (Richards). The economic exploitation, land seizing, and breakdown of communal systems of ownership that characterized the Pinochet administration were all elements that prompted a new moment of Mapuche activism.

[16] The end of communal ownership left the Mapuche eligible for taxation yet without social healthcare, another consequence of Law 2568 (Sznajder, 1995).

The struggles of the Mapuche in the face of colonialism, Chilean nation-state interests of eliminating territorial discontinuity, and the weaponizing of racism for political purposes serve as a backdrop for the current environmental activism of the Mapuche community in Chile. The Mapuche in present-day Chile are estimated to number from 360,000 to 537,000 in south central Chile and have a widespread population that stretches into other parts of Chile and Argentina (Langer, 2003). As such, the population of the Mapuche would not seem to have much in common with the small group of eleven organic farmers who gathered around Roger's table in Cerro Punta, Chiriquí, or the larger related network of environmentalism found in western Panama. The Mapuche environmental community of activists, however, does resemble the network of ecologically-concerned organizations in Cerro Punta in the sense that both represent grassroots approaches to addressing anthropogenic threats to the environment.

These threats to local species in Cerro Punta, is manifested and experienced in local contexts by local people. The Mapuche are no exception and indeed have, as evidenced by their history, suffered disproportionate impacts from aggressive human intervention and ecological degradation. I intend to use the case study of the Mapuche as a means to reflect similar circumstances and patterns to grassroots environmentally-focused community networks found in Cerro Punta in Panama. As I will further elaborate, the area occupied by the Mapuche in south-central Chile is threatened by logging operations which threatens biodiversity and the integrity of the land. In this analysis of the environmental actions of the Mapuche, I will examine specifically the mobilization against logging operations which can be considered threats to local biodiversity and land health.

The culture and cosmovision of the Mapuche reflects similar values to those of Arne Naess's concept of deep ecology as an argument for a consciousness and protection of the environment.[17] In the traditional Mapuche understanding of heritage, each person's personality is drawn on two inherited sources of human psyche. The first source is nature or *Tuwun*, denoting the natural environment where one is born and from where one's family ancestors remain. The Mapuche of the Andes, by this system of understanding, are thought to have a specific outlook on life from their Andean origin. The second source is called *Kupalme*, signifying the ancestral legacy that is meant to produce a particular role within society and the community. The concept of life, *Mogen*, refers to the relationship between this social world and nature. The connection within *Mogen* is one of the most important interactions of Mapuche ideology and is reflected in Mapuche actions to protect ecological systems (Reinao, 2008). The care for nature associated with the Mapuche culture and cosmovision sets forth a path to addressing incoming threats from outside anthropogenic forces to Mapuche land.

[17] Another nuance of the Mapuche story is the spiritual connection to the land, which does not have a direct analog in the case study in Cerro Punta.

Mapuche lands in Chile: Vulnerable to the logging industry

The Chilean state, though neoliberal policies and oppression of the Mapuche people, has supported the actions of corporations from the logging sector which contend for Mapuche lands. Since the mid-twentieth century, the Chilean state has supported logging, and the rapid development during the Pinochet regime in the 1980s created a large-scale threat for small Mapuche land-holders. The implementation of Law 2568, previously described as a part of neoliberal legislative moves during Pinochet's administration, created tax incentives and subsidies that benefited the development of this industry. In the 1980s, the logging sector became the third largest earner of foreign exchange, after mining and export agriculture (Haughney, 2007).

The logging industry, from an economic standpoint, has had deleterious effects on local populations, despite promoting the idealized view that the industry is economically beneficial at a national level. Logging both destroys native forest and creates monoculture tree plantations for later harvest. The tree plantations remove opportunities for local subsistence by expanding into land once used for agriculture by small-landholders. Logging and tree plantations offer few jobs despite their large land-use, which can cause emigration from rural areas. The logging sector reaps high profits, yet does not pay local taxes, thus exacerbating the impoverishment of local communities (Haughney). Additionally, logging companies have removed many of the remaining sections of native forests, which has eliminated many native herbs and plants that have been traditionally used in Mapuche medicine and ritual ceremonies (Lafkenche, 1999). The Pehuen tree (*Araucaria aruacana)*, in particular, is a tree often targeted by logging companies, but which offers widely-used

ethnobotanical benefits. The seeds of the tree are cooked and prepared in stews and salads, which one study estimated to be used by 92% of a sample Mapuche population (Ladio & Lozada, 2000). The Mapuche lands offer more than the territory itself, including unique species which are threatened by the entrance of logging companies.

Beyond economic implications, the environmental impact of the logging industry is devastating to the ecological integrity of rural lands in Chile. To start, tree plantations contribute to a decrease in the biodiversity of local ecosystems. The clearest manifestation of this reduction of biodiversity is through the conversion of previously biodiverse forested areas to monoculture, which in the case of Chile has consisted of exotic pine and eucalyptus species at the expense of native forest (Altieri & Rojas, 1999). A converted monoculture forest can have cascading impacts on other forms of life, such as mammals or insects, which may persist in a monoculture, yet at reduced abundances (Wilcove et al., 2013). The marked decrease in biodiversity is another crucial part of the environmental damage caused by logging companies.

In terms of soil and water in the areas surrounding the logging industry, there have been many documented problems with Chilean timber industry which are common in logging worldwide. The pine and eucalyptus plantations planted by logging companies are extremely water dependent, consuming approximately 60 to 120 liters of water per tree per day, leaching water from the drought-prone regions of Chile (Maggio, 2007). In addition, the aerial spraying of pesticides may cause contamination, potentially having unintended side-effects on nearby watersheds and streams. Studies have shown that streams within watersheds of commercially logged areas have experienced ecological

damage to macroinvertebrate populations. The studies further demonstrate that the ecological damage of contaminated water extends to local fish populations, which are not only important as parts of ecosystems but valued additionally for human consumption and subsistence (Eaglin & Hubert, 1993). Chile's logging industry, like the detrimental farming techniques employed in Cerro Punta, is clearly associated with soil and water conservation issues, which tear into the ecological systems in nearby areas.

Finally, government deregulation stemming from Chile's emphasis on the free-market serves to impede government solutions to environmental issues, instead encouraging widespread exploitation of the land. As a consequence of the neoliberal policy of government deregulation, the regulations to protect natural resources in Chile since the 1980s have been loosened, permitting environmental damage without legal recourse (Haughney). During the closing years of Pinochet's administration, there was little to no environmental policy, a condition often highlighted in order to attract foreign investment in national industry. Since 1990, with the initiation of a democratic government, a concentrated political effort has been made to create government organizations to address environmental issues. Some of these include the National Commission on the Environment (CONAMA) and other initiatives to address air, water, and soil contamination (Altieri & Rojas). Despite new legislation, many scholars see growing evidence that Chile's economic model has already severely damaged its rich forestry and fishery resources -- potentially a case of too little, too late (Hajek et al., 1990). Moving forward, environmentalists in Chile must bridge the gaps of government deregulation created by previous neoliberal policies.

The Mapuche network of activism: Responding to the logging threats

Facing the unsustainable repercussions of the logging industry and government negligence, the Mapuche have erected strong opposition to the expansion of logging companies in south-central Chile. Just as they firmly resisted Incan expansion, Spanish conquest, and efforts by the Chilean state to take control of their land, the Mapuche again have demonstrated a capacity for combining resistance and negotiation as means to protect the viability of their land and way of life. The resistance of the Mapuche in the past several decades against the logging industry has taken many forms, from peaceful land occupation to the violent burning of logging vehicles. I will focus on environmental efforts after the end of the Pinochet dictatorship in which the Mapuche connected to other environmental advocacy groups counter disjunctions in government policy. . These examples of the resistance and negotiation tactics directed at logging companies by the Mapuche show connections to a larger environmental network and illuminate a path that realizes deep ecology, as a means to confront anthropogenic threats.

Since the end of the Pinochet dictatorship in 1990, the Mapuche have repeatedly articulated their demands against the interests of logging companies. Similar to their strategy of using the organization strategy of *parlamentos* to negotiate with the Spanish, some Mapuche leaders have successfully become involved in local and national politics. The presence of democracy has increased the expectations of the Mapuche and opened a space for their implementation of negotiation tactics within the government. One of the principal ways that the government has attempted to support the Mapuche is through CONADI, the Corporación Nacional de Desarrollo Indígena [National Corporation

for Indigenous Development], a national program overseen by the Ministerio de Desarollo Social [Ministry of Social Development.] The mission of the institution is:

> Promover, coordinar y ejecutar la acción del Estado en favor del desarrollo integral de las personas y comunidades indígenas, especialmente en lo económico, social y cultural y de impulsar su participación en la vida nacional, a través de la coordinación intersectorial, el financiamiento de iniciativas de inversión y la prestación de servicios a usuarios.
>
> [To promote, coordinate and execute the action of the State in favor of the integral development of the indigenous people and communities, especially in the economic, social and cultural aspects and to promote their participation in the national life, through the intersectoral coordination, the financing of investment initiatives and the provision of services to users.] (Torres et al., 2017)

CONADI was founded as a part of Ley Indigena 19253, a law enacted in 1993, under the leadership of Patricio Aylwin, the first president elected after the dictatorship. The Mapuche have gained representation within CONADI and their directly-elected indigenous representatives advise government programs which concern local forested lands (Meza, 2009). The law was intended to, at last, give support to the marginalized Mapuche, who have repeatedly been the victims of government oppression, since the Occupation of Araucanía in the late eighteenth century when the State subdivided Mapuche land and relegated indigenous groups to smaller areas.

Just a year after the foundation of CONADI, another groundbreaking law was passed by the Chilean government, the 1994 Environmental Framework Law. Like the indigenous law, the Environmental Framework Law brought into existence agencies to enforce and promote the new legislature. CONAMA, the National Environmental Commission, was created to promote the ideals of the prevention of environmental degradation and participation by local community members in these efforts (Carruthers & Rodriguez, 2009). Like the government institutions of Cerro Punta that focus on the environment, CONAMA intended to promote state-run environmental protection.

Despite the innovative and cooperative intentions of laws for indigenous inclusion and environmental protection, the relatively new state institutions have largely fallen short of their promises. The CONAMA staff, for example, may produce a technical report which disqualifies a logging company from using land, but decisions regarding land-use are ultimately made by politicians. Overlooking the environmental impact of proposed logging projects, politicians often grant companies permits for the sake of short-term economic interests. In this context, David Carruthers and Patricia Rodriguez argue that the Mapuche have struggled to find meaningful channels of representation (2009). Mapuche connections to outside organizations and the effectiveness of creating awareness through protest has created a possibility for political voice, yet political decisions continue to favor corporate development interests and undermine community interests.

One of the responses to the slow pace of access to benefits from the 1993 indigenous law was the emergence of activist groups that have preferred land takeovers and occupation to negotiation with CONADI lawyers. As they did while resisting the Inca,

Spanish, and newly independent Chilean military, the Mapuche have deployed guerilla attacks and demonstrations against invading logging companies (Richards, 2010). Some organizations asserted their rights through “productive takeovers” where community members planted their crops on land that was being used for forestry (Figure 7). Occupations and protests have been effective in creating public awareness for the plight of the exploitation of Mapuche lands yet were unsuccessful in preventing the entrance of logging companies (Richards).

Figure 7. Mapuche activists occupying a territory in Ercilla, Chile in protest of the presence of logging companies (Montes, 2018).

The alternative to violent tactics of resistance has been to engage in negotiations apart from the traditional routes for representation within CONADI and CONAMA. One of the disputes at the fore of Chilean political relations with the Mapuche was a conflict between the Galletué timber company and a Mapuche community in the town of Quinquén,

which identifies as Penhuenche (Sznajder, 2003). The Penhuenche, people of the pehuen tree (species *Araucaria aracuana*), are a branch of the Mapuche who live in the Andes alongside the Bío Bío River (Ladio & Lozada, 2000). The Gallatué timber company waged a persistent legal campaign to evict the 150-member Penhuenche community living there. The target of the company was an age-old araucaria forest, and the timber company eventually won in the courts.[18] Representatives of the Quinquén community appealed to Patricio Aylwin, the President of Chile, for help, using connections to the Chilean National Forest Corporation (Sznajder). Growing public awareness of this dispute energized Mapuche negotiation and prompted the Chilean government to reconsider the situation.

The Chilean Supreme Court had already ruled in favor of the Gallatué timber company, who legally now owned the land occupied by both the Pehuenche trees and people, yet still the Mapuche continued their negotiations. Functioning in the same spirit as the colonial-era *parlamentos* with the Spanish, Mapuche representatives were granted a seat in the government discussion of the ownership of the Pehuenche land. After a debate which included presentations by all sides under the pressure of public scrutiny, a decision was made to declare the Quinquén area a National Forest Reserve in May 1991, thus precluding any future possibility of harvesting the araucaria wood (Sznajder). In this instance, the Mapuche subverted the traditional systems of power in the Chilean government to accomplish their goal of maintaining their land and the forests that grew there.

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[18] "Age-old" was the descriptor used by Sznajder in his telling of the conflict between timber companies and the community of Quinquén.

The threats to subsistence, property, and culture posed by the logging industry have prompted Mapuche leaders to forge additional connections with a variety of organizations. One clear example of this network can be seen in Red Nacional de Acción Ecológica [National Network of Ecological Action] (RENACE) which is an organization focused on linking citizen organizations in Chile to undertake ecological action. The ties of the Mapuche to environmental NGOs have seen impressive development. In 2001, the municipality of Temuco signed a 25-million-peso agreement with University of the Frontier's (UFRO) Institute of Indigenous Studies, a group that focuses on outreach and advocacy with indigenous groups (Carruthers & Rodriguez). The international ties and links to NGOs have formed a larger consciousness of the missions of the grassroots network within the Mapuche community. These specific organizations are focused on awareness of indigenous and environmental issues, and thus have supported the direct actions of Mapuche resistance and negotiation.

The environmental advocacy of the Mapuche has not been limited to forestry. Indeed, one of the most prominent aspects of their political agenda of resistance has been focused on halting hydroelectric dam projects which threaten to flood Mapuche land. The conflicts over hydroelectric dams have been highly publicized and created international outcry over poorly managed dam project proposals. Other campaigns for the environment, especially with regard to environmental justice, have handled issues such as toxic waste, landfills, road and airport construction, cellulose plants and industrial salmon farming operations. As an example, in August 2005, approximately 1,300 people protested against a landfill site in Vilcún Chile (Hube, 2005). By connecting the various environmental goals of

the network of activists within this community, the Mapuche narrative of resistance and negotiation has been expanded.

Looking at the community network formed within the Mapuche community, the ideas of deep ecology and grassroots action have permeated the environmental activism taking place in recent years. The Mapuche, in comparison to the community of Cerro Punta have a long history with the land, including continued discourse about land rights over several centuries. Since their resistance to Incan expansion, the Mapuche identity has weathered colonialism, the new Republic of Chile, the dictatorship of General Pinochet, and is now part of the fight against the invasion of logging companies. The anthropogenic threats faced by Mapuche land are considerable and have already caused extensive damage to biodiversity and the integrity of the land. Neoliberal policies allowed and encouraged this exploitation, yet the Mapuche network continues to stubbornly advocate for environmental awareness and works to bridge gaps in government policy. As the Mapuche begin to rekindle their difficult and storied relationship with the land, the implicit principles of a deep-rooted ecological vision are made explicit.

Conclusion

Antes de la peluca y la casaca
fueron los ríos, ríos arteriales:
fueron las cordilleras, en cuya onda raída
el cóndor o la nieve parecían inmóviles:
fue la humedad y la espesura, el trueno
sin nombre todavía, las pampas planetarias.

El hombre tierra fue, vasija, párpado
del barro trémulo, forma de la arcilla,
fue cántaro caribe, piedra chibcha,
copa imperial o sílice araucana.
Tierno y sangriento fue, pero en la empuñadura
de su arma de cristal humedecido,
las iniciales de la tierra estaban escritas.

Nadie pudo recordarlas después: el viento
las olvidó, el idioma del agua
fue enterrado, las claves se perdieron
o se inundaron de silencio o sangre.
No se perdió la vida, hermanos pastorales.
Pero como una rosa salvaje
cayó una gota roja en la espesura
y se apagó una lámpara de tierra.

Yo estoy aquí para contar la historia.
Desde la paz del búfalo
hasta las azotadas arenas
de la tierra final, en las espumas
acumuladas de la luz antártica,
y por las madrigueras despeñadas
de la sombría paz venezolana,
te busqué, padre mío,
joven guerrero de tiniebla y cobre
oh tú, planta nupcial, cabellera indomable,
madre caimán, metálica paloma.

Yo, incásico del légamo,
toqué la piedra y dije:
Quién me espera? Y apreté la mano
sobre un puñado de cristal vacío.
Pero anduve entre flores zapotecas
y dulce era la luz como un venado,
y era la sombra como un párpado verde.

Tierra mía sin nombre, sin América,
estambre equinoccial, lanza de púrpura,
tu aroma me trepó por las raíces
hasta la copa que bebía,
hasta la más delgada palabra aún no nacida de mi boca

[Before the wig and coat
were the rivers, the arterial rivers,
the mountain ranges, in whose weary wave
the condor or the snow appeared unstirring:
the thickness of the humidity, the unnamed
thunderclap, the planetary pampas.

Man was earth, a vessel, the eyelid
of the quivering clay, a form from the mud of the earth,
a Carib pitcher, a chibcha stone,
an imperial chalice or an Araucanian silica.
Tender and bleeding he was, but on the hilt
of his moist crystal weapon,
the initials of the earth were
inscribed.
No one could remember them later: the wind
forgot them, the language of the water
interred, the keys were lost
or inundated by silence or blood.

Life was not lost, pastoral brothers.
But as a savage rose,
a red drop fell to the depths,
and the lamp of the land was extinguished.
I am here to tell the story.
Since the peace of the buffalo
until the lashed sands
of final earth, in the accumulated surf
of Antarctic light,
and for the burrows embedded off the cliffs
of somber Venezuelan peace,
I searched for you, my father,
young soldier of shadows and brass,
or you, nuptial plant, indomitable hair,
caiman mother, metallic dove.

I, Inca from mud, touched the stone and said:
Who waits for me? And I squeezed my hand
around a fistful of empty glass.
But I traveled among Zapotec flowers
and the light was as gentle as a stag,
and the shade was like a green eyelid.

My earth without a name, without America,
equinoctial stamen, purple spear,
your aroma winds up my roots
into the chalice I nursed, into the finest
word still not yet born from my mouth.]

"La lámpara en la tierra" ***Amor América*** – Pablo Neruda (Neruda, 1981)

In the opening poem of *Amor América*, the first section of Pablo Neruda's epic *Canto General*, titled "La lámpara en la tierra," he presents the history of America before the arrival of Spanish colonists characterized by "la peluca y la casaca" [the wig and the coat].[19] The poem nostalgically refers to a period before ecological and cultural change, where humans coexisted peacefully with nature during a time the poet calls "la lámpara de la tierra" [the light/lamp of the land]. In the poem, it is understood that history has departed from this time of light, which has been extinguished by the exploitation of nature by humans. Neruda, in his expression of nostalgia, orients himself as the storyteller, announcing, "Estoy aquí para contar la historia" [I am here to tell the story]. The role of the storyteller here is to broadly interpret previously-told histories of various communities and to demonstrate how these fit into a view of the environment – an exercise which has been considered deeply in the production of this study. The stories of the relationships of humans and their environment in Latin America, whether expressed through poetry or through ethnographic observation, ask questions about the impact of humans, the consciousness and actions of communities, and the role of history – contemplating the way

[19] Given the comparative structure of this thesis, it is interesting to speculate how Pablo Neruda might have viewed the detrimental human impact generated by communities in Central and South America before colonization. The Maya, for example, suffered from the self-afflicted anthropogenic issues of overpopulation, land shortages, ecological stress, and climatic change which caused severe environmental damage, ultimately resulting in the collapse of their existing political and economic frameworks as well as rapid depopulation (Andrews et al., 2003). The value in Neruda's nostalgic claim for a time before ecological and cultural change serves a metaphorical role in trying to imagine a time before the widespread dominance of human activity on Earth, especially in discussing the relationships of Latin American communities with nature.

forward in an era in which the Earth's local environments have been dominated by human influence.

As the anthropogenic threats to land and ecosystems continue to multiply, increasing ecological damage and global change as a result of human activity is forthcoming. Natural systems that have been in existence for millennia - made up of landscapes such as Neruda's "ríos arteriales" [arterial rivers] and "cordilleras" [mountain ranges] as well as the diversity of species like the endangered Andean condor he references - are under threat from human intervention. This dominant influence of humans on natural systems, as acknowledged by Paul Crutzen and the scientific community, indicates a potential darkening of the "lámpara de la tierra" [light of the land] that Neruda describes. Globally, this arrival has taken the form of climate change and widespread losses of biodiversity. Locally, however, each site of anthropogenic threats to the environment has its own set of characteristics that determine to some degree the relationship of humanity with the land, from topography to cultural history. In this study, we have seen how the communities of Cerro Punta and the Mapuche have experienced both the erosion of the integrity of their land and disjunctions in government support for environmental protection. Each community has found its own unique ways of confronting the darkening of the environmental landscape that appears inevitably to be part of anthropogenic change.

The light of the land, though, perhaps can be reignited by a deep consciousness of ecological systems, from the arterial rivers to the species that occupy these ancient natural territories that Neruda calls "earth without a name." This deep consciousness enables humans to appreciate and understand the holistic value of the fragile interconnected

processes which exist in Earth's biosphere. Together the non-living territory and the organisms which inhabit these ecosystems hold value intrinsically and call for human awareness of their actuality, as intended by Arne Naess's concept of deep ecology. In Naess's holistic assessment of ecosystems, all parts hold value. His approach, even while not always explicitly acknowledged by those becoming conscious and holistically appreciating the value of fragile ecological systems, is widely applicable to environmental activism around the world. In my exploration of two different case studies of community environmentalism in Latin America, I have focused on the importance of both the land itself and the species – taking Naess's approach of deep ecology, considering the whole picture of the natural world as tied to the land occupied by humans.

In the case study of the community of Cerro Punta, the ecosystems in the surrounding areas are home to a multitude of life that is being jeopardized by intensive agricultural practices. From a geographic standpoint, Cerro Punta is located in close proximity to incredible biodiversity. The nearby Parque Internacional La Amistad has been threatened by farms in the region which have continuously encroached on these protected havens of land integrity. The once fertile volcanic soils of a region in the shadow of Panama's highest point, Volcán Barú, have been degraded by practices like the use of dangerous agrochemicals, which have given community members in the area cause for concern. The erosion from farming coupled with the run-off from agrochemicals which comes from the precipitous landscapes of this particular region of western Panama continues to endanger ecosystems and land that are downstream. Thus, the community of Cerro Punta, with its steep eroding slopes and nearby biodiversity, has been shown to be subject to a quickly darkening environmental future.

When I remember the groups of community members who began advocating neighbor to neighbor for sustainable farming practices in Cerro Punta, I see Neruda's "light of the land" re-taking its form as fledgling candles, attempting to reignite the previously burning brilliance of ancient natural systems. The grassroots gathering of the organic farmers that took place at Róger's table, who referred to themselves as "once locos y una loca" [eleven crazy men and one crazy woman], is clearly just the beginning of a larger consciousness being spread, candle to candle, among the farming community clinging to the erosive hills of Cerro Punta. The group received a spark of inspiration from the Amisconde movement, which formed the foundation of the small group of individuals shining light on the threats to the integrity of land in the region of Cerro Punta. The foundation of this network, based on awareness, engages in the lateral process of spreading seeds, compost, and information. The local NGOs that directly sprang from the AMISCONDE movement have created effective horizontal networks, which have been able to begin distributing the tools necessary for sustainable agriculture.

Meanwhile, in south-central Chile, the Mapuche community might be better situated in this allegory of the "light of the land" as fiercely burning logs – cultivating for centuries the powerful embers of grassroots resistance. The Mapuche built their fire over a long history, prompted by impending Incan expansion to stack the logs of their loosely organized kinship-based society in order to thwart the military encroachment of their invaders. Later the colonial attempts by the Spanish, who Neruda characterizes as the "la peluca y la casaca" [wig and the coat], were fended off by the blazing tools acquired by the Mapuche through conflict – showing them capable of expert negotiation alongside their

style of stiff guerrero resistance. Their light of the land held its ground at the Bío Bío River, a line held for centuries until after the formation of the Chilean state.

In the Mapuche conflict with Chile, nationalistic ambitions to unite the newly-founded country coupled with an economic drive for natural resources began to threaten the firmly held border at the Bío Bío River. Through military action in the mid to late 19th century, the Chilean state gradually began to extinguish the Mapuche light of the land. Using the shadowy tools of racial propaganda and discriminatory legislation, the state rapidly relegated the Mapuche to *reducciones*, taking the once bright embers of the Mapuche relationship to the land and violently dispersing them throughout south-central Chile. During the Pinochet dictatorship, similarly unjust legislative strategies allowed for large industry such as hydroelectric and logging companies to extinguish the scattered "light of the land" maintained by Mapuche communities across south-central Chile. Logging companies paired with neoliberal government policies, in particular, have been destructive for the integrity of the land, damaging biodiversity with the planting of vast monoculture timberlands which leach water and impair the habitat in surrounding areas.

In recent years, however, the government began to grant the Mapuche some semblance of rights to their land, passing legislation in the early 1990s which founded representative bodies to represent indigenous and environmental interests. CONAMA, the National Commission on the Environment, and CONADI, the corporation for indigenous development, were sources of hope for the Mapuche, who hoped to finally see institutional support on their behalf. As in Cerro Punta, though, community members found that the government institutions meant to be protecting the land were weak in the face of the

pressing ecological threats. In the case of the Mapuche, these government institutions proved unable to prevent the entrance and expanding influence of national and foreign logging companies.

In response to the environmental threats of logging companies, the Mapuche have carried on their fiery capacity for resistance and negotiation. In their negotiations, the group has created connections to a variety of organizations, both domestic and international, to advocate for government action and international awareness. The land advocacy is seen in the Pehuenche community, named after the Pehuenche tree whose species (*Araucaria* araucana) bears the very etymology of the character of Mapuche resistance, Auca, as termed by the Inca. The protection of the forests of the Pehuenche tree through direct advocacy to the president of Chile himself show the desperation of protecting land and forest intimately tied to the local community. The act of resistance and protest, too, has had the effect of creating a shared consciousness. Using land occupations, street protest, and in some cases violence, the international community has been made aware of the dark forces of exploitative logging companies encroaching on the Mapuche light of the land.

Stepping back to examine these two case studies together, there are lessons to be learned. Looking at the efforts by the community of Cerro Punta, the words of a before-mentioned interviewee, as she touched upon the difficulties with conservation projects ring clear: “eran poco incipientes” [they were a little incipient]. Environmentalism in Cerro Punta is just at its very beginning. Community members have begun to become aware of the potential damage that may impact local biodiversity and land integrity as a result of

intensive farming. Comparing this initial awareness to the long-time vigorous resistance of the Mapuche against outside invaders shows how the historical and cultural traditions of community networks may create a widespread awareness of threats to local ecosystems and help realize concrete resistance. There is a marked difference between the horizontal networking of organic compost materials and seeds and the dramatic response of Mapuche protestors to the entrance of logging companies on their ancestral lands. The farmers of Cerro Punta are coming together to share and collaborate in the face of threats to their agricultural livelihood that have been internally generated through traditional practices, while the Mapuche have formed networks to confront external threats.

Neruda's light of the land, the roots of his expression of love for America before it was named, may be the most apt metaphor to encapsulate how these two communities are reclaiming their connection to the land, which has been threatened by colonialism, intensive human activity, and exploitative industry. The darkness of the Anthropocene has taken hold on a global scale, but it is vital to look closer at the local level to understand how the human relationship continues to evolve. To protect the lands and waters of Latin America, an environmental consciousness will be a first step to rekindling "la lámpara de la tierra."

Appendices

Appendix I: Semi-structured interview guide

Preguntas para Agricultores

¿Por cuántos años ha sido productor?
¿Por cuántos años ha vivido en Cerro Punta?
¿Ud. tiene hijos?
    ¿Sus hijos trabajan en su finca?
    ¿Sus hijos quieren trabajar en la finca cuando estén grandes?
Y sus padres - ¿ellos fueron agricultores aquí?
¿Cuántas generaciones de agricultores tiene en su familia?
¿Cuántos trabajadores tienen en su finca?
¿Qué tamaño es su finca?
¿Ud. tiene animales?
¿Cuáles son los cultivos que su familia consume de su finca?
¿Cuáles son los cultivos que Ud. vende de su finca?
¿Cuáles son los cultivos más importantes en su finca?
    ¿Cuántos?
Cuénteme como Ud. maneja su finca
    ¿Quién le enseñó a sembrar?
    ¿Ud. usa pesticidas?
        ¿Qué clase?
        ¿Hace mucho tiempo?
        ¿Siempre usa las mismas?
            ¿Por qué sí? ¿Por qué no?
        ¿Es posible producir/cultivar sin pesticidas?
    ¿Hay plagas en su finca?
    ¿Sus cultivos han sufrido de enfermedades?
    ¿Siembra siempre los mismos cultivos en los mismos lugares?
        ¿Por qué sí? ¿Por qué no?
    ¿Usa barreras vivas?
    ¿Hace algo para mejorar el suelo?
        ¿Usa fertilizante (abono)?
        ¿Usa cal?
Cuénteme la historia de su finca y su tierra…
    ¿De quién era la finca antes de Ud.?
    ¿Había árboles aquí?
    ¿Es común cortar árboles?
        ¿Cuándo y por qué?
¿Las políticas del gobierno afectan su finca?
    ¿Como?

¿Hay pérdida de suelo en su finca?
    ¿Hay maneras de prevenirla?

¿Es posible producir y cultivar sin afectar los ríos y el suelo?
¿Si pudiera cambiar algo de su finca, qué cambiaría?
¿Tiene algún otro comentario?
… si ellos demuestran un tipo de conservación del suelo o agua o son orgánicos….
¿Por qué los otros agricultores no hacen las prácticas buenas de ____ como Ud.?

Preguntas para Organizaciones (gobierno o ONGs)

¿Trabaja Ud. para una organización?
¿Para cuál?
En sus palabras, ¿qué es la meta de su organización?
¿Qué es su trabajo con respecto a esta meta?
¿Cuáles son las dificultades ambientales que pertenecen de esta área?
¿Cuáles son las peores?
¿Qué ha pasado para arreglar estos problemas?
¿Cómo han afectado las fincas al ambiente?
¿Hay productores que han contribuido a los esfuerzos de conservación?
¿Qué pueden hacer para ayudar?
¿Cuáles son unas prácticas sostenibles específicas que pueden ser adoptadas por los agricultores para mitigar la degradación medioambiental?
¿Su organización ha hablado frecuentemente con los agricultores?
¿Por qué?
¿Cómo responden los agricultores a su trabajo y activismo?
¿Cuáles son los obstáculos que experimentan los agricultores al adoptar las ideas que son promovidos de su organización?
En su opinión, ¿qué debe hacerse en contra de la degradación medioambiental?
Cuénteme sobre la historia de esta área.

Appendix II: Pamphlet describing the mission and certifications of GORACE (Grupo Orgánico de Agricultores Cerropunteños)

Nuestra Organización se denomina Grupo Orgánico de Agricultores Cerropunteños, cuyas siglas son GORACE.

VISIÓN:

Ser una organización líder en la producción procesamiento y comercialización de productos orgánicos a través de la participación honesta, activa y eficiente de los actores que propugnan la actividad orgánica.

MISIÓN:

Ser una red comunitaria consolidada y reconocida a nivel nacional, en la producción y abastecimiento de productos 100% orgánicos a través de relaciones comerciales sólidas que se distinguen por su calidad, costos y competitividad, fortaleciendo redes confiables de distribución de productos frescos y saludables a nuestros clientes.

INTRODUCCIÓN

Como agricultores que hemos crecido produciendo alimentos no sólo para alimentar a nuestra familia, sino para generar ingresos a través de la venta, hemos tenido la oportunidad de conocer un nuevo tipo de producción. Se trata de lo que se conoce con diferentes nombres: Agricultura Orgánica, Agricultura Ecológica, Agricultura Biológica, entre otros.

¿POR QUÉ LA AGRICULTURA ORGÁNICA?

Son muchas razones de salud humana, equilibrio ambiental, aspectos sociales y culturales que nos obligan a seguir este modelo de producción, pues se trata de prácticas que no contaminan el ambiente, son saludables al humano y respetan la cultura de los campesinos, así como económicamente rentable.

¿QUÉ ES LA AGRICULTURA ORGÁNICA?

Como se señala arriba son muchos los nombres con los cuales se conoce este tipo de producción de alimentos. Con cualquier nombre que se conozca, se trata de un método de agricultura que contempla todo lo saludable, lo ambiental, lo social, así como lo cultural y económico. Existen muchos conceptos que definen la agricultura orgánica, pero todos se enmarcan en las normativas internacionales (FAO, Codex Alimentarius, IFOAM, etc.)

¿QUÉ PRODUCE GORACE?

Producimos de todo: Hortalizas, frutas, granos, raíces, tubérculos, plantas medicinales, entre otros.

¿GORACE OFRECE?

- Compra venta de productos orgánicos
- Capacitaciones
- Pasantías
- Intercambios
- Venta - trueque de semillas
- Productos insumos

CERTIFICACIÓN

Somos productores certificados desde el año 2005, a través de la Agencia Certificadora BioLatina y actualmente estamos en trámite con la Certificadora Publica Nacional ACERT, que ofrece el MIDA, para el mercado nacional.

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