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Cartographies of roots: An Exploration of plant communication, place, and story

By

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B.S. Communication, Southern Oregon University 2011
M.S. Communication & Research, Portland State University, 2014

DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Philosophy

Communication
The University of New Mexico
Albuquerque, New Mexico

July, 2019

Acknowledgements

My deepest gratitude to this land I am lucky enough to call home, this desert that has taught me so much about what it is to belong to a place. My most emotional thanks also to every participant on this project who was willing to share the big wild intimacy of their stories with plants. Your experiences give me so much hope for humanity and the possibilities of multi-species relations.

I can't thank Tema Milstein enough for being my teacher, my advisor, my mentor and my friend throughout this process, you have left an indelible mark on the way I move through both human and more-than-human worlds and supported my beliefs that there is such thing as generous, beautiful, scholarship and playful, joyful ways of swimming through academia.

Jaelyn deMaria, your gentle love of the world around you somehow seeps through the way you do research and the way your mentor. Chris Duvall and Miguel Gandert, thank you for the endless kind and wise support and guidance. The amalgamations of all three of your lived experiences have inspired me to no end, and your belief in this kind of research is what made this possible. David Weiss, you have been a tirelessly excellent chair of the department since you've adopted the position, a real ally to all graduate students and certainly to me. In our short time working together, you have also made me an exceedingly better writer.

Thostenson, you've listened to my feverish ramblings of ideas for over a year now and always made me feel heard, accepted, and supported, and encouraged me to even more imaginative renderings of the Earth in this dangerously skeptical world. Little baby sea creature, you were the kick in the ass I needed to finish this and the world of possibility and connection presented by this study is the world I want for you.

Also, thank you to Jackie, Maryanne, Naomi, Natalie, Kaitlin, Kalyn, Ailesha, Melissa, Micah and Derek, and most especially my mother and father, Carrie and Franke, where this all began for me.

Cartographies of roots: An Exploration of plant communication, place, and story

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Abstract

This study uses oral history and auto-ethnography to collect thematic data on relationships and communication between plants and people in New Mexico, USA. Western and industrial cultures tend to be plant-blind, which is extremely dangerous in the wake of climate disruption and associated loss of plant biodiversity. This study works to collect and produce a generative landscape of narratives of non-binary relationships between humans and plants. These narratives show a range of hopeful, relational connections between human and more-than-human worlds. Overall results indicated the existence of many positive relationships between plants and people in the Western world, and that these relationships develop through human-human communication, plant-human communication, place-making, and relation-making practices. Furthermore, results showed clearly how relationships between humans and plants are wrapped up in history, sense-of-place, family, and identity, positioning studies about plants and humans as an extremely potent and important subject for ecocultural studies.

Keywords: Plant communication, multi-species relationships, binaries, more-than-human communication, oral history, auto-ethnography, New Mexico

TABLE OF CONTENTS

Chapter One: Introduction

"'O Tiger-lily,' said Alice, addressing herself to one that was waving gracefully about in the wind, `I wish you could talk!'
`We can talk,' said the Tiger-lily: `when there's anybody worth talking to.'
Alice was so astonished that she could not speak for a minute: it quite seemed to take her breath away. At length, as the Tiger-lily only went on waving about, she spoke again, in a timid voice — almost in a whisper. `And can all the flowers talk?'
`As well as all can,' said the Tiger-lily. `And a great deal louder.'"

-Lewis Carroll, 1865

"Know the ways of the ones who take care of you, so that you may take care of them.
Introduce yourself. Be accountable as the one who comes asking for life. Ask permission before taking. Abide by the answer.
Never take the first. Never take the last. Take only what you need.
Take only that which is given.
Use it respectfully. Never waste what you have taken. Share.
Give thanks for what you have been given.
Give a gift, in reciprocity for what you have taken.
Sustain the ones who sustain you and the earth will last forever."

-Robin Wall Kimmerer, 2013

When I was little, perhaps six or seven, the backyard of my otherwise unspectacular suburban dwelling presented a fertile, jubilant landscape of possibility for communication and connection. At that time, I lived in the Pacific Northwest of the United States and can easily recall the pungent emission of fragrance from the wet soil where I pressed my palms in the pine duff, the underbellies of the undulating slugs somehow slick and sticky at the same time, and the faint whisper of iris blossoms opening their feathery layers to the rare spring sunlight. Like many very young children, I was quite positive that most of the plants around me were somehow at least dimly aware of my presence, and at least somewhat cognizant of what I was saying to them. I was simultaneously already intrinsically aware of how I shouldn't speak about my conversational plants in public, and perceptive of the kind of social humiliation that could

be easily doled out by my seven-year old peers or second grade teacher if I vocalized this tiny secret I entertained. On my own time, I indulged in the dreamy possibilities of living things. I conceptualized flowers as fairy creatures, and I felt constantly observed by their purple be-petaled bodies. They leaned on each other in such a way that I assumed they were family members, and I was generally torn between the desire to capture their beauty by plucking them and the fear that they would no longer be there to commune with if I did.

I am by no means an anomaly of a childhood case with this anecdote, and do not consider myself any more perceptive of the more-than-human world than any other child raised in the Western world. I share this story as an example of how the possibility of communication and relationship with more-than-humans seems more tangible in those years that are protected from the glare of dominant viewpoints. In my experience, a state of childhood allows many humans to find sentience in those parts of the world generally considered inanimate, and find kin in beings that do not resemble our own bodies. Children will often fail to discriminate between differently-bodied beings, and regard a teddy bear, a Barbie doll, a pet guinea pig, and themselves as able to equally participate in a tea party. Perhaps dominant ontologies have yet to fully infiltrate the daily imaginations of children at that age, or perhaps the rather low mastery of verbal speech present in youth leaves rooms for other possibilities and potential ways to connect. Either way, there seemed to be space to communicate and thereby commune with trees, flowers, non-human animals, toy horses, and whatever was thought to exist in the dark corner underneath the bed. Whether we realized it or not at the time, this instinctual desire to comprehend the world as sensual (Abram, 1997) and writhing with indelibly alive characters is perhaps a

reflection of the utter biological innateness of ecocentric understandings of the universe. However, these ecocentric instincts can be effervescent and unstable in constitution, as even those of us brought up with without divisions between non-human nature and humans in our childhood educations can struggle with ecocentricity upon entering dominant society. To continuously accept the notion that other organisms may have a decisive sort of sentience akin to our own is difficult, and many humans in Western and industrialized cultures are often quickly taught to discipline ourselves against acting on this possibility in daily life (Milstein, 2020). Though the times of literal witch-burnings have long passed, many members of Western societies are socially disciplined when they step out of the boundaries of what is considered rational ways of understanding and interacting with the physical world of material beings, and are pinned with terms like "crazy," a simultaneously vague and harmful label used to discount the legitimacy of unconventional bodies (Milstein, 2020).

In the Western world, dominant ideologies that symbolically and materially separate humans from more-than-human nature tend to inform many of human beings' ways of framing and orienting to parts of the world considered as "nature."[1] While much of the more-than-human world is continuously caught in a culturally Western anthropocentric viewpoint of being considered lesser-than, plants are often just not considered at all. In all their mysterious and seemingly innocuous presences, plant-life and fungi are continuously ignored in dominant Western thought about culture, economy, politics, and even food. Furthermore, much of Western society suffers from "plant

[1] "Nature" is placed in quotes throughout this project to indicate its problematic use as an entity separate from human beings, and the general ambiguity of its definition.

blindness" (Wandersee & Schussler, 1999), or a lack of attention toward the presence of plant-life on the Earth. Even in the wake of several waves of animal rights activism arguing the moral complications of use-based relationships with more-than-human animals, plants and fungi remain misunderstood and often disassociated from other moves towards more-than-human recognition, or used for purely instrumental purposes (Hall, 2011; Head & Atchinson, 2009). It appears that pleas for the protection of baby seals and violent visuals of commercial chicken farms garner much more attention and empathy than images of struggling plants or fungi and statistics about rapidly declining biodiversity of plant species. This is all despite the utter universality of plants and fungi, in that they not only are the majority of biomass (Trewavas, 2003) but also a primary layer of every ecosystem that exists on this planet we inhabit. In the wake of massive environmental destruction and climate disruption, the need for increase of human attention on plants is of utmost importance. As a most crucial part of every ecosystem in every region, humans are utterly dependent on plants, and the extinction and migration of many species of plants is becoming both increasingly prevalent, and detrimental to both more-than-human and human worlds. Plant blindness inhibits humans from noticing the crucial role that plants play in both this biosphere and their own lives, and encourages a dangerously un-observant relationship (or rather, lack of relationship) between Western humans and plants.

In a harmfully anthropocentric fashion, plants are most often considered non-sentient and inanimate organisms, if they are noticed and considered at all. They are often assigned meaning based on their uses as cultural symbols (a rose for love, a carnation for death), and most commonly evaluated or conceptualized based on their commodity value

to human beings as food, medicine, or building materials, through extractive formats that are disassociated from the individual plants (Head & Atchinson, 2009). It is no wonder that the recent biological discoveries concerning plants' and fungi's ability to communicate to one another and across other taxonomic categories have failed to garner the level of attention necessary for change in Western society. Even the most progressive of scholars, scientists, and activists still struggle to integrate and contextualize the meaning of the potentials of communication in species besides animals, as well as the potential for multi-species relations beyond domesticated animal pets.

Plant communication's recent popularity in the world of biological studies is not the first evidence of human awareness of plant communication. Indigenous and Earth or land-based cultures hold multiple accounts of plant communication (Kimmerer, 2013; Kohn, 2011; Narby, 1998; Rival, 1998;) and many contemporary plant healers, herbalists, and botanists from even Western societies have intuited the possibility of plant communication and use this knowledge in their practices. However, a chasm still exists between the empirical scientific data that has emerged on the subject and humans' embodied, intuitive understandings of plant communication and their ability to form relationships with plants. As a category of cultures, Western society has yet to make sense of the evolutionary-based conceptualizations of plant communication alongside the spiritual, experiential engagement with the subject, whereas other cultures have been working with the idea of plant communication and sentience for generations. For example, in Narby's (1998) ethnobotanical work on ayahuasca in indigenous Amazonia, he found that people insisted the ayahuasca plant itself instructed people to ingest it, and taught people what it would need to be combined with to make it psychoactive. This kind of

research worked to position plants as teachers, and therefore an agentive authority role. Narby's work showed the level of awareness and openness to possibility necessary for plant communication, but also the multi-species advantages of engaging in communication across species, asking the question of who is really the more agentive being in the situation (Pollan, 2009).

The current study aims to survey human experiences of relation-forming practices and communication with plants. Because the available literature is rather lacking in detail about human-plant relationship and communication in a Western context, my preliminary research included investigation into people's communication and relationships with plants, biological research on plant-to-plant communication, and work understanding and contextualizing the implications of communication and relationships with plants in a social science setting with special attention paid to place and the function of stories. The primary goal was to collect enough broad thematic information about peoples' relationships with plants to build a range of themes with which to ask better questions to support further studies in this subject. The final themes formed a comprehensive base to aid in guiding future research on the subject. In doing so, I hoped to not only collect people's stories about plants, but also create space for the potential of plant stories about people. In allowing the potential for plant agency and "voice" through the stories, observations, and embodied interactions I engaged in, I hoped to allow parts of this project to reflect a multispecies perspective of place, storytelling, and communication.

Embarking on a project like this was a critical move towards the expansion of more classical academic conceptualizations of communication to include multi-species relations, and an attempt to continue poking holes in a human-nature binary and

conceptualizations of communication as predominantly verbal. In doing so, I hope to offer the field of environmental communication and its several multidisciplinary partner fields some re-framings of communication that allow for increasing encompassment of the more-than-human world(s), as well as foundational themes that support entertaining the possibility of communication with members of different species in those worlds. The crux of this work is predicated on a fulcrum argument that considering human beings as the only organisms capable of complicated thought processes and interactive communication beyond survival mechanisms is detrimental to all life. Anthropocentric worldviews that disregard plants are part of a dangerous paradigm that continuously situates humans as the center of the world, and ignores the utter interwovenness and interdependency of existing in a biotic community. This kind of anthropocentric thinking furthers dualisms that are harmful to most organisms (Carbaugh, 2007, 2011; Marifiote & Plec, 2006; Plumwood, 1997) and promotes anthropocentric and, specifically, androcentric asymmetries that encourage other cultural binaries (Milstein & Dickinson, 2012). Pressingly, it cuts short what could be a generative and lively conversation of scholars, environmentalists, and practitioners that could benefit from having more than only human perspectives at the proverbial table. While I am not the first to consider communication in the more-than-human sense (Abram, 1997; Carbaugh, 2011; Haraway, 1992; Kohn, 2011; Narby, 1998; Seegert, 2016), the subject of plant-life offers an especially difficult and somewhat untouched topic, and the interdisciplinary methods I use have few forms of precedent. Many other species of non-human animals possess forms of communication recognizable as akin to our own, but plants and fungi eat, reproduce, and move in a fashion so foreign to most humans that it is difficult to consider them communicating and relating with the

same importance we humans attribute to our own communication systems. Because plant's corporeal functions appear vastly different from those of human beings, I hope to allow space for certain points of relation to flow through the data that de-alienize plants and plant bodies. Throughout this project, I will address this and look for narrative bridges not only between disciplines, but between taxonomic queendoms.[2]

Addressing plant communication from a multispecies perspective poses a difficult discursive tango. Until very recently, most Western humans believed that plants were unable to communicate except as automatic response of evolutionary-bound signals and cues (Karban, 2016). An old Aristotelian adage demarcated plants as insensitive and passive in pre-Christianity days, a logic that is extended by Western cultures as an organizing feature toward anything in proximity to the more-than-human world, feeding the framing of other marginalized groups (such as women) (Merchant, 1990). However, as Gagliano (2013) points out, plants are anything but insensitive, as even before current biological research, their photogrophic[3] behavior was observed by ancient scientists reminding centuries of people that all living things must be sensitive to the world around them in order to survive. Gagliano recommends removing our "Aristotelian spectacles" (p. 149) in order to depart from zoocentric[4] modes of understanding the more-than-human world.

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[2] The term *queendom* acknowledges and attempts to undo the patriarchal sway of the term *kingdom*. Though used previously by decades of radical herbalists and mycologists., it has unfortunately been co-opted and trademarked by the nut beverages company Rebbl, Inc.

[3] *Photogrophic* means sensitive to sun and lights; most plants are photogrophic.

[4] *Zoocentric* refers to the ideology that non-human animals deserve more focus and consideration than other members and aspects of the more-than-human world.

However, arguing that plant life is indeed sensitive is different from arguing plants are communicative beings, or indeed beings that humans could deem to listen to, "speak" with, or learn from. If plants are largely understood as unable to "speak," then arguing that the potential for them to "tell" stories either to us or one another is yet another aspect of this research that needs work. In order to do this, our understanding of not only plants, but of all more-than-human organisms' abilities to story their own places and spaces must be recognized. This current study aims to highlight people's stories about plant relationships, but aims to focus on privileging the possibility of plant communication and plant experiences simultaneously. While humans are used as a primary data source in this exploration, an ecocultural framing of human communication is used that will hopefully lead to understanding communication in a broader, more inclusive sense. An ecocultural framing of human and plant communication could allow a space where meanings flow across species with less obstruction, and may very well be something already occurring in some people-plant relationships.

Project Overview

This study is an exploratory and generative foray into plant communication starting from a communication field-based set of assumptions. As previously noted, the aim of this project is to produce thematic and praxis-based considerations to help frame plant communication's implications for many academic disciplines and Western cultures in general. To do this, the study uses a collection of oral histories about people's communicative relationships with plants, and auto-ethnographic observations of plants, landscape, and people in New Mexico, where all research was completed. New Mexico was chosen as the location for this research because of my background knowledge of its

history, ecology, and culture; and the abundance of longstanding intimate relationships with plants I have observed and participated in here. Work coming from the environmental communication field has most often emphasized human-human communication about the more-than-human environment in efforts to effectively educate, persuade, and serve as allies to other living species and planetary formations (Cox, 2006; Milstein, 2011). However, this project heeds Carbaugh's (2007) call to explore approaches to environmental communication that heuristically "generate knowledge about communication as it mediates the relationships between people and earth's places" (p. 72). Because there is an extreme deficit of research on plant communication and human-plant relationships produced from the communication field and very little from other social science fields, I find it most useful to apply interdisciplinary considerations from multiple fields simultaneously in order to speak to my research questions. Previous research on the subject of plant communication exists largely in biological sciences (e.g. Gagliano, 2012, 2013; Karban, 2015, Shaefer & Ruxton, 2011) though these kinds of studies often evaluate plant communication from an evolutionary stimulus-response context. The fields of ethnobotany and anthropology (e.g. Brightman, Grotti, & Ulturgasheva; 2012; Levy-Bruhl, 1985; Medin & Atran, 1999) also host scholars who work with this subject matter, and tend to home in on the cultural uses of understanding plants as communicative, but often fail to explore or describe in praxis-based terms how this communication takes place.

This project also uses methods that rely heavily on Carbaugh's (2007) ecoculturally supportive Cultural Discourse Analysis (CuDA) in order to allow developmental, open-coded, place-based explorations of data. Additionally assumptions

that Husserl's (1970), Merleau-Ponty's (1962), and Abram's (1997) constructions of phenomenology, Ingold's (2006) work on animism greatly inform the analysis of the multi-disciplinary, embodied, and potentially quite otherworldly data that this project will produce. Finally, the analysis section relies heavily on Haraway's (2018) adoption from M. Beth Demster of term "sympoeis," or, "collectively-producing systems that do not have self-defined spatial or temporal boundaries. Information and control are distributed among components" (p. 33) to help describe the way parts of storytelling systems work in relation with ecocultural goals. I also used Alaimo's (2009) version of transcorporeality to help frame how humans are always intermeshed with the more-than-human world due to the very material realities of our corporeal existences.

Because of the complicated interdisciplinary concepts I hope to take and make accessible, this project works with several levels of storytelling. First, it covers the dominant and specifically Western narratives with which human communities have often framed plants as inert, or incapable of memory or relationships (Hall, 2011; Gagliano, 2013; Nagel, 1998), and describes plant communication from a Western biological perspective. Second, it considers accounts of plant communication from cultures and peoples who participate in more animate understandings of the world than Western cultural ideologies socially allow for. Third, it includes oral histories of people who have a non-binary (meaning they don't conceptually separate humans and the more-than-human) concept and ways of interacting with plants that differ from the dominant view of plant insentience or plant commodification. Lastly, this project includes my own auto-ethnographic notes, observations, and journal entries from the experience of engaging my own self and body with this kind of communication and relationship over the years of

preparing for this study. This kind of research methodology and focus has the potential to encourage reflection on place-based, embodied communication with the more-than-human world. Additionally, because this project includes my own embodied understandings of place, the natural world, and my interactions with those I am fortunate enough to learn from (plant, person, and otherwise), the project attempts to subvert scholarly frames that holds research at an objective arm's length. In the final formation and ensuing last chapters of this project, I begin to draw parallels and create braids from how the narrative storylines of humans and plants, and science and story, interact and support or contradict each other. The aim of combining several layers of plant stories, plant relationships, and ways of interacting with plants is to create a philosophical inquiry and a diverse thematic foundation for how to engage with plant communication and human-plant relationship formation in a social science context, as well as to develop praxis-based data on how communication with plants is possible.

Immediately, however, I am faced with the conundrum of how I could ever in practicality invite plant voices to "speak" or "story" with each other and with other organisms by using a decidedly human and extremely western form of producing academic writing in English. Carbaugh and Boromisza-Habashi (2011) remark on the irony that scholars attempting to access more-than-human communication are faced with, as when working with a world of communication that is nonverbal, we still tend to use verbal accounts to describe the lack thereof. Still, my work is largely directed towards people who do in-fact use words, as my goal is to make these ideas accessible to other humans to start chipping away at the dominant storylines of what humans consider animate and sentient. Therefore, using the recognizable medium of verbal stories as data

to explain potentially nonverbal methods of communication is at least a partial necessity for now.

The following sections of Chapter One offer clarifying definitions for major terms on which my research is predicated including *natureculture, ecoculture, more-than-human, multispecies discourse*, and what I specifically mean by *plant communication* and *plant relationship.* The next sections of Chapter One address the personal, cultural, and locational contexts for my research. Because New Mexico, the site of my data collection, is home to diverse and often land-based cultures and populations, I feel it necessary to expand on some of the particular histories of this place and implications of this choice of location and participants. The chapter closes with a presentation of my researcher positionality. I consider it ethical to address my own cultural positionality in a land (like many lands) that is historically rife with colonialism, extractivism, and disregard towards First-people's presence, as sections of this study involve auto-ethnography that presents my own engagements of observations of plants in this place.

The next chapter, Chapter Two, begins with a presentation of the research question I work with for this project. My primary research question is "How do people who have non-binary relationships with plants understand, interpret and enact communication with plants?" The chapter then lays out the theoretical and philosophical foundations necessary to answer this research question. Here, I discuss the major tenets of environmental and ecocultural communication and briefly describe why stories and words are so important for environmental matters. Next, I present an overview of how dualisms and binaries in environmental ideologies function to influence dominant society, and elucidate different ways to view and create cracks in these ideologies, as well as how this research directly

challenges human-nature binaries. Subsequently, I present animism as an ontological and epistemological worldview that challenges binaries and allows imaginative space for how to consider human-more-than-human connections and relationships. After the review of the theoretical foundations for this project, the remainder of the chapter delves into a formal literature review of academic studies on various other topics necessary to analyze my oral history and auto-ethnographical data. The literature review begins with a synthesis of how plant communication has been studied previously, starting with biological sciences and then moving to anthropological and geographical contexts. It then discusses how humans have historically used and related to plants, as well as some of the anxieties humans have had about plant agency, and how to organize human-based classification systems about plants. Based on my review of plant communication, I offer a proposition toward accessing and integrating more-than-human communication in academia, and review the work of several scholars with similar ideas on the importance and possibilities of tuning into more-than-human communication. After this, I move from reviewing interdisciplinary research to deep arguments on how identity, place, and storytelling are mutually dependent subjects in order to make meaning of plant communication, and make a case for how ecological place and communication are subjects that are mutually effective and generally inextricable from one another. The chapter closes by reiterating the importance of place-based environmental storytelling as a world-making project, and offering thoughts on how the stories we tell about our places, ourselves, and our environments enormously effect how we choose to live, feel, and act in our time on Earth.

The project then moves away from the literature review to Chapter Three. Here, I present the methodology and research design of the project, including a description of my

choice of location and participants, my method of selecting participants, the general research protocol, and my data collection and management. I also include a lengthy review and defense of my combined methodology of auto-ethnography and oral history, which is necessary to effectively access plant communication stories and observations. Additionally, I make a case for cross-disciplinary multi-method research that involves embodied learning. Finally, I summarize Carbaugh's (2007) CuDA as my primary method of analysis that can intentionally subvert the possible hierarchies of institutionalized anthropocentric researcher-subject models due to the analysis tool's focus on place, meaning, culture, and personhood.

Chapter Four, titled "Introduction to results" begins with an introduction to how the research plan and methodology played out in actuality, and includes relevant demographic information and specifics on the data collection process, as well as some of the philosophical locations I approached analyzing the data from. The chapter re-introduces the overall research question of "How do people with non-binary relationships with plants understanding, communicate, and create relationship with plants." It also provides a brief overview of the major themes that emerged after analysis, including "Germination" or how participants' relationships with plants began, "Tending" or how those relationships were built and maintained; and "Commune" or how participants understood and enacted communication with plants. The chapter explains the "sympoetic" nature of the results of this study, leaning on Haraway's (2016) understanding of the term to describe imbricated, moving, systems of knowing and being.

Chapter Five, or "Germination" marks the first theme that was used to understand non-binary relationships with plants. The title of the chapter refers to the world-changing

moments where participants saw their relationship or consciousness of plants begin, I lovingly termed “cotelydons” in reference to the first shoots that emerge from a seed before it has sprouted leaves and began to photosynthesize. Many participants came to plants through beings that I refer to as “nurse logs” due to their enormous role in providing support and nourishment that helped foster the participant’s relationship with plants. Nurse log characters in their stories were most often “Kin”, members of “Community,” “Human teachers,” and “Plant teachers.” All of these categories make up the subsequent sections of Chapter Five and provide selected sections of participants’ oral histories, auto-ethnographic data, and corresponding analysis.

Chapter Six, titled “The Tending” covers the second large theme provided by both oral history and auto-ethnographic data which observes how people maintain the relationships or non-binary consciousness that came from their cotelydon moments. Sections in this chapter are titled “Place-making,” and “Relation-making.” “Place-making” reviews data that showed the importance of place as a major factor in developing and maintaining relationships with plants. “Relation-making” includes stories on how people went about tending and growing their relationships with plants after theirc initial cotyledon experience. Themes that arose as subsections to “Relation-making” included “Plant-friends” or thinking of a relationship with plants in terms of friendship, “Changing times/making times,” or acknowledging how it is much more difficult to make time for plants in modern society, “Exchange/gratitude” or consistent practices of showing gratitude towards plants, and “Bodies like bodies,” or relating to plants by considering the similarities between all physical living bodies in the human and more-than-human worlds.

The final section of results is Chapter Seven, which is titled "Commune." Commune is the term I use to encompass the range of ways that oral history participants explained their communication with plants, as they emerge in elastic and nonverbal methods. Once again using oral history data, this chapter explores the possibilities of multi-species communication through ways of communing and communicating drawn from participant's stories. These include "Feeling energy," "Words," and "Observational/traditional methods." "Feeling energy" shows that many participants think of plant communication in terms of "energy," "vibration," and other somewhat ambiguous terms. Here, I note the Western delegitimizing of the word "feel" and posit that the difficulty participants' experienced in describing their experiences might be due to a lack of words in typical Western English to describe communication that is not strictly verbal or recognizably nonverbal using human body language. The section "The Trouble with words" discusses the tensions that some participants held about the use of human language with plants in that some considered them a barrier, some considered them important, and others wavered between the two. The final section of "Observational/traditional methods" discusses participants' who understand plant communication as based on observational knowledge through the senses of plants, and understood the communication to come from co-evolved advantages to species being able to understand one another. The chapter closes by questioning the importance of the body versus words in more-than-human communication, and discussing some of the ways in which place, more-than-humans, and humans interact with language.

In Chapter Nine, titled "Gathering," this dissertation closes by reviewing the study as a whole and reiterating the major findings and their implications for the communication

field studying more-than-human communication in the future. I review the advantages and disadvantages of using the combined methods of oral history and auto-ethnography and I pose some of the outstanding questions that a larger oral history set and different research questions could speak to.

Definitions

Before moving on to other considerations of this project, it is first important to clarify terms that have been thus far used in the introduction, project overview, and preview of chapters, and will be used increasingly throughout the duration of this dissertation. Environmental communication is innately focused on the power of words to construct meaning and persuade relationships with the world around us (Carbaugh, 1996; Milstein, 2009). For this reason, many of the terms used in this project are words or phrases intended to intentionally resist, deconstruct, or question dominant ideologies of human-nature and nature-culture separations. For example, Haraway's (2003) term *natureculture* works to acknowledge the inseparability of nature and culture, and serve as a "scholarly interrogation of dualisms that are deeply embedded within the intellectual traditions of the sciences and humanities" (Malone & Ovenden, 2017, p. 1). In this present project, the term *ecoculture (see* Milstein, 2009; Weisner, 2002) is often used in place of *culture* to point out the impossibility of cultures that are not mutually constructive of the ecosystem(s) the culture engages with. Similarly, the term *more-than-human* is used to refer to biological organisms and geological features of planet Earth besides human beings. I borrow the term *more-than-human* from David Abram's (1997) treatise on ecological perception and conceptualization of language titled *The Spell of the Sensuous: Perception and Language in a More-than-Human World* in which he uses the term as a way to access the expanded consciousness and sensorial knowledge of the earth beyond

humans. I use the term *more-than-human* pointedly, to avoid terms like "other-than-human" or "non-human" that run the risk of positioning human beings at the center of ecosystems and at the top of ecological hierarchies, placing other creatures and beings as "other" or "non." In short, I use this term fervently to acknowledge that my human-bodied experience, and this writing and project, are but one shade on a spectrum of earthly organisms and a page of a chapter of Earth's timeline.

Other alternative terms used throughout this project include cross-species discourse, plant-communication, and plant-narrative. *Multispecies discourse* refers to information shared across different species as defined by their taxonomic organization. For example, when a parrot sends messages to his or her human companion with agreed upon meaning, when a species of mushrooms has mutual interactions with a plant, or when a human being and a plant attempt information sharing. This is of note because in communication studies, discourse most often refers to written or verbally spoken communication from humans and human institutions. In using the term *Multispecies discourse*, I aim to expand academic conceptualizations of discourse to include other methods of sending and receiving information. I also aim to trouble biological definitions of "information" which often have to do with inter-species action that occurs afterwards in an evolutionary sense, meaning generally for procreation or sustenance (Shaefer & Ruxton, 2011). I also use the term *Multispecies storytelling* to identify the potential stories and narratives that plants tell about humans and those that humans tell about plants to create multi-voiced stories. My hope, however removed it may be from the current state of affairs, is that we will reach a time where discourse is academically acknowledged as

possible and even accessible between many species in the more-than-human world, something that would fundamentally change the scope, force, and tenor of discourse.

I use *plant communication* to refer to previously studied methods of interactions among plants. Most of the research previously produced on the subject focuses on communication between members of the plant queendom or between members of the plant and fungi queendoms. Most of this communication has been categorized in terms of the sending and receiving of information through light, chemicals, touch, gravity, temperature, sound, and electromagnetic forces (Karban, 2013). I found that throughout data collection in this study, new terms emerged from participant's stories to help describe the myriad of ways communication may occur in a cross-species sense. Because of this, *plant communication* as a term will hopefully expand throughout the current project to include communication with plants among different species and queendoms, and perhaps a term to better describe this will arise from analysis of people's experiences with plant relationships and communication. Closely related to plant-communication is *plant relationships. Plant relationships* refers to ongoing, nurtured understandings of reciprocity between a plant and a person, where the person feels like they have a shared understanding with a certain plant or plants in general.

Locational Context

While basic terms have been defined, it is also important to acknowledge the research site where data collection will take place. This helps in understanding the importance of the breadth of literature on place, story, and identity that is subsequently discussed in the literature review.

All oral history interviews and auto-ethnographic observations took place in the state of New Mexico. While it is seemingly problematic to delineate a research site for

environmental exploration based on political cartographic lines as opposed to specific bioregions or ecosystems, both the ecocultural foundation of this project and my own privileges of access makes this necessary. New Mexico has long been recognized academically as a rich sight to observe ecocultures (Milstein et al., 2011), and has attracted diverse waves of artists, environmentalists, healers, and ranchers over the years to a space where complicated histories of Pueblo, Navajo, Hopi, Spanish, New Mexican, and Mexican peoples were already intertwined. All of these peoples have had unique and complicated relationships with the flora of the area, and many of these ecocultures still hold those relationships close. Those relationships are also complicated, and often reflective of the multiple cultural interests at play in New Mexico. For example, while some Hispanic and indigenous peoples have a special love and attachment to certain strains of corn and sometimes understand the seeds as ancestors, the abundance of newer farmers with GMO seeds threatens the genetic purity of some of the more ancient strains. Or, while over-grazing and ranching has led to an over-abundance of sagebrush, chaparral, snakeweed and the extinction of several grasses that used to comprise the landscape, much to the dismay of people who still need to graze animals, Southwest herbalists count these "invasive" species as some of the most potent healing medicines the desert has to offer. In short, New Mexico's botanical relationships are heavily layered with different cultures, needs, wants, and histories. New Mexico is also a state heavily influenced by sense-of-place or querencia[5] (Arellano, 2002), and story, two topics that plants are heavily involved

[5] The term "querencia" is used in New Mexico to describe a place that is so dear to one's heart and existence, that one can always seek a sense of home there.

in, in that people's relationships with different plants are both bound up in stories and a vital part of understanding their sense of place and home.

It is important to acknowledge the diverse histories of New Mexico because all the participants who allow me the privilege of collecting their stories and perspectives came to call this place home through very different journeys but consistently feel intense pulls and senses of belongingness here. The desert is a unique location to engage in plant and people relationships, as desert ecosystems tend to lack what most of us understand as completely necessary to plants: water. Relationships with desert and high-elevation plants require honed skills of how to deal with the geology, weather, and often-scarce water of this place. These relationships also coincide with different histories, stories, family values, teachings, and modes of conservation. Both people and plants who[6] have found their way out here and stayed have intricate learned relationships, through ways of growing and tending, methods of processing, spiritual understandings, and dependencies on one another.

Partially because I include myself as a subject in this project, and partially because it is my overall ethical intention to include my researcher positionality and engage in constant reflexivity throughout the course of research (Collier & Muneri, 2016), I must acknowledge the identities I began this work from. I am a mixed-race, cisgender female identifying as human-animal and I spent most of my childhood moving globally, inconsistent to the rooted family structures and sense of loyalty to place that is often found

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[6] Though most word processing programs will mark this as incorrect, I prefer to use *who* when referring to plants as opposed to *that* in order to rhetorically establish the possibilities of personhood.

here in New Mexico. Plant communication as a topic of research occurred to me after a series of instances where people who hold sincere relationships with plants helped a member of my family deal with illness. It was a kind of alliance with the more-than-human that I had not encountered before, and the process was imbued with respect and gratitude towards the plants helping in the healing process. Although I am the child of a biologist who had an intense adoration of plant-life, I still spent my post-childhood years considering plant-life to be rather boring. Perhaps it was plants' inability to offer the attention and validation in comprehensible anthropomorphic terms that members of the animal queendom often give humans, but I existed for a long while in a state of what Wandersee and Schussler (1999) among others call "plant blindness." Plant blindness is the inability to notice and relate to members of plant communities, as well as the tendency to privilege paying attention to animal queendom members (Gagliano, 2013; Wandersee & Schussler, 1999). Even my own entry to considering plants as a topic of study came from a fairly extractive place, as I only began to notice them because they could 'do something' for me as I became more interested in herbal medicine for humnas. This project is partially a scholarly move to address my own and others' plant blindness.

I have had the privilege of working out of the University of New Mexico for the past five years. I moved here from the US Pacific Northwest, a region that is home to very different plant communities and often feels more forgiving due to its abundance of water and green life. I find it important to state that in my privileged position of living in rural Northern New Mexico, I wake up and plant my feet every day on what was once exclusively Tewa people's territory. I live amongst people who represent Spanish descendants of colonizers from the 16th century, mestizos, and newer immigrants from

Colorado, France, and Mexico to name a few locations. I am by far one of the most recent transplants benefiting from this land and using its flora, fauna, and ecoculture as a basis for academic research. I feel it necessary to acknowledge gratitude towards this place and its' people, as well as my privileged position that allows me to research from the outside what are the daily realities of this place's ecocultures. It is my experiences here that have fashioned me as a scholar, raised and nurtured my interest in plant communication and plant relationships, and ultimately led me towards the research questions for this project.

Chapter Two: Literature review

This chapter is organized in three primary sections. The first of these presents the research question that I frame this project around. The second synthesizes literature to support the theoretical assumptions that undergird the overall project. This includes the theoretical goals of the environmental communication field, engaging with extant arguments of human-nature binaries as a basis for plant ignorance, and animism as a theoretical stance (Ingold, 2006, Willerslev & Ulturgasheva, 2012) to help frame plant communication. The third section and remainder of the chapter provides an overview of how plant communication has been studied previously in various disciplines. In these sections, I review biological research on communication between members of the plant queendom and between plants and animals. I also provide a brief thematic covering of the ways in which humans talk about and engage with plants, several ways humans have typically classified or categorized them, and explore the anxiety in human cultures that arises from the confusing subject of plant agency.

I then move on to literature that questions human languages and advocates for the possibility of more-than-human language. This is an important part of the overall project because in studying how people have experienced plant communication, a pathway opens up towards plant communication that is not necessarily an evolutionary signal-response concept, but perhaps a more interactive, animate relationship that extends beyond basic survival needs.

In the next section, I take the focus of the literature towards analyzing material on how identity, place, and storytelling function as mutually constructive elements of meaning making, and how understanding the relationship between place and communication are crucial to even begin answering the research questions of this project

Research Question

This research project and subsequent discussion is concerned most with the primary question of: **How do people who have non-binary relationships with plants begin, understand, and maintain relationships with plants?**

In this project, "people with non-binary relationships" refers to those who do not follow the dominant Western viewpoint of human-nature separation, and hold multi-species relationships that acknowledge the potential of agency, sentience, and ability to communication from the plant world. Before collecting data that answers this question, I assumed that childhood, place, family stories, and embodied communication (or communication that doesn't rely on human languages but rather on the experience of having a material body) would play major roles in my overall thematic construction of communication and relationships between plants and people, so much of the literature review works to provide framing for this topics.

Between data gathered from oral history interview conversations and my own auto-ethnographic experiences and observations, I was able to speak to this research question with a range of detailed, multi-layered, multi-sensory collections of information and presentation of common themes.

Theoretical assumptions

In this section on theoretical assumptions, I begin by defining environmental communication as a field, along with the goal and ethical concerns the discipline focuses on, such as environmental awareness and movement away from anthropocentric (human-centered) ways of thinking and living. The next section elucidates on the human-nature binary, or the false assumption that human beings and the more-than-human world are entirely separate and hierarchical. This is one of the primary theoretical issues that

environmental communication scholars work with, and is also a major blockade to considering intelligence in more-than-human species. The next section of theory makes the case that stories we tell about the more-than-human environment and certainly about ourselves are world-making, meaning, stories have the power to create ways of existing, acting, and making sense of the world. I work from this assumption as a starting point for understanding data is the concept of animism. Animism, while not a perfectly transferable theoretical base, offers several ways of engaging with the more-than-human that western society does not yet have words or theories for. Animistic cultures (Most often studied by anthropologists in remote areas such as deep Amazonia and Northern Siberia) generally possess non-binary worldviews where divisions between plant, person, animal, and land are more of an interwoven network of connection and communication than a separating system. This mutual reversibility of organisms is of particular note, as it could help frame data concerning communication between species.

Environmental communication.

Plant communication from a humanities perspective is a relatively unstudied topic, but the theoretical basis for this study is largely dependent on the major tenets of environmental communication. These include an assumption that anthropocentric and dualistic ways of thought are harmful to our multispecies relationships and the survival of human beings (and all beings) on this planet. This theoretical base also argues that language and the stories we tell with language fundamentally affect our relationships with the more-than-human world. The world of more-than-human world conversation is largely dependent on several pre-existing frames that have to do with the goals of environmental communication as a field. Cox's (2007) generative and timely call for re-organization and action posited questions for environmental scholars. What is our ethical duty as a field?

And what are our ultimate goals for the research we do? In this, he lists several concepts (i.e. conservationism, preservationism, preparing for/understanding environmental apocalypse etc.) and leaves the environmental communication community with a call to reflect on what our field is and means, especially in regards to a teleological trajectory, or overall direction and concept of what goals met might look like. I understand environmental communication work to indeed have ethical duty, and believe this ethical duty should expand beyond the bounds of what is immediately alleviating of hardship to humans, though it may take time, patience, and highly increased awareness of non-human communication to bring to light what more-than-human ethics might actually look like (Carbaugh, 2007).

In order to begin to challenge or support any ethical systems in the human realm, we do still currently need human languages, as they are often our sense-making tool for the more-than-human world (Carbaugh, 1996), and our ability to conceptualize identity, community, and land (Basso, 1997; Carbaugh & Cerulli, 2013). Milstein (2009) reiterates this idea, and writes that environmental communication is largely based on the concept that the way we understand the natural world is predicated on our communication about it. Additionally, she offers that communication is important because the communicative organization of the more-than-human world by humans has a direct effect on the kinds of policy and action that is implemented. This means that communication lives between the material and symbolic worlds, as its implications affect the material world even when stemming from the symbolic/rhetorical one. Human communication is performed by the body on a physical plane of reality, and has material consequences (Cloud, as cited by Haraway, 1992; Milstein, 2009). Therefore, studying communication about plants is

highly important, as the stories and phrases used to consider, categorize, and contextualize plant life have the ability to change our embodied, material, choices of how to interact with them in the material world, including plant restoration efforts, paper use, extractive medicine gathering, and the simple decision of whether or not to pluck a blossom from a branch.

Binaries and dualisms.

Perhaps the first step to analyzing plant blindness (Wandersee & Schussler, 2001) might be to first recognize why humans see themselves as so different and so much more important than plant-life, which involves addressing the dualistic ways in which "nature" is often separated from "human." Despite some scholars' recognition of environmental communication's power to reorganize thought and mediate between human and more-than-human, most of dominant Western society still operates using dualistic and divisive worldviews when it comes to human more-than-human relationships. Dominant discourses that promote the human-nature binary place humans and culture in a vastly separate category from beings of the more-than-human world. In turn, this propagates a divisive mindset, where humans fail to acknowledge their effects on the environment, and the intermeshed co-evolutions of human cultures with the more-than-human world. Environmental and ecocultural studies scholars have spent much time attempting (and often succeeding) on putting cracks in this overpowering human-nature binary, and their efforts have provided a myriad of more generative frames from which to materialize change in practice (*see* Plumwood, 1997).

Some scholars have also pointed out that this human-nature binary is not as powerful as earlier scholars have given it credit for, offering hopeful spaces for resistance. For example, Haila (2000) addressed the nature-culture binary (viewing the more-than-

human as "naturally" occurring and culture as completely human-constructed) as dangerous to overall environmental health. However, she also questions if social perception of this dualism is as strong as environmental philosophers have theorized, and if inventions of modern science might actually be helping to break down the dualism in public thought. Responding to Haraway's (1989) calls to action, she articulates that many of the methods of breaking down dualistic thinking may already be in place, people just have to look for them in specific environmental examples such as in medicine. Haila (2000) cites Haraway's (1992) earlier work which asked for a worldview of unity, and an understanding that the more-than-human world is responsive and intelligent. Haila (2000) writes that modern science's theory of unity expressively proves what Haraway's (1992) worldview of unity proposed, and that most discoveries in the scientific field support that other matter is intelligent. Far from arguing that nature-culture binaries are not an issue, she posits that perhaps we can avoid their paralyzing and exhausting effect on environmental scholars by seeing spots of science where they are actively being un-done. Though not explicitly responding to it, she echoes Haraway's (1992) later work that asks that we understand science as culture. If scholars conceptualize science as culture, they not only remove the hierarchical frame of objectivity, but also understand it as born of culture, meaning it is within our human powers to make malleable and changeable for better (Slack & Whitt, 1992). Both Haraway (1992) and Haila's (2000) work provide insight on the barrier between humans and plants (as well as other more-than-human elements), and the importance of cross-disciplinary approaches that include science and culture simultaneously to address environmental issues.

Plumwood (1997) similarly calls for a reinvestigation of dualistic tendencies in discourse, though not because they are overwhelming as Haila (2000) notes. Instead, Plumwood addresses them because she argues that they immediately create unnecessarily oppositions that cloud the goals of environmentalists by distracting them into philosophical battles with oppositional stances. Plumwood (1997) offers a feminist reading of anthropocentrism that critiques centrism in-and-of itself, as the notion that anything is specifically 'central' already has the potential to be ideologically harmful (*see* Milstein & Dickinson, 2012). Plumwood (1997) chastises limiting philosophies of anthropocentrism, and instead proposes that a theory of liberation might be the way to subvert rampant cosmological anthropocentrism, or in this present study, the inability to extend consideration and empathy towards members of the plant world. Theories of liberation have to do with practical and behavioral changes, and do not push for humans to stop thinking from their own perspectives, but rather posit that perspectives of self-centeredness can be done away with as an overall practice of being. In dealing with plants, this helps remove the argument that humans will never be able to inhabit plant bodies or have plant experiences as a reason not to consider their lives. Instead, it pushes for removing the self-centeredness of the human experience and the mindset of allowing things to exist that we cannot directly experience.

In order to better understand plants, humans need an array of new ideologies, stories, and ways of experiencing the world. Much more emphasis must also be placed on cross-disciplinary and possibly multispecies storytelling and the hopeful understanding that most Westerners don't actually ascribe firmly to the seemingly indomitable human-nature binary. Marifiote and Plec's (2006) work supported this kind of multilayered

storytelling in that their research found that perceived binaries between culture and nature tend to be more heteroglossic than dualistic. Bahktin's account of the concept of heteroglossia posits that human thoughts and perceptions are a combination of the hegemonic notions of the time, as well as their own personal thoughts. In their study of college student's understandings of the natural world, they found that most responses referenced hybrid ideologies. This provided hope in many ways, and also allowed the authors to suggest environmentalists could use what they term as "strategic hybridity" in order to communicate more effectively with wider populations. In studying plant communication and encouraging people to take time to see plants, this might help in determining ways of storytelling and presenting information that includes several ways of understanding the more-than-human world simultaneously. Perhaps elements of dominant binary-based ideologies need not be promoted, but instead simply acknowledged in order to better spread stories of multi-species more-than-human communication and connection. As Haraway (1992) notes, "nature" is hard to understand, because it is all at once a place, a topos, and a material thing, but by using stories that toe the line between science and culture, she suggests new ways for understanding and interacting with the natural world that see the two as imbricated. She shares a tale of working with microscope on cell samples. The microscope was made possible by orderly, mechanistic, rational notions, but the love she felt for the opportunity to engage with her petri dishes transcended that, combining the culture of science and her own embodied response in one tangled storyline.

Environmental stories.

Perhaps the most powerful way to change stories we tell about plants, challenge human-nature binaries, and imagine new generative futures for the planet is through the

avenue of storytelling and story-sharing. Stories can teach values, lessons, and ethics, and always carry and promote certain ideologies. Stories, like all communication, also exist in both symbolic and physical realms, as their symbolic power have the potential to create and change. Because this project is ecocultural at its core, I write and research with attention to the constant undulation between material and rhetorical (Rogers, 1998). Therefore, I am also compelled to consider how organized rhetorical formats like stories or narratives have enormous impact on world-making efforts and ideologies in practice. I also approach plant narratives from an ecocultural sense where I consider them quite dependent on the culture and ecosystem where they were created, tended, and where they are told. Stories are often bound to certain places, and can have great political, social, and environmental implications. The stories we tell ourselves about more-than-humans, and plants specifically, are not disembodied place-less discourse, but are indelibly environmentally and culturally bound (Carbaugh, 1996), and have the capacity to change the way we orient both our bodies and our actions.

While research on plant stories specifically is scarce, other scholars have used storytelling for a variety of environmental agendas. For example, Pezzullo (2001) argues that narratives (and the interruption of narratives) concerning environmental matters are crucial to the field because stories "do" things in the world. In her article, Pezullo covers a major environmental justice event that functioned to eventually make environmental racism an articulable term in that town. In the summer of 1982, residents in a small rural and mostly Black community of North Carolina began protesting a toxic waste dump that was placed close to their city limits. They felt that the reasons for its placement were political, and not environmental, and their protesting provided what Pezzullo termed a

"critical interruption" that challenged the dominant narrative of how environmental matters are dealt with. Pezzullo's analysis of the town's provided a counter-narrative to the common framings of poor people of color as inactive in environmental issues, and provided a model narrative for other communities to grab onto. Environmental justice and racism provide an excellent example for how stories can be used to change policy and action, as well as how they dominate our conceptualizations of who belongs in what environments, when, and how.

It is stories like Pezzulo's (2001) that seem to provide direct contradictions to one of Western culture's most dominant and harmful story or nature and culture separation. In considering nature as a place distinct and separate from both culture and the culturally bound stories we layer onto it (Carbaugh, 1996, 2007; Cox, 2007) two things happen. First, dominant industrial culture relieves itself of the pressure towards ethical cultural storytelling about nature by acting as though nature is untouched by our range of humanist violence. Second, a strategically anthropocentric block is placed so that humans' ethical duty to non-human nature is removed. The dominance of a separation narrative between nature and culture has roots from Aristotle to Descartes (Merchant, 1990) who found traction in eras of rationalism, bucolic romanticism, and industrialization, when the othering of the non-human world became even more crucial to the agenda of mechanistic progress (Abrams, 1996; Haraway, 1992; Haila, 2000). The narrative of dualism as an organizing feature in the world not only encourages erroneous culture nature separation, but also serves as a blueprint for all other binaries (i.e. male-female, gay-straight, sentient-non-sentient) which promotes a worldview of dangerous simplifications that do not allow for the multilayered, multi-channeled creative and inventive ways of thinking that are

necessarily to make sense of environmental crisis (Haraway, 1992; Plumwood, 1997; Tsing, 2015). If humans fail to question binaries that propagate othering against even members of the same species, plants run the risk of even more severe marginalization. Stories have world-making power, and stories about our more-than-human counterparts have the ability to challenge harmful binaries and rewrite cultural norms for a more inclusive way of existing on planet Earth.

Sentience and animism.

While changing dominant narratives and breaking down binaries are necessary steps to better understanding plant communication, many cultures in the Western world still lack a cohesive storyline of what ecocentric ideologies might look like (Milstein, Thomas, & Hoffmann, 2018). As this is a major block towards including plants in dominant discourse, I find it useful to learn from several other cultures' more ecocentric philosophies for ideas on how to understand more-than-human life, and also to survey how Western narratives have generally categorized plant communication. The final theoretical assumption that is necessary to engage in my project is the acknowledgement of the possibility of plant sentience, and of an overwhelmingly animate world of matter, beings, and creatures with agency. These assumptions rely heavily on the parts of communication that live in the material world, whether they be human bodies, aspen trees, or mountains. In a methodological sense, animism is most supported by the epistemological claims of phenomenology (Merleau-Ponty, 1962). This is because theories of animism rely heavily on embodied sensory and spiritual experiences to make sense of the world. I do not aim to argue that this study only makes sense if people completely believe plants can communicate like humans, have rational sentient behavior, and a sense of telos, Instead, I posit that this project will serve the most purposes if readers

suspend their possible disbelief about plant sentience, and entertain the theoretical *possibility* of an intensely animate and communicative universe. Engaging in the possibility of animism means moving away from some of the previously mentioned binaries of sentient and non-sentient, or culture and nature. This allows space for horizontal as opposed to hierarchical orderings of members of this planet. The question of sentience has multiple definitions depending on the academic field in question, as the ontological awareness varies based on the ecoculture it was born of. Acknowledging sentience tends to be one of the largest holdups people have when considering how to conceptualize plants, so it is useful to review some of the previous ways plants are categorized across cultures.

Nagel's (1997) work offers four definitive frames to help organize how humans tend to categorize plant sentience and communication. The first of these is closely related to the above descriptions of plant intelligence in a biological sense, what Duvall (2017) calls a "prosaic" frame. In this camp, plants are categorized as communicative in a biological sense, though not necessarily conscious. Most of the communication plants make is understood as a reactionary force, and they are not considered sentient beyond their somewhat mechanistic functions.

The second of these frames offers that plants might have 'something,' though what that something might be is unknown. This frame is populated by studies that show plants seem to react on some level to outside stimulus unrelated to their immediate survival – for example (Hoffman, 1992) showed that tomato plants tend to fare better when given compliments or other forms of positive communication, and Voell (1972), who found that

plants connected to a polygraph have negative reactions to stress-inducing communication.

The third of these frames posits that plants are communicable beings, though not necessarily agentive. Nagel (1997) uses the example of Malidoma Some's (1994) work *Of Water and Spirit,* where as part of his shamanic training, Some was instructed to go stare at a tree until he could "really see" the green spirit inside of her. This framing lends itself more to a more mystic approach to communication.

In Nagel's last frame, he uses the case study of communities in Findhorn Scotland to explicate the concept of plants as fully conscious. Findhorn is a tiny community that has its roots in communal living. Here, the residents believe that there are nature spirits that are directly responsible for the success of the local gardens, and that they can be spoken with easily. This concept however, is a troublesome framing in that it shows that some of our most liberal understandings of plant communication are still largely through the lens of plant-communication as it directly relates to human use, as opposed to independent of human needs and desires. Because of this, I find instead that discussions of animism and totemism are more binary-breaking in helping re-theorize how relationships between plants and people could be. While still usually described in terms of human habits and needs, they at least offer more imaginative ways of connecting inter-subjectively.

Animism and totemism.

Animism, or "A system of beliefs that imputes life or spirit to things that are truly inert." (Ingold, 2006, p. 10) is a concept studied most commonly in the anthropology field. Historically, anthropologists paid special attention to indigenous peoples who reside in Amazonia and the Artic Circle, due to the prevalence of land-based cultures there that had not been directly colonized. Animacy is not necessarily a singularly held perceptive lens,

but rather "…the dynamic, transformative potential of the entire field of relations within which beings of all kinds, more or less person-like or thing-like continually and reciprocally bring one another into existence." (p.10) Because of this philosophical standpoint, a worldview of animism would preclude plants as avid participants in this "field of relations" and therefore, as important and agentive as any other living being. Animism is often confused with totemism, as both are epistemological ways of being that often occur in indigenous and land-based cultures. In Willerslev & Ulturgasheva's (2012) re-visitation of the debate between animism vs. totemism, they borrow from both Ingold (2007) and Descola's (2003) work to define totemism as a vertical relationship where ancient spirits and ancestors exist in the landscape, and accessible features like mountains or rivers can serve as the homes for powerful or god-like spirits. Animism, on the other hand, provides more of a horizontal relationship between people and spirits, where life and the afterlife, animals, and humans, death and birth are all different sides of the same coin with relatively little hierarchy. They use the example of the Eveny reindeer people's practices in North-eastern Siberia. When most Eveny children are born, they are given the name of an elder who has recently crossed over out of this world and to the other side to keep in-place the connection between life and death. Furthermore, they are generally given a reindeer spirit guardian from their family's herd. The reindeer guardian is charged with the task of protecting the child's "open soul" or their relatively accessible and newly transitioned spirit, and can do so by switching places with the child in the advent of malevolent spirits. In this, it is the mutual reversibility of child and reindeer that exemplifies the inter-subjective relationships possible in cultures with a strong predilection towards animism. Because Eveny have no doubt that a child may embody a

reindeer form and vice versa, they understand the world in which physical boundaries between different species matter little, and communication is possible with all. While Willerslev & Ulturgasheva's (2012) work does not specifically bring in plant life, the "mutual reversibility" between two species offers something towards this study, as the unquestioned inter-species communication and deep relationships across species offers a model for how inter-subjective relationships with plants might be possible, as well as deeply spiritual and mutually advantageous.

Similarly, Kohn's (2013) work with the Runa people in the Amazon makes comments on Runa people's ability to regard and inhabit several species' worth of consciousness depending on the event or needs of the person. For example, hunters who cannot embody both hunter and prey in their dream-worlds have little chance of actually killing anything, as the inability to dream on/access other animals is the inability to become them enough for them to be open about the idea of dying. Kohn borrows the Runa term "soul blind" that refers to those people who cannot acknowledge the ecological myriad of selves that exists in the rainforest at any given time. This "soul blindness" is not only an ignorant way of being, but detrimental to the basic survival of those who understand the jungle through the avenue of only their own soul. Because of the prominence of indigenous understandings of souls in the Amazon supported by years of difficult sacrifice, protest, and activism, some policy changes have begun to reflect the possible existence of nature spirits. For example, Ecuador's 2008 move to give pachamama legal rights of personhood, the same writes that human individuals have for mother earth (Pelizzon & Gagliano, 2015). Still, most of these movements are birthed from non-Western perspectives, as much of the Western world still holds a considerable

amount of anxiety over how to categorize personhood. Perhaps it is due to the uncertain standing of plants within Western cultures' morals and ethics, and the general inability for most philosophers to agree on a definition of sentience (Knutsson & Munthe (2017), but plants continue to illicit confusion as a category. However, this discussion of animism and sentience in the more-than-human world hopefully serves as a base from which to imagine communicative universes of mutuality and relationships. In the next section, I provide an overview of plant communication as it has been studied in biological, anthropological, and geographical fields thus far. While no previous literature exists on plant communication in the communication field, communication as a discipline has the potential and often successful accomplishment of connecting research from multiple fields and several ontological backgrounds.

Plant Communication: An Overview

In his 1916 work *A Thousand mile walk to the gulf,* John Muir wrote that "Plants are often credited with a dim and uncertain knowledge, and minerals with positively none at all" (p. 358), and questioned how humans in a state of "blind exclusive perfectionism" could possibly continue to understand ourselves as the only organisms capable of intelligence. Since 1916, slow moves have been made in Western contexts to better understand the capabilities of plant-life and fungi. Through a web of scientific empirical data, shamanic and psychedelic-based accounts (Narby, 1998), and a growing body of literature with goals of re-contextualizing human understandings of plant intelligence and sentience (*see* Hall, 2011, Trewavas, 2014; Duvall, 2017, Wohlleben, 2016); exists the tremulous beginnings of expanded frameworks regarding communication and intelligence in the more-than-human world in the Western world.

Perhaps the largest blockade to understanding plant intelligence is the sheer difficulty of understanding communication in organisms that do not resemble our own human methods of communication. When other organisms care for their young, cry in pain, or play, they are easier for humans to identify and relate to (Milstein, 2008). Whether or not anthropomorphization is at play, these are traits that the humans themselves have experience exemplifying. Plants have far fewer relatable characteristics for Western humans than other animal species, which has relegated them to a non-sentient or incommunicable status in the minds of many humans. Despite the growing body of studies presented in popular science magazines and best-selling books that trees can recognize their own kin and support their offspring (Wohlleben, 2016), that *mimosa pudica* has memory and can learn to not close its leaves when being experimented on by botanists (Karban, 2015), and fungi are in-fact grand connecters between different plant species and serve as powerful re-mediative forces in various toxic areas (Tsing, 2016); plants are still regarded as remarkably lower on the sentience-ladder than animals (Knutsson & Munthe, 2017). While there are several ideological barriers that contribute to this, specifically focusing on the topic of communication offers a fertile starting place to connect social scientists and biologists in similar goals of understanding, discovering, and contextualizing how we connect with our more-than-human communities.

Plant-plant-animal communication

In order to deconstruct the harmfully anthropocentric stance that Western societies acknowledge plants from, it becomes necessary to first analyze what "communication" means in several contexts, as this term is often a precursor used in categorizing matter as sentient or not (Hall, 2011). A growing body of work from empirical biology and botany has offered many new insights towards understanding how communication can function in

the more-than-human world and in specific biotic communities or ecological spaces. However, there is still a bridge between social and natural sciences where terms can mean fairly different things depending on the field. In order to discuss communication, I first define what the term "communication" generally means in a biological sciences context.

Biologists Maynard, Smith, & Harper (2003) define communication as the transfer of information from one entity to another, where either one or both party tends to receive benefits from the interaction. The term "information" which in human communication may refer to the simple presence of aspects unknown by a party before a communicative event, can really only be observed or identified by the action that information does or does not illicit. This results in identification of a non-human communicative event as largely attached to action or reaction that scientists have already learned how to observe and study, leaving lots of room for communication events that scientists perhaps do not know to look for, and vaguely arguing that other species have no communicative needs that do not relate directly to survival. This viewpoint is echoed by most scientists in the field who understand non-human communication through the lens of Darwinist tendencies, where communication is not so much a conscious act than simply an evolutionarily action to emit and receive information from other members of a biotic community. Biologists Schaefer & Ruxton (2011) differentiate between cues and signals, as two major delineations of how to organize both plant-to-plant and plant-animal communication. A cue is defined as a product of the basic function of an organism's biological existence that is not an attempt to illicit a particular response, but can be picked up on by other species in a mono-directional relationship of advantage. For example, the carbon dioxide that mammals emit in their breathing process can be picked up on and used by mosquitos and other biting insects to

locate the animals themselves. A signal on the other hand, refers to a relationship that usually has an evolutionary advantage for both parties, even if it is an asymmetrical one. An example of this might be how certain flowers emit a particular stench that attracts the type of insect who pollinates them best. Additionally, it could be exemplified by the instance of pollinators who can find their reciprocals through electromagnetic signaling of a plant, where certain colors or shapes appear attractive to particular organism's types of eyes (generally the ones most useful to the plant) but are less noticeable or attractive to other species.

Plants use a series of channels to emit both signals and cues in order to obtain their survival, reproductive, and possibly other unknown goals. Karban's (2015) book on plant communication systems offered a broad overview of research conducted in the area, and surmises that plant communication systems are far more complicated and misunderstood world of constantly firing cues and signals than scholars have previously thought.

Plants communicate and share information through multiple channels, using mycorrhizal networks (Wohlleben et. al, 2016, Gorselak, Asay, Pickles, & Solar, 2015; Barto, Hilker, Muller, Mohney, Wedenhamer, 2011), vascular systems, volatile signaling, and electromagnetic spectrums (Trewavas, 2014; Karban, 2015). Perhaps one of the most observable of these by the human laywoman however, is volatile signaling. Jack Shultz and Ian Baldwin began research in Volatile organic compounds or VOCs in the late 40's, and provided the first hypotheses for which to understand the way they function. An example of these might be Jasmonates, which are used for several purposes though most often indicate herbivore damage to plants. This kind of signaling has been shown to alert other plants in the area to increase leaf density or toxicity, and studies on sagebrush have

shown similar defense reaction in untouched sagebrush that was within VOC signaling range of wounded sagebrush, and even in tobacco that was near wounded sagebrush, indicated that 'eavesdropping' between species can also occur due to VOCs (Karban, Baldwin, Bazter, Laue, & Felton, (2000).

Other studies have refuted plants perceived inertness or lack of reactions by proving the existence of HAMPS (herbivore associated molecular protection systems) and MAMPS (Microbe associated molecular protection systems) (Karban, 2015). The first of these come into action when a plant has been attacked or wounded by an herbivore and can increase leaf density, and change rate of growth to a slower pace. The second of these occurs when a plant is attacked by a parasite or microbe, which can result in a plant upping the toxicity of its leaves.

Mycorrhizal networks have also received an increasing amount of attention as an important channel that plants can use to share information and nutrients. According to Karban (2015), about 80% of plants have root systems that are connected to mycorrhizae. Sometimes these relationships are parasitic (for example, the bright red pine-drops one often sees growing near ponderosas in New Mexico are usually just siphoning nutrients using mycorrhizae), but for the most part, they allow for mutually beneficial relationships between plant lives. In Suzanne Simmard's work with pine and birch forests, she found trees that were fairly far from a water source with salmon-based nutrients in their roots, allowing her to posit that trees can pass nutrients far from their source using the seemingly ineffectual white tangles of fungi. Additionally, she found that birch and pine took turns sending nutrients back and forth to one another seasonally through mycorrhizae (something she tested by putting bags over the trees to block potential VOCs), depending

on which species had more to give. Karban (2015) also summarized a study where legumes used mycorrhizae to communicate with other legumes close by when aphids attacked, and found that legumes in the vicinity reacted chemically as if they too were being attacked by aphids.

As shown, there is plenty of biological evidence about plant communication, and the potential of plant intelligence. The issue is less that we can prove empirically it exists, and more that we have no proper methods or narratives for integrating it into dominant western culture. Western human communication about plants has historically either had trouble placing plants, or relegated them to objects of use for humans. In the next sections, I describe Western humans' most common ways of considering plant life, as well as the relative difficulty to be had in categorizing anything of uncertain moral standing.

Human-human communication about plants

Human geographer Duvall (2017) wrote that studies about plants can generally be divided into four categories, the prosaic, poetic, paranormal, and psychedelic. The prosaic category is what most of the information presented thus far would fall into, as it is researched using empirical methodologies. A poetic understanding of plant communities serves largely anthropocentric goals of romanticism and psychedelic has a certain connotations that repel many subgroups of the population, the paranormal category is often populated with pseudoscience, the prevalence of which has hurt the burgeoning study of plant communication more than helped it. While much of the information presented here comes from a prosaic, or points towards plants as active beings, scholars still struggle with how to categorize these kinds of studies. Are plants agentive? Do they share information with benevolent intentions? Or- is this simply a function of an

evolutionarily advantageous response or relationship that occurred from centuries of trial and error?

For the most part, scholarship in the sciences still rests on the latter. The overarching value-sets of capitalism, Christianity, and anthropocentrism have in many ways made it a cultural norm to understand plants as non-sentient and passive (Hall, 2011); though they persist in every corner of our daily lives. Head & Atchinson (2009) wrote that the majority of studies in the geographical field have to do with the production of plants as food in a global capitalization market, and the most frequent studies after this have to do with plants in domestic gardens, as boundary markers (what is a weed? And where does it belong?) or in the context of specific forests to gain ecosystem-based knowledge. They also posit that perhaps the invisibility of plants has to do with their relative malleability, where they can be all at once a shining field of corn or a disposable fork. Plants have also been studied in regards their general use as mood elevators humans, through studies about these have been inconclusive (Bringlismark, Hartin, & Patil, 2009) possibly due to the lack of uniformity in trying to identify and understand non-empirical relationships between plants and people. Most of the time, plants are spoken about as immobile, as a backdrop, symbol, or stage for which the happenings of humans take place on, as opposed to conscious entities themselves. This general inability to categorize plants has led to uncertainty and even sometimes fear concerning plants. The following section covers the way plants have worked themselves into Western imaginations of fear

Anxiety about how to classify & anxiety in general

Allewaert's (2013) book on tensions between slaves, colonizers, and "nature" in the tropics did not address plant sentience so much as plant agency and the concept of parahumanity, or the blending of human and more-than-human biotic worlds. In this text,

Allewaert is specifically concerned with how white colonizers framed and feared tropical plant-life. On one hand, they relished the new flowers and trees and fungi and spent many resources on detailed drawings to send back to London archives. On the other hand, they were terrified of the way the plants of the swamps seemed to swallow up their ill-advised tools, clothes, and books. Allewaert remarks that plants played a large part in slave resistance to white colonizers, as marooners (locals) were unafraid of the relative permeability between their bodies and the swamp, allowing their bodies to mix freely with the water, parasites, fungi, and plants; whereas the colonizers reacted in anxiety and fear to how the heat and mold swallowed up their paper documents and invaded the boundary of their skin.

Western anxiety about plant-life can also be discussed from a taxonomic standpoint, as a relatively large amount of literature and resources have been spent on trying to categorize the plant world and make sense of distinctions between folk biology and ethnobotany. Berlin (1992) argues that taxonomic systems should echo the kinds of order inherent in "nature," as opposed to the orders that humans sometimes erroneously attempt to force *on* "nature," also asking scientists to consider not only *how* to categorize plants but more importantly, *why* they do it the way they do, and how that might reflect the cultural assumptions of a time. Hsu & Harris (2010) echo this with their call for a system of classification that takes into account common sense organization systems that are ubiquitous across the world in folk taxa. They also argue for the application of the Latourian concept of plants as both material things and mobile affective entities, thereby reframing plants as isolated species studied by "scientists and their notepads and their cameras" to a more engaged understanding of plants as indelibly ingrained in social

systems. Berlin's (1999) later work indirectly acknowledges Hsu & Harris' (2010) idea of a "common sense" classification system by writing extensively about Mayan views of the plant world. By working closely with one Mayan man in particular, he found that the Mayan system of classification is very organized, and has all the trappings of a modern taxonomic system though organized differently. Mayans categorize plants in two levels; first as one of the specific named plants, and second, *as related to* with a qualifying term one of the specific named plants. In this, a Mayan will rarely say "I do not know that plant" but instead use an active and aware method of relating the plant to something that they know how to specifically identify. For example, they might say, "It's similar to X, "It's Y's companion," or "it's a relative of Z" (p.84). This system of classification by way of relationship as opposed to strict identifications serves as a reminder that there are many ways to come to know plants. Discourse in the Western world relies heavily on hierarchal classification systems that muddies chances for relational and horizontal ways of associating with plants through a myth of objective knowledge of plants..

The Uses of plants

However comprehensive and even binary-breaking some folk classification systems can be, they can hit a particularly rough juncture when dealing with the world of modern medicine. Because much ethnobotany relates directly to medical fields of discovery, precise categorization in a Western empirical sense is often necessary (Hsu & Harris, 2010). However a large percentage of medical discoveries continue to come from research and extraction of plants in the global south, which can result in the bowling over of local taxonomic systems and stories that engage more intimately with plants than the rest. Because plants often serve specific purposes for human beings, they are easier to consider "things" that are used in a subject-object relationship, as opposed to a subject-

subject relationship of mutual autonomy. The adoption of an attitude that considers plants communicable and sentient has the power to vastly change how we use plants unthinkingly, as if they were tools put there specifically for our human benefit. Often, this use-based association with plants means people consider them independently, as opposed to within an interrelated web of other organisms. For example, mistutake mushrooms grow in newly disturbed or burned forests, and serve a powerful remediation purpose in clearing out toxins and encouraging new nutrients in distressed soils, but because they also fetch an astoundingly large sum in international food markets, they are often overharvested (Tsing, 2015); collected for taste and profit to serve a particular species with little attention paid to how they benefit multiple species where they grow. A global capitalist system also disturbs practices of ethnomedicine, contributing to overharvesting of specific plants in order to suit medicinal trends across the world. Oftentimes, this results in an irrevocable loss of plant remedies and knowledge (Borins, 1995). Anyinam's (1995) work discusses the pressure that both globalization and urbanization has placed on folk medicine, showing that the kind of "geopiety" (Cosgrove, 2000) that exists in rural communities still dependent on shamans and local plants for survival tends to drop away when the space becomes crowded or overbuilt. Simultaneously, herb collectors must travel farther and farther from their villages to obtain plants that previously grew close-by, and with increasing amounts of children in rural areas leaving for more urbanized environments, knowledge of plant medicine is disappearing more quickly than even the plants themselves.

Mazumdar's (2012) work studied how immigrants (often refugees or other victims of quickly changing systems) used home gardens as place to mediate, manage eco-loss or

the missing of home landscapes, as a place to connect to family, and as a place to grow familiar plants from home. I once heard a story of how Polish immigrants would travel across with sea with a rutabaga root in a hollowed out turnip to keep them alive, and seeds sewn into the hems of their skirts. Plants serve more than purely medicinal, capital-based or decorative purposes, as they also can offer emotional or symbolic functions to humans that we perhaps don't even acknowledge. Consider an apple for example, an immediate rush of images should arrive in most people's heads very quickly, of eve and a violent fall from grace, or Johnny Appleseed, or a teacher's desk. Mention a fig and some might understand it as a fertility symbol (Simoons, 1998) or a pomegranate and we might picture those three ruby seeds on Persephone's tongue as she accidentally sealed herself to Hades and the underworld. Often, plants are arranged in an order of their specific uses to humans, or ability to attract the human species. For example, roses are highly prized (Head & Atchinson, 2009), as is marijuana, but many humans tend to think of incredibly useful mold as dirty (McCoy, 2015) (if we think of it at all). Not only do we use plants in the physical and material world, but also as placeholders for larger concepts or stories that help instruct human morality and value systems. If plants have found a way to bind themselves to not only the basic survival needs but also the psyche of the western world, are they really lacking as much agency as general consensus believes? Or is it a product of our own ignorance and testament of plant genius? (Pollan, 2001) that we can't or don't recognize our dependency on plants in everything from their symbolic uses in human cultures to the paper-based sticker on the computer where I'm currently typing.

If communication in social sciences is defined at a basic level as the conscious or unconscious exchange of information between two or more parties through multiple

channels, then perhaps we are simply unaware of several other channels out there we could be tuning into. As we now know that plants communicate to each other and other animals, what's so say they haven't been communicating to us all along? I think that many indigenous understandings of plants would argue just that, and while our western society might not immediately jump to considering plant communication as a daily experience, or trusting the accounts of ayahuasca users that the forest can in-fact speak (Narby, 1998). Perhaps though, we could edge slowly towards an approach to communication that integrates the more-than-human world, and instead of over-concerning ourselves with the question of 'What are they?' realize that this is very possibly unanswerable in the context of a biotic community without simultaneously asking, 'Yes, and what must they think are we?'

Towards a new understanding of language

This move to better understand the possibilities of plant communication involves a move to better understand how communication functions in general, especially in anthropocentric settings. In order to re-imagine how language beyond humans might work, we must first revisit the symbolic and material elements that make human language as powerful as it is. Despite the relative academic support from ecocultural scholarly communities in webbed and non-binaristic thinking and modes of approaching communication, tension still exists about how to produce discourse, rhetoric, and communication with physical and material consequences for both human and more-than-human communities without further re-inscribing a dualism between rhetoric and material. Rogers (1998) writes about this tension by first outlining the long history of objectification (both material and rhetorical) that the natural world has faced at the hands of humans. Aristotle is one of the first scholars attributed with dividing spirit and body, as he thought

the divisions were necessary as the body was unpredictable, and ruled by senses as opposed to logos (Merchant, 1990; Rogers, 1998). This division also perceivably marked the beginning of women's oppression, as Aristotle thought women were creatures of only the body, and that even their eggs were passive until "inspirited" by the male sperm (Merchant, 1990). This history of separation continued with Descartes and Kant (who understood spirit as different than body), Burke (who thought language may be the only way to make sense and intake the world around us) and Nietzche's nihilism, that framed language as a rationalizing system men built out of fear of the disorderly, and within this posited that women could not be trusted due to their so-called irrational embodied existences. To say the least, humans have a long and difficult history of struggling with the primacy of rhetoric (and often implied rationality) over material (implied, body). Roger's (1998) argues that it is time to move past the philosophical frameworks of Western histories towards a new constitutive theory of materialism. A theory like this has the potential to help dissolve the perceived battled between rhetoric and material, and instead engage, mesh, and re-story the connection between language and the body. Roger's (1998) theory proposal also provides a secure stepping-stone towards opening a conversation about communication and the more-than-human world, as his concept of "radical materialism" allows for communication appeals that are embodied, but still have possibility to include the understanding of language.

Kohn's (2011) anthropological work on signs and symbols in the more-than-human jungles of Ecuador produced a response that Rogers (1998) might have deemed acceptable. Kohn argues that social theories of construction tend to conflate representation with language, meaning that we tend to anthropocentrically act upon the worldview that

we humans with recognizable language are the only ones capable of representing the world, something Kohn avidly rejects. He argues for an expansion of ethnography beyond the human, which involves avoiding the narcissistic practice used in many hierarchical human cultures of asking the group relegated as "other" to explain themselves to the dominant group.

In doing away with (or at least finding cracks in) the stories of human-nature, nature-culture, and material-rhetoric binaries, we are left with some ideological space where communications' possibilities are less bound to past conceptualizations of them. This is difficult, as previous models meant to relieve oppression and othering are hard to completely disengage with, and still hold ethical tenets that are difficult for many critical scholars to leave behind. For example, Marxism was created to relieve that suffering of the working class and alleviate 'othering' (Slack & Whitt, 1992), but as Haraway (1992) reminds us, even Marxism isn't enough for the more-than-human world, as it still promotes speaking for those who cannot speak for themselves, a quick step towards anthropomorphism. If we are to re-wild communication to include more-than-human voices, and re-story the world of communication as more than just human-centered, a little more philosophical open space is necessary. One way of moving towards this may to be understand language-use as not only cultural, but also as predicated on embodied relations with spaces (Low & Lawrence-Zuniga, 2003), and rooted in communication that occurs in specific places (Milstein, Anguiano, Sandoval, Chen, & Dickinson, 2011), and innately synonymous with the state of being alive (Kohn, 2011). While Kohn (2011) argues that it's not our embodiment that relates us to the more-than-human but instead our signs and

ability to represent things, I posit that it is both, and that more focus on and practice with the sensorial world and embodied awareness is absolutely necessary.

Carbaugh & Borosmisza-Habashi's (2011) work offered that language and how it is organized, is very much culturally bound. In the West specifically, many languages and subsequent orderings of reality are built off of Judeo-Christian traditions (*see* Merchant, 1990), and because of this, order communication into three realms. These are, the human realm where communication is possible, the non-human realm where it isn't really, and the heavenly realm where communication is spiritually possible but not physically. Carbaugh & Borosmisza-Habashi (2011) argue that there is much to learn from Blackfeet culture, in that they communicate by listening with the more-than-human world, in an interconnected state of constant awareness and information giving and gathering. Part of listening, is listening with one's whole body, as nonverbal communication forces the need for a spiritual (yet still physical) relationship with the more-than-human world (Scollo, 2004). Abram (1997) spoke to this also. Reflecting on Merleau-Ponty's (1970) work, he writes that until every meaning in the world has been discovered and there is no such thing as a fresh understanding, language will stay directly connected to the visceral experience of being in the body.

Seegert (2016) additionally highlights the body as a possible site for resistance for fostering more-than-human communication. She uses the example of synthanthropic animals (such as crows) that muddy the boundaries of communication by subverting the connection between rationality and communication. Because she believes that very little to do with human language and communication was expressly rational in the first place, she argues that we would do well to allow an older non-human rhetoric into our languages.

While Seegert's focus for the article was on more-than-human animals, this same logic could be applied to plants, as who knows what kind of non-human rhetoric is consistently engaged in when making and maintaining multispecies relationships with plants.

In order to tell new stories, and build stories between perceivable worlds (i.e. plants and people, or intuition and science) we need language that does not simply reinstate binaries of the past. Ideologies are bound up in language, as we use language as an organizational tool to make sense of place, nature, and ourselves (Carbaugh, 1996). While stories are often told in language, this project aims in increase understanding about the other ways that stories are told by our more-than-human communities. For example, it is known that many species of mushrooms have no immediate lifespan, meaning that barring disease or being eaten, they are technically immortal. What does an immortal mushroom have to 'say' about its existence? What might we humans have to say about the time-bending nature of its immortality? What if our fantastical tales became based on the misunderstood magical narratives of the very ecosystem we live in? Perhaps they already are. As an ecophilosopher friend of mine Jeremy Gordon remarks, there is an entire beastiary of obscure, otherworldly beings right here on our planet that would challenge what dominant cultures consider alien or Earthly. Reductions of binaries and creation of multi-leveled expansions in understanding of communication and what is possible with communication may help us see this. What other devices do we have for sense-making in the world? Can we tell a story without words? What might the story of a mushroom be without the cultural frame we place on it? For that matter, might it be possible that mushrooms have culture? Stories do, make, and sustain place, culture, and reality. They have the power to re-write ideology, change culture and policy, and reform relationships

with the natural world. A good story also never works in a binary, and the most enduring tales of time have villains that have secret hearts of gold, and heroes that are flawed. Non-human nature also rarely works in true binaries, so in a time that many view as near-crisis, what might we learn from what Haraway (1992) terms, these "other-worldly stories?" And how might we change language so that we might hear those more-than-human narratives?

Embodiment, childhood, and indigenous pedagogy

Because scholars have so few academically researched ways of accessing more-than-human language in the Western world, I borrow lessons from both studies on children and the more-than-human, and indigenous pedagogy help me form a more nuanced and embodied framework for understanding emplaced ecocultural plant stories as a site of resistance. Studies about childhood, and indigenous pedagogies might also help possible expanded conceptualization of language, as both those topics (though stemming from vastly different fields) privilege embodied forms of communication as much as or more than language, something that is necessary when working with plants. Work on childhood and more-than-human relationships has many parallels with indigenous cosmologies and critical pedagogies; not because indigenous cosmologies are in any way undeveloped (as children are often framed to be), but that in cultures that tend to understand and respect childhood intuition and their habits of understanding the world as animate (Chawla, 1994) also tend to respect and protect the more-than-human environment and have a sense of sacred places. Chawla (2002) wrote about childhood through the lens of Wordsworth and other romantics who believed childhood was a rare and ingenious time of life where basic empathy skills were formed. Wordsworth wrote that childhood was a "manifold spot of time" where children believed in the animate "other" and learned to regard nature with the deep and embodied feelings of both fear and

love. Gebser (1897) work would have agreed with this notion, as he argued that childhood can provide the kind of un-judging sense of time in cycles (life death, winter summer, awake asleep) as opposed to the more mechanistic understanding of time and place that tends to set in in adulthood. Chawla (2002) argues that adults who look back on their childhood imagination with fondness and seriousness are generally adults who love nature, whereas those who think of them as silly or irrational also regard nature as irrational, if sentient at all. Perhaps this is why so much folklore with lessons about how to relate to place is hidden in children's stories, though the themes are very adult. In a society suspicious of intuition, we often relegate love of place and storytelling to a childhood category. This isn't so terrible, except that we then we proceed to denounce the teachings of childhood as something silly; as opposed to the seminal years where we learn to engage with and story places in an embodied way.

In Derr's (2002) work on children's sense of place in Northern New Mexico, she found that all children find ways to relate to place, whether it is through fishing, climbing trees, or fort-building; but that children in the more rural locations of Mora[7] and Dixon tended to have a deeper affinity for the natural features where they lived. She spend special attention on a child named Leo, who learned most of what he knew about the natural world by sitting on his grandmother Lita's porch and listening to her stories about plants. Leo didn't know the names of plants, or even the birds passing by; but he knew their purpose and function in the larger ecosystem, (for example, the right herb to fight a

[7] Mora meaning "mulberry" is a census designated rural area that was formally founded as a Hispanic farming community with a land grant issued from Mexico after Mexican independence from Spain

cold). There are two points to be drawn from this study. First, children who are given the opportunity to learn and experience place at a young age tend to have much more knowledge of and comfort in the landscapes they inhabit. Secondly, place-based knowledge often comes from elders who have had long relationships with places (*see* Carbaugh & Cerulli, 2013), so mass urbanization and the instinct of many rural children to move away to cities as soon as they can puts a block in the flow of stories about place and the more-than-human inhabitants of a place. Cajete's (1999) work on biophilia also posited that a lack of contact with elders puts a damper on place-knowledge and human-nature relationships. Cajete (1999) argues that access to elders, ritual, and community space at a young age could be a fertile site of resistance against what he terms "biophobia," or the innate distrust of nature that is constantly re-propagated by human's erroneous belief that technology with solve the environmental crisis and also by human's general lack of eco-centric imagination. "Biophilia" on the other hand, reflects an innate want or need to affiliate with nature (E.O. Wilson, as cited by Cajete), and is the base practice of most indigenous or of-the-land communities. Cajete references Thomas Atencio's term "resolana" to acknowledge that learning could take place from a place of light and awareness, something Anzaldua (1981) also remarked on in her term "facultad," or, a place of embodied understanding and awareness where someone is innately alive in the world.

Both Johnson (2010) and Grunewald (2008) also call for indigenous pedagogies and place-based learning as a way to simultaneously resist colonization and encourage place-attachment and stewardship. Johnson (2010) wrote that indigenous pedagogies are a strong method of decolonization, and that just sitting-with some of the places that have

been wounded by colonization is a way to understand the pain of the people attached to those places. Grunewald (2008) posits that critical pedagogy would do well to include place-based education in their curriculum, as scars left by harmful pedagogies such as No Child Left Behind have left a framework of teaching to the test, as opposed to allowing children an embodied and engaged understanding of the world and its inhabitants. Grunewald argues that this kind of education change would greatly increase the chances of a generation of politically motivated, environmentally aware, children who cared about the places they inhabited and the fates of those places. Both authors argued for more stories, ritual, and community in education, however, they agreed that in order to carry out this resistance, there must be an actual physical place to share old stories and build new stories on. Bataille, 1996; Cajete, 1999; Johnson, 2010). A revaluing of childhood intuition and embodied knowing and learning combined with increased access to place-based learning and indigenous pedagogies could serve as resistance to all manner of things, especially plant blindness. While environmental degradation can be slowed by a return to earth-based cosmologies (Cajete, 1999) and decolonization of both places and scholarship about places (Johnson, 2010), place-based education could also help to preserve traditions, stories, and value systems of indigenous peoples (Cajete, 1999) while reinforcing the importance of landscape in regards to maintaining the rituals, songs, dances, art, and stories of indigenous cultures. As Allewaert's (2013) work posits, colonization plays a large role in separating humans from the more-than-human. I believe this is because colonization of indigenous peoples and ways not only attempts to invalidate embodied and oral knowledge, but also disassociates people from place, which in turn, can disassociate people from plants. When people, place, and story become isolated as subjects, the plant-

life of a place can lose it's connection with people, as relationships between humans and plants depend on embodied emplaced interaction.

Stories, place, and Identity

While this project aims to include more-than-human voices, and expand on literature about more-than-human language, it also depends heavily on oral history stories as a primary data source. In order to analyze the kinds of communication moments, practices, and experiences participants have had with plant communication from an ecocultural lens, the intersections of identity, place, and story must be acknowledged. Identity of self becomes crucial to involve in the conversation of plant communication as what people consider alive, animate, and capable of communication often depends on how they think of themselves in their human bodies and life in relation to the more-than-human world around them. Similarly, place often operates as a keeping place for stories giving them relevance, and allowing communities to remember and make meaning of them. Communication of these stories allows people to construct their identities and understanding of place. I surmise that all three of these create useful frames for analyzing people's experiences with plant communication.

Literature on place comes from a wide-ranging spread of disciplines. While geographers have been historically (most publically or obviously) concerned with place in academia, anthropologists, communication scholars, botanists, and historians alike have all found themselves dealing with the incredibly important yet oftentimes vague and difficult to grasp range of concepts concerning place. Basso (1988) writes, "A placeless event is an impossibility, everything must happen somewhere," echoed by Casey (2009) who remarks that happenings do not happen without place, as every story or event must starts with where it 'takes place.' Because of this, place is (or should be) simply difficult

to ignore as both a major theoretical lens and an element with measurable material consequences in research. Literature that does manage to obfuscate its power can prove one-dimensional, or as ascribing to harmful Cartesian dualisms and separations of body and mind. Place is crucial not only as a stage or setting, but because it is imminently present in and preserved by folklore and stories (Basso, 1988, Derr, 2002, Ryden, 1993; Arellano, 2007), but also an implemental factor in how people learn and practice their identities (Anzuldua, 1981; Kimmerer, 2013, Carbaugh & Cerulli, 2013), engage with and understand ritual (Bataille, 1996; Cajete,1999), and learn the basic methods of environmental engagement that encourage stewardship, responsibility, and a need to protect the more-than-human world (Cantrill & Senecah, 2001; Chawla, 2002).

Many of these functions of place are directly linked to folklore as a field of study, and borrowing tenets from folklore can help nearly every field of social science create a clearer and deeper understanding of place meaning, as well as more accurate and ethical one. Folklore combined with or concerning understandings of place have the potential to 'do' things in the world such a write or rewrite histories of peoples or regions, help us understand how identity and sense of self is connected to land, and articulate relationships with the natural environment. This becomes particularly important when we begin to untangle how people may ascribe personhood to a plant, or deem a plant as a relevant being with whom communication is possible. The stories people tell and the stories people hear have an enormous role in supporting the possibility of an animate more-than-human world. As Tempest (1987) writes, "Stories have been my guides across the desert. To the Navajo, they are inarguable truths, to me, they are beacons in a nation suspicious of nature."

The relationship between folklore and place is not a particularly new concept, although it has not been used widely in the communication field previously. For example, Ryden's (1993) seminal work on folklore and landscape argued that the two disciplines have most often been converged to suit the research needs of geographers. He argues that geographers generally use folklore for three reasons: First, to see how folktales travel across land alongside human migration; second, to figure out borders and boundaries based on where one folktale ends and another begins, and third, to learn about specific geographical features. Ryden finds trouble with these objectives, as he argues that these framings often work to disengage the 'folk' from the 'tale,' which is something that can be detrimental to the study, as well as an incomplete method of gathering information. Instead, he argues that scholars should spend more time focusing on regional folklore, which he defines as folklore that cannot be disengage from the place it is told, as it doesn't make sense without local place knowledge and an understanding of the landscape itself. Regional folklore can work in a variety of ways to provide insight about a place, including but not limited to; allowing access to intimate historical information and accounts of place, understanding moral and value systems attached to a region, understanding identity formation of local residents, and lastly understanding how locals engage with their own land and utilize it. Stories like these can be of particular interest to scholars because they allow insight to how local materials (such as plants) are used or regarded, something that can contribute to a greater understanding of regional identity. For example, adobe houses are common in the southwest because they reflect the available local material, but they also have worked to form an image-based story that conjures up narratives of Route 66, Pueblos, and turquoise; a story that is somewhat disengaged from the emplaced

knowledge necessary to actually work with Adobe. Similarly, Basso's (1988) precursor to his more popular work '*Wisdom Sits in Places*,' identified stories and folklore as a major method for understanding and referring to place or specific landscape features; as in most stories, the two are indelibly bound. He found that folklore was used regularly for politely shaming local residents where he worked in Cibecue for moral transgressions. In his observations, he found that locals used place names as stand-ins for entire tales. The stories were inherently attached to the natural features (such as trees) where they occurred, and could be used as index-cards to refer to the entire take-away or moral lesson that the tale held. This process gives place the kind of importance that an elder might have, as without the tree in the meadow to refer to, the story and lesson attached to that location could also be lost, and without emplaced knowledge of the story, the reference would be misunderstood. Basso therefore argues that ethnographers and scholars would do well to look at regional folklore from a place-based lens, as the practice of using place-names therefore combines place, story, and identity in a mutually relational trifecta where they are indelibly tied to one another. I similarly argue that understanding people's relationships with plants involves investigating their relationships with place, something that regional meaning-making folklore about local flora could help make clear.

Arellano (2007) also remarks on the close ties between place, identity, and story in his essay concerning sense of *querencia* in Northern New Mexico. I have found querencia to be one of the most singularly important concepts to understand when engaging with place-based research in New Mexico and trying to understand New Mexicans devotion to this land. Arellano writes that querencia was first defined by a Castillan dictionary as "a place where men go to die" and then later in a Spanish dictionary as "the inclination for

men to return to the place of their birth." Arellano's definition of querencia is more broad, in that he argues it to be a sacred place, a place where one's identity stems from, a homeland. Similarly to Basso (1988), he posits that identity can come from the combination of landscape and stories, though while Basso focuses on place-names as an identity maintenance tool, Arellano (2007) focuses on agricultural relationships, an important marker of plant relationships. Taos and most of Northern New Mexico are inherently storied places, as the landscape and its features have had multiple meanings for multiple different groups who have travelled through and settled, making the place a crosshatch of different folk-groups stories who have at times layered on one another, dominated one another, integrated and hidden themselves in one another; but in the end are all attached to the same "querencia." For example, he relays how the stories and tales of agriculture are a hybrid entity of Arab, Spanish, Pueblo, Navajo, and more. How mutton stew (a particularly traditional Navajo dish) would not have been possible without the chili (and breeding stock) of another land, binding the cultures in a braid that spans centuries. The act of so many hybridized people loving the same place and the same plant is more a testament to how stories and people who are bound to the land through regular contact with soil, food, and water have the potential to create a bigger pluralized story of home, one with creative possibilities and an acknowledgement of histories without the element of shame. This acknowledgement however, is carried in the blends of folklore, language, and agricultural traditions that are bound up in the physical place of New Mexico.

Place and space as a theoretical construct

Shifting away from a regional discussion, studies of place and story can not only be framed with place-folklore connection, but also on a philosophical level of

distinguishing place and space. This matters very much when looking and plants and stories, as the 'place' of a specific plant relationship is a physical location but the 'space' of a plant might be created by story, and able to travel. For example De Certeau (2002) writes that "every story is a travel story," meaning that stories are what we use to go throughout lives both mentally and physically, and they help us organize multiple vectors of space, time, and location so that we may make sense of the world. In his work *Spatial Stories*, he uses the term *metaphorai* to explain the mobile functions of a story. According to De Certeau, *Metaphorai* was the term for ancient Grecian vehicles of mass transportation. Essentially, this poses stories and metaphors as active entities that promote motion of some sort, as people use a "metaphor" to get from here to there, just as we might need a story to learn something, or cognitively make sense of an event. He defines place a stable and fixed object, something concrete and locatable; but space as the mutable application of mobile vectors like time and movement. For example, a place could be a city crosswalk, but the spatial element of it comes with the hoard of busy walkers charging across the street. In this sense, space is practiced place, or the layering of motion and emotion on a physical fixed location. This concept is useful in conceptualizing folklore and place because it helps us understand that place is not only the physical manifestations of a grassy knoll, because that seemingly insignificant grassy knoll is usually in fact a 'space.' This space is created by the reality that it is something that exists on a historical time-scale with important events, memories, and affective attachments; it is something that is ruled by the 'travel story' that has the ability to transport the listener to the metaphysical 'space.'

Anzuldua (1981) theorized on this idea of place and space in much less esoteric terms, and showed how borders persist as both places and spaces in many parts of a mestizo life. In *Borderlands/La Frontera*, she explained the U.S. Mexico border as both a place full of memories both triumphant and heartbreaking; but also a space where liminality could be understood. As much as physical borders try to define one place from another, the stories and narratives of those people who live directly in/on/with the border pervade its absoluteness by sharing another tale. Anzaldua remembers her Aunt's utter pride in having her recipe for chili Colorado printed in a Southwest cookbook being produced, juxtaposed with the Mexican and U.S. governments wipe-out of her homelands for capitalist agricultural purposes. She writes of her families love for the area, and understanding of it as home, but also how her Grandmother's Loca's wish to be buried next to her husband in the family cemetery could not be fulfilled, due to ranchers chaining and gating the area for other purposes, a very physical and literal wall resulting in a spiritual one. made sense of by stories that attach her people to that tenuous strip of land. Plant stories and uses to humans as medicine and food, like most marginalized stories occupy space, even when their place has been disrupted. Even Anzaldua's familial relationship with chili is a marker of a plant story where both place and space matter, and the ability to frame plants (who do not tend to follow geopolitical boundaries) as immigrants, refugees, and as capable of carrying stories with them to other places they drift, may be of great use to this study.

Identity and place

Not only are stories ways of accessing place and space, but stories serve as mediators between place and identity, as they offer us the ability to build spaces where we can carry out all the functions of community and identity building. In relation to plant

communication identity becomes key, as it not only relates a person to place and culture, but also as a way of acknowledging self and other. Stories serve as boundary-setters to distinguish group members from non-group members (Basso, 1988; Carbaugh & Cerulli, 2013; Ryden, 1993), which can include systems of belief about the more-than-human world. Because of this, they can simultaneously function to build community and sense of place, but also maintain certain boundaries that can be kept up to keep people (or more-than-humans) out or expounded upon as a form of resistance, especially in terms of indigenous pedagogy. In this sense, place and identity are also indelibly linked to communication, giving me a privileged window to do the work I wish to. As a communication scholar, I understand the world as mediated by communicative acts, which often appear in the forms of narratives. Stories and words are not just layers on a physical world, but have the power to do, accomplish, and make action. I believe that stories and words have dramatic material consequences. As an environmental scholar, I understand our sense-of place to be rooted in communication, and believe that the kind of understanding of place necessary to reconstitute human-nature relationships can be found in stories.

Identity and place have been linked with communication in several studies, as multiple scholars agree that understandings of place are closely tied with social interactions that people have in or about those places. In Carbaugh and Cerulli's (2013) study on hunting communities in the Northeastern US, they found that social interactions in certain places (in this case local hunting grounds) are what made people feel attached to the area. Carbaugh (1996) had previously argued that communication about place is 'doubly placed' in that it both happens in a place and about a place, and his later work

followed up on that argument by reiterating that not only is it doubly placed, but it also is inseparable from other modes of human interaction. The authors argue that talking about place is meta-commentary, in that when people talk about a place, they are also commenting on their community, their individual identity, their environmental relationship, and their history; but within this, time is the greatest factor in deepening place knowledge, as not only do understandings of natural spaces take time, but understanding of the people you experience them with does also. I have assumptions that talk about plants might also turn out to be meta-commentary, and equally reflective of identity, environmental relationship, place, and history. Cantrill and Senecah (2001) echoed the sentiment about place knowledge and communication in their study of 'sense-of-place' as a construct to understand how to better implement environmental policy. In their work, they found that people were most attached to places that they had social relationships in, and that especially in metropolitan areas, social relationships seemed to come before relationships with the natural environment; a point reiterated by Hidalgo & Hernandez's study of neighborhood place attachments (2001). Cantrill & Senecah (2001) also argued that by using understanding of human identity, they could possibly make more effective regional planning, as humans who had lived in particular places for a long time or felt a certain environmental event was destructive to their personal well-being were more likely to take action. If the goal is environmental revolution or action, than the resolutions of these four studies are clear. People need communication to understand and narrate the places they live and exist in. Furthermore, people need communication to understand both their own identities and their social relationships, which directly relate back to their sense of place. Essentially, if people are given the time to build relationships

in and communicate with/in/as a certain location with a community of peers, they are more likely to invest interest in it, protect it, and pay attention to it.

Stories as world-makers

"The telling and the hearing of a story is not a simple act. The one who tells must reach down into deeper layers of the self, reviving old feelings, reviewing the past. Whatever is retrieved is reworked into a new form, one that narrates events and gives the listener a path through these events that leads to some fragment of wisdom. The one who hears takes the story in, even to a place not visible or conscious to the mind, yet there. In this inner place a story from another life suffers a subtle change. As it enters the memory of the listener it is augmented by reflection, both other memories, and even the body hearing and responding to the moment of the telling. By such transmissions, consciousness is woven." –Griffin, 1992 p. 172

In *Braiding Sweetgrass*, Kimmerer (2013) wrote of her shock at the reactions of her students when asked if they believed humans and nature belonged together. Her students responded that they thought humans and nature were a bad mix, that we or it was inherently harmful to the other. Kimmerer reflected on the Skywoman story that helped her form her own understanding of place and the natural world. In the story, Skywoman is a celestial being falling to the terrestrial plane, where several other species of animals recognize she will not be able to survive unless they do something quickly. The animals gather and manage to convince turtle to rise from the depths of the sea so that Skywoman may have a place to land. When she does finally fall to the newly formed turtle island, she smiles and thanks the animals. In gratitude, she spreads the seeds she brought to earth and begins to dance upon the land, massaging the soil with her feet until all manner of trees and grasses sprout and grow. The first of these plants is the wingauushk, or sweetgrass, the first sacred gift on earth. In another plant story, Kimmerer (2013) imagines that many of her students were raised on the story of Eve and the apple, a dangerous and punishing tale where humans are exiled to a wasteland for worshiping earthly plant delights as

opposed to the Skywoman story of abundance, gratitude, and a welcoming planet. These two stories hold such different narratives for how to identify oneself in relation to where one puts their body, and work to not only tell a story of history but propose a way of acting and thinking in the future. This then, is the power of a story, as it can recreate harmful ways of being, but also rewrite and reinvent new (or old) ways of relating to self and place.

Still, it's not so much about choosing the "right" story as allowing for several knowledges and truths to exist simultaneously (Chawla, 2002). In Bataille's (1996) book, he wrote that Mexico exists in a tension between two stories that of the imagined Mexico ruled by the civil projects of colonizers, and that of the "real" Mexico, or Mexico *profundo*, which is the story of Meso-America and all the indigenous peoples who still live, think, and exist in traditional ways. He argues for a pluralism of these stories, as they exist in reference to each other and are linked. For example, if Mexico profundo did not exist, then imaginary Mexico would have had to give up their story of progress and colonization a long time ago, as they would have no reason to continue colonizing. He argues that the goal of the country should not be to eradicate imaginary Mexico (a possibly impossible feat at this point) but instead to strive towards pluralizing the stories, not as a byproduct or a starting point, but as an actual goal. Both storylines are now bound to the land, so much as Arellano (2007) writes about, several cultures are already bound in what could be a single, multilayered story. I argue that plant stories have the potential to present a similarly hybrid representation of place, where different people have different relationships with plants (is it a weed or medicine? Is it an invasive species or a piece of home?) that exist simultaneously.

Louis (2004) writes that there are people of place, and people of words; and the people of words are not to be trusted, as they can take the story of a place and sever it from where it was created (see Ryden, 1993). Perhaps this is true in many accounts, but as a communication scholar, I cannot completely release myself from the written word. Instead, I think that finding a hybrid story, a multiple channeled pluralistic narrative like the one Bataille (1996) argues for might be the right avenue for writing about place, story, and plants. If we as scholars can access narratives from an embodied, emplaced, and distinctively subjective standpoint, we stand a chance of helping more than hindering with our scholarship about plants and place, and honoring the ecocultural narratives we might have the privilege of having access to. Researching plants from place-based narratives offers the possibility of deeply rooted data that is enmeshed in language, family, and history, and acknowledges the ways that these parts of the world affect one another.

To extradite or eradicate a sacred mountain or burial site, or type of plant food a people has existed on, is also an attempt to demolish the story that goes with it, to essentially erase the wisdom or a group's elders or a crucial event or series of events from their history. For example, without the acequias would we think about Yemeni stories in New Mexico? Or would we remember the tales told at the time of year when they are cleaned out? (Arellano, 2014) But I suppose these are the goals of basic colonization and a version of dominant Westernization. To erase or drastically alter landscape is to wound a story, and erase a crucial avenue of both group and individual identity.

Stories communicating and relating with plants are also very potentially stories about self, body, place, various worldviews, and history. Stories about plants might also be stories about ritual, culture, family, and folklore. Throughout this literature review and

for the data collection for this research project, I operate with the assumption that plants, people, place, and story are four elements that are necessary to generate the kind of data to answer any research question about relationships and communication between plants and people. In the following chapter, I discuss my methodology for accessing the kind of multi-layered data I need to address these multi-pronged subjects, and present an analytical tool for unpacking and organizing the place-based ecocultural data I have gathered to respond to my research question.

Chapter Three: Methodology

This chapter reviews the theoretical and practical implications of the methodology for the present study. This study used oral history and auto-ethnographical data to generate thematic information on how communication and relationships between plants and humans functions from a social science perspective. This chapter also reviews the research protocol for the present study, provides arguments for interdisciplinary research, and describes oral history and auto-ethnography in depth, and provides a case for using combined methodologies. The chapter closes by presenting Cultural Discourse Analysis (CuDA) (Carbaugh, 2007), as it is the preliminary analytical tooI used to analyze my thematic interpretations.

As noted above, I use oral histories and auto-ethnography as primary data sources for the present study. The summer previous to the beginning of this project was spent collecting pilot data to help me build context and explore potentially viable methods for collecting data about people-plant relationships. I attended herbalism conferences; engaged with botanists, alchemists, dendrologists, biologists, and mycologists; and spent time observing botanical gardens, forests, parks, and farms, as well as individual plants that seemed open to the idea of being observed. I kept extensive journals about these experiences which were used to help frame this study and as a data source throughout. Throughout this experience of exploratory research, I gathered enough information to confidently argue that non-binary people-plant relationships or rather, relationships that are intimate and communicative across species, are a good starting place to study plant communication. I also created enough relationships with potential human participants to be able to use snowball methods to find remaining participants through the extended networks of connections I have made.

This study uses data from 14 oral histories I gathered of people who have non-binary relationships with plants and my own auto-ethnographic experiences retrieved from journals I have kept. These journals largely consisted of my memories of my life with plants, observations of various botanical landscapes of New Mexico, and accounts of certain engagements with individual plants. I found all participants through word of mouth, and used snowball methods to find and contact participants I had not met through my pilot study work. Participants' non-binary status was determined by self-professed intimate and interdependent relationships with a plant or plants, and self-professed belief in plants' abilities to communicate in one way or another. Lastly, my data analysis relied heavily on Carbaugh's (2007) Cultural Discourse Analysis (CuDA) to decipher and organize themes.

Participants

Participants were all people who self-identify as having close relationships with plants, and have had some sort of experience in their lives that allows them to consider plants as communicative and sentient. In pilot work, I found that I need only mention what I am studying, or what I am interested in, and people would immediately expose themselves as potential participants by their desire to share stories, experiences, or thoughts about their relationships with plants; or alternatively, as people who would not be able to provide stories and experiences to support my research question. Because plant-communication is a relatively obscure topic in dominant culture (where exploring the animacy of anything other than humans and non-human animals is scarcely accepted), most people seem to have definitive yes or no reactions when it comes to plant communication. Participants could identify as anywhere on the gender spectrum and be included in this project, had to be over the age of 18, and provided consent to allow their

oral history to be used for research on this subject. Participants were all from, or living in, New Mexico, as I believed I would have a better context for analyzing potentially place-based data if it is concerned a location, culture, and political history with which I was familiar. However, I had no stipulations on if they are from rural or urban New Mexico as I hope to resist prolonging the stigma that only people from rural bucolic environments can have close and embodied experiences with the more-than-human world. Additionally, I strived to collect oral histories of a somewhat equal number of urban dwellers and rural dwellers.

Data collection

I collected 14 oral history interviews that ranged from one to three hours apiece. The number 14 was chosen because it allows for enough types of stories and experiences to be collected that a range of themes will be available for analysis, without sacrificing the amount of time I will be able to spend with each participant. Final data collection included 14 oral history interviews ranging from one to two hours each and generally taking place in one or two visits. Data presented here also included several personal essays, reflections, and journal entries from my perspective in order to complete the auto-ethnographic offering of this project. Participants ranged in age from early 20s to late 70s, and close to half were from rural environments vs. urban environments, though many had lived in both. While initially I had hypothesized that the living environment participants hailed from would have a large effect on the ways the related to plant-life and place, I was mistaken. Two components of this became quickly clear through the oral history process. First, most people who live in daily relationship with plants and sustain a conscious invitation toward them in their lives choose to do so whether they live in a rural location or not, and tend to follow non-binary conceptualizations of the more-than-human world

that position it as ubiquitous and inclusive of humans and human-created constructs. Second, because of New Mexico's unique terrain, participants who lived within the bounds of what could be technically termed cities still found green (or at least plant-filled) spaces within city limits or close by, a privilege of living in a state with low population, with an abundance of open space, and a historical cultural dependency on agriculture.

Oral histories came from five female-identifying participants, eight male identifying participants, and one gender-fluid identifying participant, however, nearly all participants used gendered language and spectrums of concepts concerning masculinity and femininity to help frame their relationships with plants and with the land. Five were of Hispanic descent, two were native French, one was native Austrian, one native Ecuadorean, and six were of mixed Anglo-Saxon American descent. While initially not part of my overall research question, I found it relevant to note that gender was one of the lenses that participants used to interpret and make sense of communication and relationship with plants, which opens up an interesting project about the queering of the more-than-human world and possibilities of spectrum-based ideologies over gender binary systems in regards to studying beings that do not have sex organs resembling those of humans. Participants held a range of occupations, though most had chosen to incorporate working with plants as a way to monetarily sustain their lifestyles. Included in this project are the voices of farmers, herbalists, ceremony leaders, community workers, healers, artists, and teachers, though not one of them would confine their identity or role on this planet to a singular label, and like the plants they loved so much, they all served multiple roles in their communities. Oral histories took place at the discretion of the participant in the months of January and February 2019, and occurred in a multitude of locations

including giant hoop-houses, coffee-shops, the public library, an herb shop, kitchen tables, against adobe walls to soak in the precious *resolana*, in a hot-spring, and at a particularly raucous family dinner to name a few. Part of my approach to this project was to allow participants the agency to determine where this experience of story-sharing fit best into their lives, and then accommodate them based on their wishes about when and where they wanted to share their narratives. Oral histories took place mostly at or in between the locations of Albuquerque as a southernmost point and Taos, as a northernmost, as this is where I had the most luck developing consistent community meaning that snowball recruitment methods worked best in these locations. While IRB requested that I draw up an official recruitment email, every participant came to me via word of mouth, or actual in-person embodied communication. Across the board, all participants preferred talking on the phone instead of texting or emailing to set up oral history appointments and familiarize themselves with the project. While participants came from vastly different cultural backgrounds and ways of being in New Mexico, they all seemed to appreciate the most embodied communication possible over technology, which perhaps has something to do with emplaced, embodied communication or the level of physical awareness many noted was important for communicating with plants. All participants declined the use of a pseudonym and instead had me use their given names throughout this project. Additionally while official compensation was not provided to participants, small offerings of dried herbs I had collected, dyed fabric, and food were made as an acknowledgement of the time they spent allowing me to record their stories and the material value of people's experiences that are not often recognized. As Kimmerer (2015) notes, rules for an honorable harvest include asking permission, listening, taking only what is needed, being

grateful, and reciprocating. It was crucial to me that I made it as clear as possible that I valued their stories and was honored that they chose to share them with me for the purpose of this project. In research in general, and especially in a colonized space like New Mexico, people often carry the trauma of centuries of extractive story-stealing; so much so that I had trouble entering many communities, resulting a lack of indigenous representation in this particular version of the project. With respect to some of these groups in New Mexico, I did not try to push my way in but rather am attempting to acknowledge missing voices and hold space in this project for more voices of New Mexico to join in due time, with adequate and slow relationship building that may come from my future and sustained immersion in these communities.

Oral histories were recorded on a Zoom recorder obtained for this project through a scholarship from the Feminist Research Institute at University of New Mexico. The reason for recording these interviews on a professional digital device was so I could more easily give participants a copy of their recordings to keep or share with family and friends. Oral history work has an ethical duty to amplify voice to those who often have had none in academic arenas (see p. 64) and I found it important to return participants' stories back to them to do with what they will, as an act of acknowledgement and gratitude for the time it took for them to tell those stories and the years of life they have lived that allowed for the kinds of things we would talk about.

Because the interviews were in oral history style, I acted as a conversational partner to draw out stories and experiences without pointedly asking about them (Ritchie, 2003). This meant that all questions were posed as open questions, and while I had a particular theme guiding each conversation, participants' narrative wanderings were

supported and respected if it seemed necessary for them to move through those certain stories.

Oral histories were analyzed through diligent, focused listening, during which I took extensive notes that were organized based on the five "radiants" of CuDA. Focused listening was conducted at my desk where I was able to truly turn-into each speaker's interview and take extensive notes on my observations. Each interview was listened to in-full five times, with focus on a different unit of analysis of the CuDA frame each time. I did not find it necessary to transcribe these interviews in-full due to the abundance of non-sequiturs or non-related information that the oral history formats tended to provide, but did transcribe specific stories, quotes, and perspectives that directly relate to the subject matter of this project. My analysis was completed by listening to participants' stories and histories being told orally, which allowed more of my analysis to consider their vocal tonality, pauses, and other nonverbals as they told their stories. As one of the goals of this project is to expand storytelling beyond written language, I have particular interest in the other communicative qualities a voice uses besides words. The partial transcriptions still allowed participants to have presence and voice throughout the final analysis and project write-up, and avoided covering their voices with my own.

Secondary data consisted of my own auto-ethnographic notes and observations from throughout my life but with special attention paid to pilot research in Spring – Summer 2018. These were retrieved from my journals, observations of oral history participants, and observations and engagement with different botanical landscapes in New Mexico. While I hoped to collect data from the oral histories that relate directly to embodied communication with plants, the phenomenological experience of having a body

that engages with more-than-human entities made me presume it might be difficult to accurately decipher the experiences of others. Therefore, I involved my own experiences to build a foundation for understanding what kinds of questions I could ask in the future that may directly access embodied experiences of bodies not my own.

A Case for cross-discipline multi-method approaches.

This study uses perspectives from several disciplines as well as combined methodologies in order to create the kinds of generative perspective necessary for the continuation of plant communication studies from a social science perspective. I spend an extended amount of space in the remainder of the present chapter reviewing literature that led to my assumption that I could use several methods of data collection simultaneously with success. I discuss the impetus for using literature and methods from multiple disciplines. First, I briefly discuss other studies that have engaged in interdisciplinary studies such as art and science, and used combined methodologies. Here, I additionally discuss embodied methodologies as a possible player in both collecting and analyzing storied data. Subsequently, I describe at length my reasoning for using auto-ethnography and oral history simultaneously and review literature that supports this combination. Finally, I review CuDA (Carbaugh, 2007) as a methodology to guide my analysis.

Interdisciplinary methodologies have become increasingly accepted between arts and sciences as environmental issues reach new levels of crisis and it becomes undoubtedly clear that there are needs for new and creative ways of engaging with environmental matters. Some scholars have even begun making cases for interdisciplinary methods when specifically studying flora (Gagliano, 2015; Head, 2007). Many scholars have used interdisciplinary methods to help increase understanding between sciences and humanities and encourage place-based and embodied ways of comprehending and creating

solutions to environmental issues. For example, Gibbs (2014) posits that art-science collaboration has the potential to engage diverse publics and do political, cultural, and social work simultaneously. In her work with a collaborative research and art conference called "Siteworks" she engaged in bodily work with documents, song, water, dirt, humans, and more-than-humans and found that though collaboration across disciplines is time consuming, it creates "non-traditional output" which holds more potential for place-related, ecocentric data that challenges dominant ideologies. She also found that by allowing all of her senses to engage in the environment, she created space for new connections and interpretations of communication with more-than-humans, specifically songbirds. Similarly, Ryan (2010) argued that embodied practices should be included when looking at relationships between the biotic world and human cultures, and specifically when working with human-plant relationships. In his study of a wildflower bloom in southwestern Australia, he used the term "corporeal aesthetics" as a framing lens for how people could engage with flora using senses beyond sight. Corporeal aesthetics are defined as moving through a place and its plants using all senses to better understand the organisms there. Ryan points out that a combination of semi-structured interviewing, participant observation, and embodied interactions are good methods for better understanding the corporeal aesthetics of a place. Ryan's study is specifically useful to my methodology for two primary reasons. First, his work shows how embodied interaction with plants and researcher interpretation combined with ethnographic interviews of those having the experience can form multi-sensory, multi-disciplinary data. Second, because of his deft use of the term "floratopaethisia" that he coins in this research, which describes the sense of place that comes from experiences of and with plants. Floratopaethisia is

based on Solnit's (1994) term "topoaesthesia," or the meta-sense that combines space, memory, corporeal cognition and places more-than-human and human bodies in line with one another. Terms like "topoaesthisa" and "floratopathisia" help organize and frame data that refers to place, embodied experience, and story simultaneously.

While I work starting from a social science perspective, this research allowed the possibility for scientific data, stories, personal experiences, participant experiences, embodiment, and plant voices to weave together to form thick (Geertz, 2008) multi-species, multi-sensory ethnographic data. Because of this, I was open to allowing more methods, theories, and approaches to join this project as they emerge, from human participants' oral histories, or observations of my own engagement with plant life, as well as the stories plants might themselves end up "telling." Still, despite my goals of including multiple forms of dialogue, my primary data source was oral histories collected from those who have connected, close, and therefore alternative, relationships with plants throughout their lives. My secondary data source was my own auto-ethnographic observations of my experiences of plant communication both before and during the collection of oral histories. The following section explains my reasoning for using these methods together to access oral histories about people's relationships and experiences with plants and plant communication.

Oral history and auto-ethnography.

Oral history, or the practice of collecting narratives, is not a new phenomenon. For example, Chinese scribes in the courts of the Zhou dynasty wrote down the sayings of important people, and the Spanish used oral accounts of indigenous peoples to build a history of the Mayan and Incan empires. In the 1930s, the U.S. government began recording the songs, stories, and rituals of Native Americans on wax scrolls, and the U.S.

Bureau of Labor hired out-of-work journalists to take oral histories of industrial workers' employment experiences (Thompson, 2017). To say the least, oral history as a method has had a soft spot in human consciousness for eons, partially due to necessity (i.e., in oral cultures) and the accessibility of the method, and partially due to the human attachment to storytelling and narrative as a way of remembering. For this research specifically, oral history works to access ecocultural data about plants in a broad and encompassing manner.

The beginning of oral history as a research practice is often credited to Allan Nevins, who began the Columbia Oral History Research office (one of the first departments to focus on oral history) on a shoestring budget in the 1940s (Ritchie, 2003; Yow, 2005). However, many scholars would argue that the practice of telling and receiving oral histories would be more accurately credited to centuries or more (estimated at 40-50,000 years in aboriginal Australia) of indigenous storytelling, where oral histories were used to understand place, tradition, ancestors, and morals (Armstrong; 1993; Basso, 1996; Dorson, 1972). Auto-ethnography, on the other hand, was a formalized methodology that was born somewhat later, and most credit its popularity to a post-modern turn away from scientific objectivity and towards the subjectivity of the human experience (Ellis, Adams, & Bochner, 2011). As a research method, auto-ethnography allowed scholars to engage in reflexivity (Collier, 2016) and highlight their positionality, experiences, and intentions, as well as indulge and engage in storytelling and narrative structures and practices. Because both oral history and auto-ethnography use narrative, identity-work, and subjectivity as major theoretical tenets of their processes, they have the potential to work well together methodologically. This kind of hybrid methodology could

allow researchers to engage in more reflexive and transparent research than is possible when using solely oral history. The accompaniment of an auto-ethnography with a series of oral histories would allow the reader to clearly understand the researchers' motivations for doing the topical or ethical choice of projects or subjects. Additionally, it could alleviate the accidental push of an unrelated personal perception on the collected oral history; as the researcher would need to maintain a constant critical reflective stance in narrating their own story while collecting those of others. My study aims to practice a new research methodology that champions embodied observations and reflexivity, as well as allowing my own observations from engaging in the subject matter to be of use.

Reliability and validity.

While oral history and auto-ethnography methods are ontologically well-suited for one another, they each have their benefits and limitations. For example, several common critiques of oral history as a methodology that could also be applied to auto-ethnography include the lack of reliability and validity (Hoffman, 1974), the possibility of oral histories being collected too late to actually change anything socially or politically (Ramirez, 2002), the potential for nostalgic ramblings or obfuscation of painful events (Thompson & Bornat, 2000) or simply the disappearance of memories (Ritchie, 2008), and the subjectivity of experience and ways of storying experience (Ellis, Adams, & Bockner, 2010; Kirby, 2008).

Reliability is defined in regards to oral history as the ability to tell the same story every time, and validity as the ability to back up oral histories against other historical data (Hoffman, 1974). However, this is the forced application of scientific objectivity to attempts to research the human spirit, and completely ignores the messy, dynamic, self-realizing experience of storytelling. Kirby (2008) writes that the critiques of oral history

are often due to an inappropriate framing of the epistemological realities of storytelling. He argues that scholars should consider phenomenology when working with oral history, as it has the potential to reorder the way we consider truth and memory. Phenomenology was Husserl's (1970) response to rationality, and provides room for the lack of consistency in memory and experience by positing that we have no prior innate ordering of knowledge without the subjective, embodied experiences we have each had so far in life. Citing Casey (1947), Kirby (2008) writes that the unreliability of memory could actually be its greatest strength, as we remember different things in different ways depending on where we are in life, and on how the question was asked. None of these memories are incorrect, but rather articulate more expansively the monumental variability of human experiences. This is particularly useful when taking several oral histories in a particular community, because there are usually several tellings available for any historical event (Dorson, 1972). The framings of events always can change depending on perspective (e.g., was Robin Hood a menace or a savior?) and, for example, as many accounts as there might be of Black slaves hating slave-owners, there are also a few of them preferring Southern whites to northern whites (Dorson, 1972).

Ritchie (2014) also spoke to memory, though more on its individual functioning of it than on the way it works in communities. While acknowledging the common critique that scholars have as far as interviewees not remembering events the way they happened, or being very old, he remarked that long-term memory works in a decidedly different way than short-term memory. While short-term memories are often fleeting in older people, being closer to the end of life generally sparks a reflection and review process, where people begin to remember the major events of their life with a level of clarity they perhaps

cannot bring to their memories of what they had for breakfast that day. This reflection process also allows for fomenting self-analysis and realizations, which often happen in the process of telling a story, giving the researcher less to analyze, as the interviewee often performs their own analysis as they tell the story.

Because there is no pre-existent empirical methodology for this kind of intimate ecocultural research, and because most of the people I interviewed were not concerned with scientific validity in their reflections of plant relationships, objectivity is not a large concern in this project. Additionally, because some of the data consisted of my own reflections, there is no way to prove validity or reliability there either, and doing so would disrupt the embodied, sensory, reflective, phenomenological emphasis this data has.

Oral history and auto-ethnography…together.

Although oral history and auto-ethnography are epistemologically well-suited for one another, and have similar views on reliability and validity in research, they are still rarely placed together in academic research. However, they have been combined before with positive results, though rarely officially stated as such, and never formally combined as a methodology. For example, Boyd's (1974) text *Rolling Thunder* offered a book-length example of oral stories collected from an eponymous medicine man in Utah, combined with his own experience of taking the oral histories, watching him work with plants, and existing in Rolling Thunder's space for an extended period of time. The movement between Boyd's reflections on the author's own discomfort and naivety, and his attempts to understand the land with the verbatim tales of his subject allowed for a co-constructed vision of Utah and their time together.

As I was preparing for this research project, I had a privileged moment with a well-respected oral historian named Rose Diaz. I heard her say that every person has a

story they are just dying to get off their chest, and until that story is shared, no other truthful topic-based narratives will emerge from that person. Perhaps even the researchers hold unshared stories as well on some level, and if we allow ourselves at least a few pages of auto-ethnography when engaging in large scholarly works, we help avoid the risk of imposing our own thoughts, stories, and perspectives onto those of others. Acknowledging our own stories, however briefly, can give the research we do a transparent and honest frame. It can set the stage, or provide the lens, for where the research is analyzed and understood. It is impossible to strive for objectivity in methods like these, so I believe that delving into and nourishing the myriad of subjective experiences present in an oral history situation could result in multi-layered, multi-dimensional, meandering and winding (Ramirez, 2002) and overall, subjectively beautiful research about plant and human relationships and communication.

Oral history, auto-ethnography and place.

As previously noted, the practice of combining oral history and auto-ethnography offers phenomenological and reflective data to work with. However, when combined, the two methods can also access place, plants, and identity in a way that reinforces what many scholars, both Western and indigenous, have argued to be an indelibly important theoretical and material construct: that place and identity are inextricably linked to one another (see Chapter two), and that our understandings of both non-human nature and ourselves come largely from our relationships (or lack of relationships) with the land.

Carbaugh & Cerulli (2012) wrote that place talk is meta-talk, meaning that when people communicate about places, they are simultaneously communicating and reifying history, identity, community in regards to place. Armstrong (1995) similarly supported this link, and using the example of the Okanagan language she grew up speaking. In

Okanagan, the root syllable for "body" or "self" is the same root syllable for "land," reflecting the human bond with landscape, and the mutual affectability of one on the other. In this sense, identity and place are impossible to understand fully without considering one in the same breath as the other, and because communication about place is a formative sense-making process to connect both land and self (Basso, 1996; Carbaugh & Cerulli, 2012). The highly narrative methods of both oral history and auto-ethnography have the potential to braid well with one another to allow researchers the dynamic, multi-disciplinary, emotional, and reflexive lens necessary to research place and more-than-human conceptualizations.

Oral history and environmental communication.

While oral history and auto-ethnography are effective in accessing stories about place, they also work well to collect stories that involve environmental and ecocultural concerns, which is why they are being employed for this project about plants. Oral history and other narrative approaches have not often been included in Western academic work about the more-than-human. Endres (2011), however, argued that communication scholars would do well to include oral history methodology in their research, as the method has the potential to illuminate stories from populations most often ignored in environmental work (Finney, 2014; Pezzullo, 2001; Sze, 2006) and has the potential to extend to the more-than-human world at some point, as the practice of letting an organism tell its own story can have monumental results. Endres (2011) cited the Scott Polar research institute, which focused on collecting stories of scientists and others who lived in the Arctic, in order to chart climate change in a more narrative and emotive way, recommending that personal historical accounts of people can provide a wealth of information on the human dimension that the graphs and instruments of scientists often cannot reach. Additionally, Endres

described another project on which she worked which comprised over 100 stories from employees about a uranium processing facility in the stages of environmental remediation. Much to her surprise, taking oral histories of employees rarely began with a story or instance related to environmental matters or the processing plant itself, but instead with a childhood story, a memory of delight or trauma. This allowed her to draw the conclusion that despite the focused environmental or place-based bent of giving and taking oral histories on this subject, people tend to understand their own role in an environmental crisis through first understanding and storytelling about themselves.

Oral history and environmental narratives from rural locations are popular in scholarship because they are somewhat romantic, and carry the perception that the scholar doing the research is really "in the field" or close to something more romantically indigenous or untouched. However, collecting oral histories in urban spaces (especially about plants) may be just as pertinent (if not more so) to the current global crisis, as understanding how someone makes sense of more-than-human place, and their own history in an urban environment, could offer more- creative solutions in understanding and alleviating things like plant-blindness, or nature-deficiency disorder (Louv, 2008). People in all walks of life find ways to access nature in the most unlikely of places. A public park, an abandoned lot, or a dried-up ditch can all offer a small sliver of wonder in the midst of a concrete and 'nature-less' space. However, accounts like these are not often connected with ecocultural dialogue, because environmental talk still persists in associating "green" or "wild" with understandings of nature (Milstein et al,, 2017).

Lefebvre (1991) argues that urban spaces function similarly to ecosystems, and include aspects of sociology, history, and identity in their processes (cited in Gottdiener,

2010). However, cities are ecosystems that are often dictated by public policy and communication law that distinguishes where boundaries are laid, how social classes are divided, and where certain kinds of signs, shops, and parking are allowed to be (Drucker & Gumpert, 1991; Flusty, 2000; Mitchell & Staehaeli, 2011). Whereas rural spaces can have more to do with natural history and boundaries based on natural features, urban spaces tend to follow strict zoning laws that divide and control space and who lives in that space, therefore controlling the way communication (and identity) can function. Still, attention to laws and policy often fail to tell the entire story of an urban area, and much data can be gathered from storied accounts.

Gottdiener (2010) wrote that many critiques on urban studies had to do with how they are often researched as conglomerate communities with little focus paid to the individual experiences that make up those communities. Oral history has the potential to highlight some of the individual experiences present without completely disengaging them from the place that helped construct them. For example, the late 1990s Drifters and Dockers project was completed by an oral historian who floated in a raft down the Thames River in London and got out to take an oral history of a passerby every time the boat docked itself, making an interactive map of the river with clickable oral histories that commemorated the emotional attachment of community members' urban relationships with the natural feature running through the city (Thompson & Bornat, 2000). Another project, titled "Millscape," documented the decline of a famous mill that once offered most of the employment in a community in the UK. Using pictures, sounds, interviews, and an interactive gallery, the oral historian provided a range of stories of townspeople's relationship to labor, time, and wheat, in the context of the mill. While not the explicit

goal of the project, "Millscape" is an inherently ecocultural project, as it deals with the political, social, and economic relationship a community had with the plant species of wheat. Further work in oral history and urban ecocultural identities could focus on children's understandings of plants; for example, where they see, engage with, and conceptualize plants to be. Another application might be urban gardens, where oral histories of people who have lived in a tiny high-rise apartment their whole lives relate to their houseplants, or any other non-human organism found in the city. These kinds of stories are crucial, because they highlight the way that cities are in fact a part of the more-than-human world and environment, and do work to upset the boundaries between "here" and "out there," something that could potentially result in more environmentally conscious and connected urban areas.

Oral history and auto-ethnography work productively both together and separately in the ability for researchers to access ecocultural data. For this specific project about plants, the two methods braiding seamlessly to access data that is sensitive to place, reflective of identity, and deeply focused on taking seriously phenomenological data. Additionally, I see the two methods working extremely well in the multiple environments (both urban and rural) where oral histories will be collected and auto-ethnographic observations will be made. Overall, this research aims to be interdisciplinary in that it not only combines methods, but also pulls research from multiple fields to ground the study. This move towards interdisciplinary combinations of biological sciences and social sciences is an important move for the future of ecocultural research, and the generation of creative methods with which to deepen human relationships with more-than-humans.

Method of analysis: Cultural Discourse Analysis

While oral history works to access the kinds of ecocultural narratives necessary to begin thematic exploration of plant communication, and auto-ethnography aids in providing sensory, experiential data to support oral histories, Cultural Discourse Analysis is a potent framework for organizing data from both methods. I used Cultural Discourse Analysis, or CuDA, to analyze my ecocultural oral histories and auto-ethnographic data due to the tool's sensitivity towards the communication field's concerns with identity, meaning, action, and relationships, as well as more ecoculturally based concerns of place, dwelling, and environment. Below, I elucidate how Carbaugh (2007) breaks the theory into five "radiants of meaning" (p. 175) or salient themes to consider when interpreting cultural, and in this case ecocultural, data.

The first of these points is "meanings about being, personhood and identity"(p. 175) which acknowledges the multiple social identities that each person holds, as well as how communication practices are linked to culture, personal identity, and personhood. I find this "radiant" specifically useful to this project because part of understanding identity is "what beliefs are presumed in order to be a person here?" (p.175), which I interpret as applicable to recognizing and evaluating more-than-humans having the components to achieve personhood, as well as how culturally bound the rules for personhood are.

The second radiant is "meanings about relating" (p. 175) and relationships. This radiant explores how communication practices work to relate people to one another, and how relationships are created, coded, and maintained through communication. I find this specifically important for understanding the meaning of plant-people relationships as I think much of the information about how people have achieved those relationships will be encoded in their narratives about the subject and the terms they use to refer to plants.

The third tenet considers "meaning about acting, action, and practice," (p.176) meaning that communication also helps determine how to analyze how a participant might contextualize certain actions, and how identification and perception of certain activities is coded in participant communication. For example, perhaps a participant would mention that they pick a flower a certain way when they're harvesting. The key of this aspect of analysis would be to recognize that activity as imbued with meaning, and possibly decipherable based on their communication about it.

The fourth tenet is "meanings about feeling, emotion and affect." (p.176) This aspect has to do with how people feel about whatever communication moment is occurring, with special attention to how they may have been culturally socialized to know how to evaluate a given emotion, as well as where and when it is appropriate. Carbaugh (2007) writes that nonverbal communication often conveys this information even more than verbal communication can, which is important when considering the emotional connections and interpretations available in cross-species communication.

The fifth and final topic is "meanings about dwelling, place, and environment" (p.176) which much of my analysis work was heavily dependent on. Carbaugh (2007) posits that place, dwelling, and relationships with environment are utterly wrapped up in communication about such. This part of CuDA is extremely important because it supports the ecocultural notion that identity, place, and communication are all bound in one another, and mutually constructive. It creates a frame where "communication practices…[tell us] where people are, how they are related to those places, and what should be done when inhabiting them." (p. 176).

My finished analysis provides an example of how multiple methods and several disciplines can be combined for a fuller, more generative type of ecocultural research, one that can acknowledge and discuss place, identity, and plants through scientific and humanities-based lenses simultaneously. In the completion of this project I also developed a stance on how best to continue researching plant and human communication and relationships, so that other scholars and I can continue work on the pressing, important, and exciting project of improving understanding about plant life.

Chapter Four: Introduction to results

Because of the relatively complicated entanglements and multi-subject data that the combined methodology of oral history and auto-ethnography makes possible, CuDA was particularly useful to make sense of the data in the initial coding stages. While it could be argued that a grounded theory approach may have been similarly useful, Carbaugh's (2007) broad thematic categories for ecocultural analysis helped me organize the data by gently teasing out smaller stories within the scope of participants' and my life stories. Additionally, the categories gave me the tools to look more closely at emergent themes that responded to my research question while still keeping in mind the major meanings that tend to occur in and contribute to most ecocultural research.

Carbaugh's (2007) radiants of "meanings about personhood and identity," "meanings about relationships," and "meanings about acting, action, and practice" were all immensely helpful in first-level organization of oral history stories that described how participants' understood their own roles with plants, plants roles in their lives, and the way relationships with plants and humans functioned to form their overall practices with plant-life. "Meanings about feeling, emotion, and affect" helped me identify which stories and experiences were most meaningful to them as pivotal experiences, and "meanings about dwelling, place, and environment" aided in grounding participants' stories in sense-of-place (Cantrill & Senecah, 2001) and observing cases where relation to plants and relation to place were bound together. I did my best to keep narratives as intact as possible in this coding process, often assigning labels to participant's longer stories such as "When she joined the mullein party" (Dara) or "The day they cut the trees down" (Eden) and then categorizing them based on the most prevalent theme in the story, as opposed to cherry-

picking excerpts. Much like plants, and certainly like ecosystems, stories can lose their ability to function properly if they are dissected in a way that makes it so the listener or reader can no longer identify the patchwork of Carbaugh's (2007) radiants of meaning simultaneously, or have the option to see how each story is a vast and constant intersection of themes. Much like pharmaceutical companies have the annoying practice of isolating chemical constituents in plants and unceremoniously disposing of the rest of the plant fibers and phytochemicals (often resulting in more side effects and medicines that are highly dissociated from their source), research in higher academia has the habit of isolating certain parts of peoples' stories and disposing of the parts that are difficult to organize perfectly into analytic categories.

In order to fully engage with the data and reflection present in this project, I ask the reader to lightly suspend any pre-determined needs they might have for the rigid categorical clarity often offered by peer-reviewed research. Instead, I ask that you allow yourselves to follow this analysis holistically. This is because, while I provide webs of stories that are clustered around main themes, some stories may extend their roots and tendrils to touch other themes as well. If anyone has ever looked closely at the roots of city trees, they know that even the concrete sidewalk confines tend to contain the tree in a certain space for only so long before a root crawls under the sidewalk to meet a lawn, or engage with the plumbing. Think of these stories as urban tree roots: lightly confined but unable to be perfectly contained under a singular thematic heading.

Throughout this dissertation, I strive for sympoetic writing and thinking, because I feel that humans no longer have the choice to neatly compartmentalize our interactions with the more-than-human world. We simply live in messy, interactional, intersectional

times. I have great confidence in stories as a research tool to help humans comprehend this. As Ursula Le Guin (1989) writes, "the natural, proper, fitting shape of the novel might be that of a sack, a bag. A book holds words…a novel is a medicine bundle, holding things in particular, powerful relation to one another and to us" (p. 166). The current project is not a novel, but it is a story about stories. Humans (among other creatures) live in troubled times for the planet, and I argue that there is no longer enough leeway left to ignore the amount of overlap and relation constantly happening on Earth. However, there are no simple ways of suspending multiple themes, multiple species, and multiple stories simultaneously, and any study with an ethic of holism and attention paid to intersectional approaches between parts of peoples' lives and more-than-human world tends to come off as a sometimes discombobulating tangle of "powerful relation."

The stories participants shared through their oral histories showed how strongly their relationships with plants were wound up in the fabric of their daily lives. Stories took place at specific times and in specific places with particular characters populating the memory and acting as symbols, teachers, and actors in their narratives. In working through the dynamic, interconnected data, I felt strongly pulled to Haraway's (2016) notion of sympoesis. Haraway borrowed the term from M. Beth Dempster's 1998 Master of Environmental Studies thesis where the term was defined as, "collectively-producing systems that do not have self-defined spatial or temporal boundaries. Information and control are distributed among components. The systems are evolutionary and have the potential for surprising change." (as cited by Haraway, 2016, p. 33) I found that the way most participants and I recalled and constructed life experiences with plants happened in this fashion, where multiple parts of their memories had agency at different times. This

provided a wonderful example for how aspects of what it means to be and act like a human animal are deeply imbedded a network, of land, relations, more-than-human and otherwise, elements, and affect. Additionally, sympoesis was present in not only the tellings of the stories but also the analysis of them, as much of the data collected involved instances of multispecies entanglements, where relation with plants was realized and valued in a non-hierarchical (though not always mutually beneficial) manner that involved switches of agency between person and plant within stories.

Key Themes

In response the research question, "How do people with non-binary relationships with plants build relationships and enact communication with plants?" A range of themes arose. Using the initial analysis method of CuDA, I was able to make sense of some of the ways in which some non-binary human beings begin, nurture, and conceptualize their relationships with plants, as well as the communicative ways in which those relationships are experienced. In the field of ecocultural communication, the act of making relationship, or as Haraway (2016) calls it "making kin," involves communication with, to, and about an entity. This is because many of our human-known ways of relating come from loops of extended intention and energy (often in the form of words for our human species) and the expectation of some sort of feedback.

Broadly, the key themes that emerged as most pivotal for beginning and maintaining relationships and communication with plants included first experiences with mentors, kin, and other teachers, place-making, and relation-making, and a more elastic understanding of what communication is. Most of these themes I have renamed below for this project with sensitivity to the multidisciplinary work I deeply believe in, and the power of words to reorganize the way we think about our world and certainly the ways we

tell our stories. Haraway (2016) writes that it matters what stories we use to tell stories, and I believe it also matters what words we use to make and understand worlds.

Themes were organized under three main topics and corresponding chapters of "Germination," "The Tending," and "Commune," with a final analysis and overview chapter titled "Gathering." The main analysis chapters were not meant to be ordered stages in development of relationship with plants, but rather three oscillating intersecting aspects that the data showed to be important and common in people with non-binary plant relationships, and their journeys to see plants in that way. While it would seem that "reaping" or "harvest" might be a more fitting final category when working with agricultural metaphors, participants did not typically view their relationships and communication with plants as a take-away, a static goal, or a growth cycle with an ending, but rather as a way of being or a practice that was obtained after time, work, and learning.

"Germination" stories occurred from experiences that I call "cotyledon moments[8]." These were participants' stories and accounts of how they first came to see plants as important. These included stories that ranged from memories of learning the names of plants and being attracted to them, to stories where people transitioned from simply identifying them to something I term "corporeal knowing," or understanding plants beyond their Latin names, primary visual identifiers, and immediate uses to humans. Most of these stories involved another human or plant character that taught, nurtured, or

[8] Cotyledons are the embryonic and first leaves to appear in seed-bearing plants before the plant begins to photosynthesize. Used as a metaphor here, they refer to the first forays participants had in seeing plants or considering them in a non-binary way.

exposed them to a non-binary way of knowing plants. I termed these characters "nurse logs," and they included "kin," "community," "mentors," and "plant teachers."

The next large category and chapter is "The Tending." "The Tending" refers to participants' practices and processes of interacting with plants that encouraged their relationships with plants beyond their nurse-log guided cotyledon moments. These included stories about "Place-making" or how they came to be where they are, certain landscapes that supported their plant relationships, and "Relation-making" or how practices of gratitude and reciprocity helped with understandings of relationality. While the element of time does not have its own section in this particular iteration of this project, the concept of time as a necessity is woven throughout this chapter. Time came up as an important undergirding to "Place-making" and "Relation-making" as neither seemed to be possible without large swaths of emplaced and focused time with plants. The final major analysis category and chapter I provide in this project is titled "Commune." I use the term "commune" instead of "communicate" to allow for the elastic methods of envisioning and approaching communication that participants used, so that I could distinguish from a standard definition of communication more commonly used in social sciences. "Commune," which comes from the Old French *comuner* meaning to share, was morphed into the meaning of "the act of communicating intimately" centuries after its original use. The chapter "Commune" revisits communication with attention paid to the different ways that participants conceptualized and enacted communication with plants, including through "corporeal knowing" or knowing something through embodied knowledge as opposed to taxonomic definitions. The section includes "Feeling energy," or how people nonverbally communicated with plants, "Words," or the tensions participants experienced

in using human languages to communicate with plants, and "Traditional/observational science," or communication through observed physical realities.

As noted above, I did my best to avoid breaking up stories and pulling out singular lines of dialogue to show the themes throughout my analysis. Instead, I focused on keeping the stories as they were told, and picked a select few stories or auto-ethnographic writings per section that provided strong examples of themes that were common throughout many participants' experiences with the topic. The themes generally overlapped each other in the vehicle of peoples' stories, and were rarely spoken about as separate topics. In this way, they were "sympoetic" as opposed to auto-sympoetic or with one creator, or a solitary storyteller. Perhaps the sheer fact that most participants acknowledged the animacy and agency of plant life in some way allowed those plants to be active characters in their narratives, in a show of the tender beginnings of the possibility for multispecies storytelling. At the very least, data for this project provided a thematic guidebook for how cross-species relation is not only possible, but under certain circumstances, probable.

Chapter Five: Germination

The first step to answering my research question "How do people with non-binary relationships with plants build relationships and enact communication with plants?" was to determine how people with non-binary relationships with plants even get to the point where they are, or want to be, in conscious relation with plants. In the diverse ecocultures and lifestyles I observed of this project's New Mexico participants, there seemed to be a mix of the importance of a gateway moment where participants began to notice plants, or instances where consideration of plants as beings capable of relationship changed. Most participants chose to identify this, down to a specific story or memory-scape from their pasts, evidencing that the moment was transformative enough to remember and be able to retell.

Nurse logs

Cotyledon utterances fell all over a spectrum of ways to communicate and connect with plants. This largely had to do with the varying definitions people had about what it meant to be in relation with plants. Some counted their first big plant experience as the first time they became aware of plants as more than an environmental backdrop. Others, recalled their first moments breaking through the ideological barrier of considering plant-life as other, or insentient, or learning to see plants through corporeal knowing as opposed to Western identification and classification systems. Still, every participant could call on story that encapsulated a starting place for their journey of being close to plants, which allowed them to tell the story of their interactions with them in a similar fashion to how someone might describe the beginning of a meaningful friendship or romance. These experiences were all enmeshed in stories about who they were at that time, their families, their mentors, and how they came to be where they are now. As previously mentioned,

there was no simple method to strictly categorize these cotyledon stories under isolated subject headings, as much like the plants themselves, they were imbricated in stories about family, youth, discovery of self, and spirituality. While a handful of participants had cotyledon stories from childhood, these were often confined to those participants who had parents or family members who regularly communed with or handled plant-life. Some had had experiences with community groups that led to a change in perspective towards plants. Many had had the help of a teacher or mentor outside their family that led them to considering plants in a non-binary way, and some had been taught by plants themselves. Even with variations in their path of coming to know plants, all participants simply had had a transformative moment or range of moments at some point in their lives. Because so many of these transformative moments were predominantly supported by or instigated by access to a teacher, mentor, or family member, the data supported Carbaugh & Cerulli's (2011) claim that people learn about the more-than-human world through social interaction that occurs in places, communities, and in "nature." Additionally, data evidenced Cajete's (1990) understanding that respect and knowledge of land relations as a practice can be taught bu family and community, through the use of stories and practices.

As I entered the auto-ethnographic portions of the chapter pertaining to this theme of germination points for plant relationships, I myself struggled to recall my own transformative moment, and was left with a smattering of recollections from childhood and a few disparate journal entries from adulthood. I, like many participants, had recollections of when I first noticed plants in general, and then when I first recognized them as active beings and it was sometimes hard to distinguish what mattered more. What appeared ubiquitous across the oral histories and my own experience was that these

cotyledon experiences were the starting point in development of this non-binary worldview but not necessarily the finished cosmology. Fully embodying a non-binary stance appeared to take more time, and more relation-making and place-making practices that are elucidated in Chapter Six.

Kin.

I was first taught to notice plants by, or rather through, my father. I say "through" because with my own experience included, very few participants seemed actively aware of being specifically taught lessons or given instructions about plants, and instead absorbed and grabbed a hold of them informally. When I was young in Oregon, my father grew bromeliads and orchids and rejoiced over new squiggly aquatic pants that we took home in puffed clear bags from the pet store for his giant aquariums, coated with the murky rich smell of the fish tank aisle. He told me the fish he kept needed the slimy green tendrils to breath, and to hide from the no doubt terrifying presence of me standing nose pressed to the tank. I used to watch him as he tended the staunch green leaves and creeping roots of his orchids which were encased in a glass sliding case he had built out of old windows ("Because they need more warmth baby," he said; "they're not from this region like us"). He would gently spray them at the end of each day, his tie loosened and hanging limp around his neck from his job as a principal and an expression akin most to a satisfied meditation. The care that he approached them with seemed to be such a communion and at the time, I could not understand how he maintained so much interest in those orchids. In those early years of my life, an orchid seemed uninteresting to me when it wasn't blooming, and only provincially so when it was.

The immediate effect of this memory was subtle, as it was not so much that I learned to love plants then and there, but that I became aware of them as "things" that

might be worth paying attention to. As I grew up, this began to matter, as since he loved plants so much, and I wished to love everything he loved, I chose to figure out how to loe plants, I wanted to love plants as well. My second strong memory of being around plants came from tending garden. At my early age I appreciated the novelty and the fruit when it came, but certainly not the labor. I was lucky enough to live around greenery in our corner of suburbia. There was a cascade of tiny pink roses that came over the neighbors fence and a sprawl of strawberries and corn that rarely grew well in the dark murky Junes of Oregon. In a separate bed was my father's chaotic bed of wildflowers, and a few sturdy roses that I desperately wanted to pluck a blossom from. As many humans, my first instincts towards wanting to possess a plant came from fascination with beauty, and I was completely unaware of the effort it took the bush to emit that single peach-colored boom. While I cannot connect these memories as a specific starting place for seeing plants as animate, they all come back compounded now, as possible building blocks that I use to make sense of getting to know plants. I think that before anyone can consider something as alive as they are, they must first learn to consider it at all.

Like me, or rather, me like them, participants in this study used a variety of "nurse logs," or nourishing mentors in order to begin or realize their journeys towards being in relation with the plant world. Lessons in starting to relate to and be aware of the plant world came from family or kin, mentors and teachers, community, or the plants themselves. Participants often considered a certain memory as their cotyledon experience if it involved a personal perspective change. Often, these perspective changes had to do with opening themselves up to thinking or speaking with their bodies, or at least the

possibility that they could come to knowing or communicating without authoritative textbooks.

A majority, though not all participants, were raised around family members who worked closely with plants, and appeared to have started considering plants as important fairly early in life. Participants who had had the experience of having plant knowledge and appreciation passed down from within their families were people who were connected to their families, and often raised around their parents, aunts, uncles, and grandparents. Often, though not always, these stories came from people with ethnic backgrounds that hold family relationships and intergenerational closeness as a primary ecocultural tenet, such as northern New Mexican Hispanic communities. Additionally, many of these participants expressed deep connection with the land they grew up on (see "Place-making") and had had the privilege in some cases and the job in others of tending the plant-life around them. This appeared to create very emplaced practices with plant-life that were worked into daily life as a family. While this influence from kin didn't always mean that a person would grow to establish communication with plants, it seemed to provide participants with the initial contact and wonderment for the plant world. For example, Cheo, a *curandero*, teacher and administrator, and proud grandfather who has lived in New Mexico since college, recalled the beginnings of his plant teachings as coming through his mother and their familial dependency on plants in South Texas. He told me:

> My mother was not a curandera[9],[10] but she had a lot of medicines, she had her herbal garden and she would pray to the plants, she would treasure plants, and she

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[9] Curanderas are traditional native healers in Latin American and Spanish cultures who typically use a combination of plant medicine and spiritual healing to remedy illness and injury, assist in birthing, and care for spiritual sickness.

> would share cuttings with neighbors and relatives, so I have a lot of fond memories of my mom and her traditional medicine. And my mom would talk to the plants, she would pray to the plants, she would ask permission to the plant when she would cut the plant and use the plant for medicine, and I think that was part of the process, that plants were alive and they had an identity.

Cheo had watched his mother from such a young age that it never appeared to him as abnormal that people could and would talk to plants. His daily life with his mother allowed him the privilege of starting out as someone who might never need to be taught to respect plant-life or question that they might have identities. Additionally, as he notes below, his family was dependent on plants as a primary medicine source, which made keeping them close, planting them, knowing them, and doing whatever was possible to encourage them to continue providing. Cheo continued by saying:

> Back then I don't think there were any nurseries where you could buy plants but here was a truck, a big truck, and in the back of the truck there was these plants and he would go by yelling "plants! Plants!" and he would stop by our house and my mother would buy plants in old coffee cans and burlap sacks or just plastic to keep the roots together, and she would plant them all over. She didn't just have a medicinal garden, she would plant them all over the yard mixed with the flowers. And she'd go on herbal walks and I would go with her and she would explain the different plants and what they were used for, how she prepared her plants. Yeah, plants were done for limpias- spiritual cleansings, constantly, and not just any plants. It was, ruda[11], basil, rosemary usually, and sometimes peppermint. Yerba Buena[12] and those were used to sweep the body, sweep the negative vibrations from your body. If you would have a fever you would use a plant, bad digestion you would use a plant, I don't ever remember taking pills, it was pretty much… plants were our medicine.

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[10] Commas in participant stories indicate where they took a breath. Periods indicate where they paused or finished a thought. While unconventional, it is easier to understand the rhythm with which participants told their stories with this punctuation and therefore to allow them their own voice.

[11] [translation] Rue.

[12] [translation] Peppermint.

Lorenzo, a fourth generation farmer in his 70s in the South Valley of Albuquerque who wears bright blue overalls, grows sweet kale all through the winter, and smokes tiny rolled up cigarettes, also had frequent exposure to plants as a child. He owns and works a farm that is the same land his family has worked on for over 300 years, a wild spread of fields growing blackberries, garlic, and other vegetables cornered by enormous, ancient cottonwood trees. In preliminary conversations we shared, Lorenzo told me he was born of two mothers, once from his human mother and once from the earth. Since he was a premature baby born at seven months in a house with no electricity, his grandmother knew he needed to be incubated and placed him on the edge of the family's *horno*[13] every day until he was strong enough to stay warm himself. The experience of being birthed from a *horno* functioned as a lifelong metaphor for his connection with the Earth he perceived as a second mother, who had nurtured and rebirthed him. For Lorenzo, family, plants, animals, land, and earth were all part of the same relationship, but he identified that family members were his first entry to the plant world. His father taught him how to farm, and his grandmother who had indigenous Mexican roots knew plants and healing intimately laid the foundation for how he relates to plants now. Lorenzo can reach plants energy and vibrations by obtaining a "be here now" meditation and way of sitting with himself that was learned from his grandmother, who he spoke about at length throughout his oral history.

> She didn't know when she was born, she didn't measure her age by years, it was her experience. She was very much in the present, what they had to do to sustain a family- I think there was 10 of them. She widowed very early, my grandfather died of tuberculosis, so the responsibility of the farm and kids she did the ranching, she rode horseback. Experiencing her presence in my life was very

[13] A *horno* is a traditional mud adobe oven.

> powerful energy, it gave me a sense of nowness, of be here now and the rest of it…it's the will of god. She used a lot of herbs, she had a very extensive knowledge of herbs, and some ceremony from her native Yaqui[14] tradition healing was very much a part of her life even though she was Catholic, she still retained a lot of her own cultural ideas and values so I received a lot of that knowledge she imparted on me, she was very generous with her knowledge…I remember being slathered with pig lard for fevers, pig lard and salt. She would make teas, she didn't drink coffee, she would gather all of her teas for herbs like *cota*[15] and different herbs that she drank as morning tea. She smoked tobacco that she raised.

Lorenzo's close contact with both his father and his grandmother made not-knowing plants an impossibility. His grandmother did not expressly teach him so much as incorporate them in the family's daily lives to the point where there was never a question that they were not innately important to the family's well-being.

Keith, a soft-spoken transplant from California who has since fallen in love with the flora of New Mexico was also taught to pay attention to plants through mere exposure. Unlike Cheo's experience, he wasn't necessarily taught that plants might have personhood, but he was exposed to them enough that he continued to seek them out throughout his life as familiar, friendly, entities. Later in life, he was able to identify more spiritual connections with them through his herbalism practice, but the starting point of his relationship came from exposure through his family.

> Some of my earliest memories are just working with my family in the garden and planting during springtime, I loved getting my fingers in the soil, it felt so good. I always felt really connected to the trees. My dad especially had a really big influence on my love for plants because he had so much knowledge about them. I could ask him about anything in our garden and he knew exactly about what it

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[14] Indigenous group from Mexican state of Sonora.

[15] *Cota,* a perennial member of the Aster family also called Indian tea is traditionally used as a light tasting beverage or a natural dye. It is hard to avoid it in New Mexico as it grows nearly everywhere.

> was, what it did, where to plant it- anything. He was an untrained botanist if you will.

Eden, Keith's husband with whom he owns a small herb shop in northern New Mexico, was also taught a way of being that allowed for plant relationships through members of his family. Unlike Keith however, his realization came from a recognizably spiritual experience. Similarly to Lorenzo's, Eden's entrance into plant awareness came partially from learning about a way of being from his grandmother. In his case, the lesson was that it was acceptable to tune into the possibility of the emotions of something other than humans.

> My grandmother was a little bit more ethereal with them [plants] she seemed to have a bit more of a relationship with these ancient trees that surrounded our property which, she built the house in like the '40s and I grew up next door to her. She was just fucking amazing, weirdo, funny, she seemed to have more a spiritual connection with them than my dad did who was like <aggressive tone> "It's beautiful. Plant it here!"…When I was thirteen I got really into roller-skating and my parents had put me in therapy so I was roller-skating to therapy every week on like, the most dangerous busy street in town it was miles away…but they were tearing down all the houses on these miles of road, Independence Boulevard, but when I was going down they were tearing up the trees and I had a nervous breakdown and I didn't even know why. I called my grandmother and I went to the 7-11, this was like 1992. "I'm at the 7-11 they're tearing out…' cause I couldn't get home I was freaking out so bad, and she was like "I'll be right there." And I was hysterical and I had never, put two and two together it was just affecting me super hard because I had grown up with these trees and she was so proud of me for being so- she was like, "you get it you understand you get that this is all just total bullshit." She was so happy, I think she was like, "you're not going to be as materialistic as I thought." I'll never forget that day. These were really humongous trees they were there for a really long time and they were just being chopped down and torn up. It was traumatizing.

Eden wasn't necessarily taught by his grandmother to understand plants as sentient, but he was supported by her open-mindedness about how he interpreted his traumatic experience and congratulated for seeing the world in a non-binary way. This appears to be an important part of living by non-dominant ideologies, as many participants expressed

worry or concern that they would not be taken seriously by me or by others reading this project. One participant named Marguerita made the point that it was essentially a long carried fear of witch-burning, where many people who care for plants still feel the trauma of social violence for thinking in a way that challenges dominant ideologies about the hierarchies of living things (see Milstein, 2020). Additionally, because many people struggled with the words to describe some of their plant experiences, perhaps the very lack of language is what made them worry about being considered legitimate sources of knowledge in a Western world that prides itself on the ability to articulate and describe everything "real" with human-centered language. (See "Commune.")

Eden and Lorenzo were supported by their grandmothers' physical presences in their lives to develop their non-binary ideologies. For many, interest in plants came from knowledge of ancestry. In these instances, participant's found their relationship with certain plants through locating themselves in a story of their heritage. For example, a participant named Jah fell into botany and distillation because of his mother, Cathy's, vocation as an aromatherapist, and Cathy in turn felt dramatically drawn to flowers and herbs from India due to a far removed heritage from the ancestry she said she could feel in her bones. Another participant Jeanette came from a multi-generational family of corn farmers in the Midwest, and rekindled her relationship with farming through a return to some of family's farming practices on her own terms. People tended to make sense of their lives with plants through situating themselves in stories, and often these were family stories, or stories about family. Many of these participants called on childhood memories with their families and ancestral memory to access relationship-building with plants, using not only physically present family members as nurse logs but also stories about family

members who worked closely with plants. In addition to Jah's, Cathy's, and Jeanette's experiences, a herbalist in his 60s named John from Peñasco[16] also had an experience of coming to feel close with plants through ancestry. John, who is well known in northern New Mexico communities for the free or extremely cheap herbalism classes he has taught over the years as part of his ethic that plants should not be sold. He called on the memory of a grandmother he never met to make sense of his relationship with plants and role as an herbalist.

> And then, it wasn't long after that [being attracted to learning about plants] I found out that my grandmother- that's what she did. They called her *strega* which is an old Roman word for witch because she healed people in the community with herbs and other things, that's why I can't- I do a lot of things for free which is kind of silly because I'm broke all the time but I kind of feel now that I'm taking a family tradition and extending it.

Through mere exposure through family members, familial support of ways of being or thinking, and family legacy, many participants began their relationships with plants. However, not all participants had the privilege of an early education with plants, and some had to find the basis of their plant relationships through other means such as community projects, human teachers, and plant teachers.

Community.

Not only did cotyledon moments come from the nurse logs of family members, but also from contact with nurse logs outside of participant's childhood or family heritage. Some participants found their relationship to plants through community projects in New Mexico, like Miguel, a metal-loving permaculture farmer with several degrees in biology. Miguel lives with his wife and daughters on farmland in Taos that has been in his family

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[16] Peñasco is a very small census-designated community in Taos County, NM.

for generations. He found his relationship to farming and specifically to corn through a series of events brought on through local land grant council, which led to him planting corn alone on a misty morning in the South Valley of Albuquerque, a moment that began a relationship with heritage corn that he has nurtured ever since.

> My first deal with plants was doing a community garden with the Atrisco land grant council in the early '90s in the South Valley of Albuquerque. They were fighting against Westland Corporation who took over the land grant. They turned Atrisco land grant into a corporation through all these shenanigans and they were trying to get the land grant back….so they were struggling against that and the Paseo del Norte extension through the petroglyphs…so then I was working with Atrisco land grant council I was a board member because one of the dudes in there was dating my mom and he took us to Mexico and blew my mind so I joined the board just to get involved because this dude was a heavy teacher. So I became a board member then I did the community project in the South Valley and we planted a field of blue corn and so I was in charge of that, I volunteered for that because nobody else would volunteer and they all helped me because I didn't know what to do, so they all told me what to do and gave me all the contacts they just didn't do it themselves so they sent me to go get the seed and get the manure and sent me to get the guy and arrange for the tractor and the row-making and the planting. But getting the seed- I got the seed from Jamie Chavez's dad in the North Valley and he blew my mind again with this blue corn I couldn't believe. You know, people don't see that, you know I've experienced it now but to have a barrel full of blue corn that you grew…you know a whole barrel, you know it's a feeling of wealth and security unlike any other. It's a motherly type of security you can feel it, and he exposed me to that. Actually, I was supposed to plant it with the people, but nobody showed up 'cause it was raining the night before it was a misty day and so I went and planted it anyways like that man told me and it was a magical….it was beyond…yeah it was an incredible experience. I was out there at sunrise with the blue corn and so yeah from that moment on I knew…it was like a homecoming, I knew I would be planting corn. There was just no way to not after that.

Miguel's experience was intimately wrapped up in New Mexico place-based land politics, heritage seeds, and community. Seeds, such as the corn seeds that Miguel planted are incredibly important in New Mexico because they are often strands of corn that have been nurtured and passed down through generations and grown on specific areas of land. Additionally, they are often strands that have been kept away from GMO cross-breeding which, has ruined countless strains of produce. Miguel has since moved from his

Albuquerque community-based position to being the sole planter of an entire field of corn, a practice he now does yearly. Miguel's connection with old seeds and the land around him nurtured and encouraged his journey from working towards a biology graduate degree to becoming a permaculture farmer working his family's centuries-old land.

Joey, another participant who I met on a farm in the South Valley in Albuquerque but who currently works passionately for Foodcorps[17] in Bernalillo County, New Mexico had a similar moment from his first experiences working on a farm. One of his first experiences with plants was when he was sent to his uncle's farm in the mountains in Guatemala after his father thought he was getting too spoiled in the United States. In Guatemala, the connection between land, his own ethnic lineage, and the connection between body and food became so viscerally clear to him that he returned as many summers as he could. However, his first major turning point experience as he recalls it was the arrival of Foodcorps members in his middle school classroom, and the impact that learning about food and agriculture right there in the South Valley where he lived.

Jeanette, an artist and farmer who lives with her family in Anton Chico was like many, initially brought to farming and interest in plants through her family lineage. However, was re-taught many things by the community she found when moving to an undeveloped piece of property in an extremely rural environment inhabited by mostly native New Mexicans. Because she left open boundaries on her property and home, "fences do not make good neighbors," she says) the local community began to trickle in bearing seeds and experience. Her experience of being a transplant, and inviting

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[17] Foodcorps is an American non-profit organization with the goal of connecting kids to healthy food in the public education system.

community members in to help her absorb what she needed to know to be in-relation with plants in the difficult growing terrain where she lived made quite a bit of the difference in her existing as a farmer in that space.

Human teachers.

In addition to family members and community organizations, a large portion of participants who didn't have cotyledon moments through kin or community had teachers or mentors who helped them experience the beginnings of the kind of relationship they wanted with plants, sometimes consciously and sometimes unconsciously. For example, John, noted that he came to the beginning of his current understanding of plants through mentors, and through some specific teachers who gave him lessons that moved beyond the basic knowledge of plant names and towards a more embodied way of knowing plants.

> I moved here [New Mexico] and I wanted to learn about outdoor skills, and I thought the easiest was to study about edible wild outdoor plants, and when you study about plants you normally just go into the medicinal part of it, and there weren't many good books out there which was actually a blessing for me because I learned from the Indians and the Spanish in the mountains. Most people, bless their hearts, most white contemporary herbalists learn from either going to a college or the internet, so I feel ok that I learned from people. I always worked the working class jobs, that's where you would find the Spanish and Indians, they would do the low paying jobs like me and the conversations would just go there. I always got little bits and pieces which added up. My favorite herb walk was from a man on the Pueblo when I was young, and I don't remember the words of what he called the plants anyway because they were Tewa and I don't speak the language, but he spoke English he would tell me what they were good for, and this was great because there were no names it was just like "that's the plant" and you have to absorb it more than going through an intellectual moment.

This moment was particularly important to John because it changed the way he sought identification of plants. In learning the use for humans, the sight, and the location of a plant, he didn't need or want the Latin names. Another participant named Dara echoed this learning experience of understanding plants by something more than name. Dara is a transplant to New Mexico, and had spent her youth tumble-weeding across the US before

landing in Albuquerque, where she formed an irrevocable love for the West Mesa area and the confluence of bioregions that Albuquerque and the Sandia mountains presented. I had seen Dara speak on herbalism and ecosystem restoration several times before I contacted her for an oral history. The first time was with a graduate class down in the bosque of the Rio Grande where she emphatically pointed out several precious plants of *yerba mansa*[18] that she and members of her volunteer project had painstakingly nurtured. She had pulled up to the bosque in a dark green Subaru and spent the majority of her time talking with her legs spread in a loose but authoritative stance wearing a purple stretchy skirt sporting hair ribbed with grey, and emanating energy of someone at least 20 years her junior.

Dara's oral history was rather different from those of the other participants because she had spent quite a bit of time practicing, being formally educated on, and reflecting on the subject matter of plant communication and relationship in her own life and work; as a result, many of her stories on the subject emerged premeditated and organized. Her own account of one of her first experiences with understanding plants in a non-binary way serves as a strong example of the fashion in which many participants come to the beginning stages of their relationships with plants through contact with human teachers, or indeed, even considering plants as beings capable of being in relation with.

> So I guess one of my most important milestones would be, firstly just realizing that there was the potential and possibility for that kind of intimacy with a non-human life-form, I didn't grow up having someone introduce that concept to me, it was something that I came to as an adult. So, um, I remember being in herb school many years ago and having this amazing mentor and I was…I've always been the kind of person who was very much in my mind, a linear logical researching kind of person and I came to realize that was a little of a barrier for me (it can also be an asset of course) but can be a little bit of a barrier depending on what your goals are, and for

[18] *Yerba mansa* is a highly medicinal perennial herb that grows in wet soil or shallow water and benefits overall ecosystem health in riparian zones.

> me learning about plants initially was very focused on reading and learning facts and knowledge and putting those things together and that was an important part of my journey.
>
> I think that's an important part of anyone's journey but I remember the moment I realized there was so much more that I never even could see…was going to be an important part of the process and I was up on the mountain with my teacher Burt Norgorden, and we were driving down the road and there was a yarrow[19] plant on the side of the road and it was one of those yarrow plants that was very pink (usually they're white) and he was driving and he screeched the car off the side and we skidded through some gravel and came to this rapid halt and without a word he jumped out of the car and ran back up the shoulder to that plant, and I got out of the car and followed him and I saw him standing on the side of the road looking down at this plant…this look of reverence came over his face and his whole physical structure just sort of melted and relaxed and I witnessed the transformation that this man was occurring in this moment of just interacting with someone he loved deeply and as a bystander I didn't really understand what was happening in the moment, but I saw something beautiful and powerful and I wanted to have that experience too, I wanted to have that kind of powerful medicine.
>
> I realized that instead of learning about herbal actions and botanical names and all the things I was engaged in I had to take another step beyond that of getting out of my mind. And learning to use my heart as an organ of perception an interpretation of the world, and that was something I'd never thought about, I didn't know it was something to do I certainly didn't know how to do it, so that's what I mean by my mind….was kind of my gateway but eventually I realized I had to use other tools within myself that I didn't know I had and that was a real important moment for me just…kind of like you're only going through life where you only see a part of it and then all of a sudden this whole world opens up. You're like, oh my god! There's so much more to life than I ever knew, like tremendously more and initially it's overwhelming and then once you get past that sensation it's very inviting, and it draws you into that next level.

Dara's story is illustrative of a cotyledon moment for several reasons. First, it is clear that as was the case for John, Dara's perspective-changing moments towards forming what she understandings as a real relationship with plants occurred through observation of a teacher she had access to. Second, Dara put emphasis on how her important cotyledon moment

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[19] Yarrow is a highly medicinal flowering plant used to stop bleeding and bring down fever. It grows in most temperate zones in the Northern Hemisphere.

with plants moved beyond simply having access to them, and involved an embodied way of connecting with plants that wasn't linear, empirical, or from an abstract source.

Other participants also experienced a similarly dramatic change of perspective and a similar distinction between ways of knowing in their cotyledon experiences. John experienced a similar distinction as Dara between knowing a plant in the sense of its Latin name and use, and knowing a plant as an independent entity that was absorbed through other senses besides the brain, as I term it, the corporeal knowing of a plant. I use the term "corporeal knowing" to refer to the kind of knowledge that comes through emotion, the body, and its corporeal senses.

In my talks with John, he made it very clear that he thought the over-intellectualization of plants and plant-knowledge has been dangerous for plants, and made people money hungry and willing to treat plants like objects. This over-intellectualization was in juxtaposition to his first lessons in plant-lore that came from simple conversations and observations from teachers and learning about plants from a place outside of taxonomic identification. John, like Dara learned to engage with plants through human teachers. He, too made the distinction between a more linear system of knowing through names, terms, and overall taxonomic classification and a sort of knowing that occurred experientially. As another participant, an aromatherapist named Cathy put it, *"*There's a difference in things we feel through experiential feeling and things you work out through the mind, and those two don't necessarily join up.*"*

Another participant Marguerita, an herbalist, and farmer in Taos, expressed her heartbreak and confusion upon entering the university system for an undergraduate degree in botany and biology. This heartbreak came when she found she could not remember the

names of plants her teachers lectured about, even though she had known them all her life from daily physical contact with them where she was raised in the mountains of northern New Mexico. There at the university, the teachers of plants (university instructors) and their lesson plans based on taxonomic distinctions between plants unknowingly created strife for Marguerita, who was forced to revisit her way of knowing plants and realize how vastly different it was from that of her teachers.

As a child, Marguerita could remember learning all the flowers and herbs around her home with her father and her grandmother. She learned them by sight, smell, and sometimes also by their Spanish names. The linear taxonomic systems provided by University science departments felt removed, harsh, and difficult to her, and on reflection she realized it was because they did not leave room for relation with plants, only objective identification.

Though Marguerita, John, and Dara came to their perspective changing experiences through varying positive or negative interactions with formal and informal teacher-figures, all of their stories reflect the Western anxiety about plant taxonomy and the categorization of more-than-humans in general. As Hsu and Harris (2010) and Berlin (1992) argued, taxonomic systems sometimes become concepts that are forced on the more-than-human and those people who work closely with them. What these participants experienced in their cotyledon moments was exposure to the possibility that knowing could occur without classification. Indeed, this makes sense, as in any other part of human life, we rarely claim to "know" something or someone just because we have a label for it and are conscious of its function in regards to us. Something critical theorists have worked very hard on during the post-civil rights movement years is to question the assumptions

placed on different cultural groups which work to allow dangerous labeling, stereotyping, and minimization of voice of the marginalized group in question. While Western society is still extremely far away from considering plants as beings let alone marginalized population, taxonomic systems position plants using patriarchal and capitalistic mode of organizing as opposed to forming actual relationships (see Plumwood, 1997).

It appears that corporeal knowing of plants comes more commonly through the guidance of teachers who force people to question their own ways of being and value sets regarding plants. While some participants were brought up to foster knowledge and connection with plants through contact with their families and communities, others required external teacher figures who provided examples of powerful worldview-changes concerning plant-human binaries.

Plant teachers.

While most of these experiences in moving towards corporeal-considerations were instigated by human nurse-logs (kin, teachers, and community), there were some instances where the gateway to a less-binary understanding of plants came from lessons from the plants themselves. This involved a certain amount of agency to be allocated to the plants, and placing them in an authority position where they held the respect, dignity, and knowledge one might allocate to any other esteemed teacher. These instances are examples multi-species storytelling, where the plant served as the instigator and teacher that allowed its human student to perform a critical interruption of dominant worldviews.

Throughout this study, and most predominantly in oral histories that mentioned plants as teachers, many participants used gendered pronouns to describe plants. This could be framed as problematic in some ways; for example, Dara noted that the practice of conforming plants to humanoid binary genders didn't particularly support some of the

social moves made as far as gender identity in human society.[20] Still, it also signified willingness to position plants in a similar subject-subject relationship as humans were willing to have with other humans or non-human animals. These experiences of plants acting as teachers and subjects occurred through dreams, medicine, corporeal knowing, and hallucinogenic experiences.

My own dawning understanding of plant teachers proved to be a powerful experience that changed my worldview on their agency and allowed me to realize my dependency on them and adopt a level of humility when thinking about them. I think I was first blindsided by my desperate need for plants as medicine, and then slowly came to a realization that this need of their healing power made them authority figures and teachers. As previously noted, most of my adolescent life was spent considering plants of all kinds as largely on the periphery, simply objects of entertainment and decoration. This worldview lasted until my father became very ill with cancer while I was in my twenties, and forms of plant medicine became the only remedies that helped alleviate pain for him.

I would like to say that I entered my relationship with plants by some divine understanding of their role in cosmology, or precocious social critique, but the truth is, I was just desperate. I needed to use them because no other medicine was as efficient of an anodyne and nausea treatment, and I needed something that had the potential to be powerful and magic in both my imagination and my father's physiology. This is where

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[20] Plants hold particular power to challenge gender binaries (and other binaries as well) due to their varieties of ways of procreating in that within the queendom, both asexual and sexual procreation is possible depending on the species. Dara was hesitant to assign gender pronouns to plants because she recognized that in trying to rhetorically frame them as subjects, humans run the risk of pushing problematic binary-based associations on them.

herbalism and the socially-loaded plant marijuana entered my world. Some participants in this present project found plants by way of steadily built cosmologies, or in a singular moment of understanding, or through an unexplainable interaction or feeling. I found plants' power in a rather extractive moment of desperation. My learning proceeded slowly because of this, but as I became more and more indebted to marijuana and other herbs, I realized it was not the people and books teaching me about them that I was learning from so much as the plant itself. Marijuana, and the cultural, political, and economic swirls of confusion that surrounded the plant taught me more than anything about more-than-human power by exposing my dependency on the plant's abilities. If so many people were wound up in confusion, demonization, and dependency of this weed-like shrub, surely it was the commodity itself that deserved some focus for making itself so irresistible to human beings (Pollan, 2001), so much so that it continues to affect Western concepts of morality and regional identities. The journal entry below marks my first ruminations on how I learned from marijuana.

Journal 2/18/16 Hood River, OR

> My father's sickness has reached a whole new level with chemotherapy and the poison coursing through his veins makes him nauseas all the time. The only thing feeling worse than eating is not eating and knowing he'll lose the little weight he still has on him. I've become desperate with my herbs, and with marijuana especially because it helps the most. Marijuana is a schedule 1 "drug," which means that pharmaceutical tests on it are illegal. There is so much anxiety around it in the medical community, as if hiding its possible benefits from the masses is the only thing keeping them from a paradigm shift in medicine. Narby (1997) wrote about early botanists stealing plant lore from the Amazon and taking it home to sell and patent, leaving out the people who taught them what it was for, and mass-producing sacred medicine for profit. It seems like the accessibility of weed makes it dangerous in that if there are the medicinal properties in it that people swear by, it would be the first uncovering of a great medical sham where people realize they could have felt well when they weren't, and don't need the pharmaceutical companies the same way they thought they did.

> My father doesn't like to smoke so I made butter for him, finely chopping weed like you would any other herb, stirring it slowly into ¼ cup butter, ¼ cup water, and simmering it on low for three hours. Next week I'll try to make tincture because the butter takes a long time to digest, meaning the CBD's[21] that curb his nausea take too long to release (Paul, conversation, 2016). For tincture, you need grain alcohol, something 75-100 proof, and time. You heat the weed on low in an oven to decarboxylase[22] it then pack it in the alcohol and leave it in a dark quiet place for at least three days. Then a couple drops on the tongue should help bring up appetite and bring down nausea. As someone who never really smoked weed but was always around the west coast[23] culture of growing it, I had to call in help from a lot of people. Nobody would guess that these lovely young humans on the fringe of society are actually modern day healers in many ways, sharing (or refusing to share) the knowledge they know wrapped in stories and experiences they've had. They told me the processes, the heats, where to apply, what strains to look for; and I realized the immense amount of expertise that went into the growth and cultivation of this one pungent plant, and how the knowledge of how to make these things is often passed down through old time gardeners and farmers living on the outskirts of legality, making what is essentially medicine in a situation like this. Everyone is in awe of how powerful this plant is, I'm in awe of what it does to our bodies just by existing. I'm so grateful, I never thought I would be so grateful that there is something so seemingly insignificant…it just helps him so much. It helps that all these people know what to do with this plant but if the plant wasn't already the plant, it wouldn't matter.

When I was around plants as a child, I saw them mostly in terms of my own entertainment or fascination with the beauty they offered. When my father became sick, I sought out plants because I needed to learn how to alleviate pain and how to heal without requiring anything in return. I needed magic, and the reactions of plants in the human body were the closest thing to magic I could find on this plane of reality. I learned quite a

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[21] Cannabidiol is an active constituent in marijuana that can address pain, inflammation, and other bodily discomforts.

[22] A process that usually involves drying and/or heating that creates a chemical reaction which releases carbon dioxide and activates THC, the active chemical constituent of marijuana that effects bodies.

[23] The west coast region of the USA is known for hosting marijuana-growing cultures and liberal handlings of marijuana legalization for both medicinal and recreational purposes.

bit about how to unconditionally provide from marijuana, a non-discriminating plant that seemed to give, and give, and give when nothing else helped alleviate my father's discomfort. However, even around my father's illness when I began to realize the potential dependency we humans had on plants, I still approached them in a rather extractive manner for quite a bit longer, concerned largely with what they were "good for." I can recall attending a talk on insects at the Albuquerque zoo once, where the presenter described several insects in the area with such care and tenderness that it made me rethink the way I ignored them. Someone in crowd raised their hand and asked, "Well, what is that beetle good for?" and the presenter shot back, "well, what are you good for?" It was not rude, rather a sincere question. However, in a single statement the presenter had forced all of us in the audience to reflect on the way we understand beings in the more-than-human world as needing to be, not even good for something, but specifically beneficial for human beings. Here, I began to reflect more on the complicated chains of dependency to tie us to plants, and how, if we need and certainly want them so badly, doesn't that mean they hold agency and a position of power? Or some set of characteristics we could learn from?

Other participants in the present study had also experienced moments where plants had assumed a teacher role in which the plant transcended being "good for something" and took on a mentorship role in their lives; the participants began to acknowledge them as beings worth learning from and possibly emulating. Karen, an Ecuadorean woman living in northern New Mexico who is extensively trained in Yaqui ceremonial traditions spoke of tobacco as a guide for her and her practice, said she apprenticed with tobacco, an

entity that has remained a part of her daily practices and spiritual life. She also counted a major plant teacher as ayahuasca, saying:

> I took the medicine, and that was the moment that truly sparked a whole different way of me seeing the world, and it was very difficult. I felt unstable, demobilized, scared, sick, and all these feelings and also knowing that they were all brought up by me in a way.

Ayahuasca and other hallucinogens have a long history of acting as teachers for human beings, and are intimately tied up in the spiritual practices of several cultures. Their lack of subtlety in how they often affect human bodies makes them a much more dramatic source of interaction as opposed to, perhaps, chamomile tea for an upset stomach. In Mary Crow Dog's *Lakota Woman* the author remarks,

> Peyote makes me understand myself and the world around me. It lets me see the royalness of my people, the royalness of peyote…grandfather peyote knows you; you can't hide from him. He makes the unborn baby dance inside its mother's womb. He has that power." (p. 72).

For Karen, much of her worldview came from her spiritual practices communing with plants and allowing them to teach her or show her things about herself and the world. Moving beyond her initial ayuhuasca experience she continued to work and learn from tobacco, treating it respectfully and with reverence, like one might treat an esteemed professor.

Marguerita similarly positioned members of the plant world as teacher figures. When being asked about seeds, she told me that the plants had been teaching her lately how to consider nutrients as connective and important entities and seeds as the vehicles for such.

> The plants have been teaching me heavy duty these last few weeks about nutrients and we think about nutrients as "oh you need this much nutrients and all these things,`' but they're entities too and so they hold the potential of the communication

> for all these fires in our brain and heart, and the nutrients in the soil and the plants pick up the nutrients and that's what connects us to everything, is those nutrients.

Marguerita, like several other participants, was extremely open to the idea that she was being regularly taught by plants, later in her oral history she mentioned that she had recently met a sunflower, and he had reminded her about her own sacredness. She was praising the sunflower and he (she felt it had masculine presence) turned the tables to tell her to praise something about human beings. Marguerita's account of learning from plants also illustrated on the way that teaching can happen in the body and in the mind, making bodily existence and communication a potentially intellectual process and communication an embodied act.

Other participants remarked on how they learned certain social processes through plants. In my journal reflections, I credit marijuana for showing me how to heal and provide with strength, and without needing much thanks. In another example, Dara professed her love for a plant called *Pedicularis*[24] which she described as the Robin Hood of the forest due to its ability to redistribute resources through nutrients from plants who had excess to plants who needed it more. Dara said that she loved Pedicularis partially because she learned from it, and that the practices that the plant lived by were actions she hoped to perform in her own human communities, thereby positioning the plant as a teaching figure.

Learning about plants through people

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[24] *Pedicularis* is a species included in the figwort family with the common name of Lousewort. According to USDA forest service, they can be found in most of the Western US states except for Nevada.

Instances of cotyledon moments with humans specifically in the data are multilayered. Through the nurse logs of kin, community, and human teachers, participants all found their way to what they identified as the relevant beginning to their relationship with the plant world. However, these relationships were sometimes as simple as being introduced to plants in general, and sometimes as consequential as being faced with a worldview-changing idea of plants as sentient beings. For example Eden's experience of agony at the ripping up of trees on the street where he roller-skated marked a painful entry into the potential consciousness of plant beings that was validated by his grandmother; Dara's experience watching her herbalism teacher in commune with yarrow on the side of the road re-inscribed plants for her as something that could in fact be related to or communed with. On the other side of the spectrum, Keith, Marguerita, and Lorenzo considered the very beginnings of their life in relation with plants as simply being around them as children, with elders who knew something about plant life.

Even though participant's had varying ways of conceptualizing the beginnings of their relationships, it is clear that in order to relate, physical access to plants and communication about plants were first and foremost necessities. In the vein of nearly every other kind of othering produced and experienced in the Western world, it seems possible that access to the othered population of plants and conversation about, with, and around them is a way to begin to alleviate marginalization. Like most social movements or narrative shifts, it appears that this starts within families and communities, and through access to mentors. Narrative shifts mark changes where the dominant storyline or narrative associated with a topic changes. In this study, narrative shifts about the role of plants had roots in people's awareness, education, and access to plant-life.

From the data, kin or family emerged as a major contributor to how people learn to come into relation with plant-life and share communication about plants. From what is known about family communication in narrative and communication studies, families often give "narrative inheritance" (Goodall, 2005; McNay, 2009), and these do not always occur in how one might think of an archetypal family story, but rather in segments, words, utterances, and interactions spread over time (Langellier & Peterson, 2004). Family stories are often culturally bound, and teach us how to understand race and ethnicity (Joseph & Hunter, 2013), family identity (Mishler, 2006) and gender (Fivush & Haden, 2003). Family stories can also double as environmental stories, or instructions for to how to conceptualize the more-than-human world (Thomas, 2020). Plants, it seems, are an element of the world that can be instructed and encouraged by family communication.

Much like any other circle of relations, older generations who appreciate plants allow for introductions at an earlier age to younger generations. For example, in Derr's (2002) work on children's sense of place in New Mexico, she found that many of her participant children knew much about plant life through access to their immediate family, and Cajete (1990) argued that access to elders encourages biophilia, or the want to interact and affiliate with the more-than-human world. While pop culture and media are often touted as the overwhelming influencers of environmental understanding (Sturgeon, 2008), perhaps family should be focused on as a powerful and fertile site of producing and exercising more-than-human understanding.

This idea becomes problematic when considering the vast amount of families who do not have innate relationships with plants, intergeneration communication about awareness of plants, or do not take non-binary ethical approaches, to relating to plants. In

many Western families, if anything about relating to the more-than-human world is taught it is often how to feed and walk a golden retriever or manage a goldfish, reinforcing zoocentric ideologies and maintaining a hierarchy of living beings. Additionally, many families do not have the privilege of access to green spaces or green beings as a product of the vast inequities that occur in US America, especially concerning environmental access and knowledge (Evans, 2002; Finney, 2015). Because my data came from people living in New Mexico where enough concrete-free land and lifestyles exist to still see the prevalence of land-based cultural ideals, I hypothesize that most of these participants did not have the experience of what it might have been like to have the only plant-life around them be some struggling city trees or cubed frozen carrots. However, despite this relative regional privilege, their stories and my own made it clear that intergenerational contact was important for creating worldviews in young people that do not submit to the nature-culture binary. This is crucial knowledge in remembering that change in worldviews, narrative shifts, and connection with the more-than-human world happens frequently through family units, and so perhaps education about the importance of plants is a topic that is best approached through accessing collectives and communities of people as opposed to individuals.

Community helps teach people what is permitted and not. New Mexico is a storied place of storied communities (Arellano, 2007), and the communication shared about plants is one part of place-making that occurs here. In New Mexico, narratives of home and belonging are often created through community, and so when people cannot rely on their immediate families for plant knowledge, the community because a place of strong potential for learning important ecocultural lessons. Here, New Mexico's cultural

hybridity works both for and against the possibility of developing plant knowledge and relationship. In one vein, the diverse ethnic and cultural backgrounds and variety of people who have lived here for generations as well as those newer transplants provide a cornucopia of rich perspectives, practices, and worldviews about the more-than-human world. In another vein, the division of these groups (for example, I noticed severely different land-based practices and communication about seeds, plants, and growing, from new transplant farmers and multi-generational farmers in New Mexico) can keep ways-of-knowing isolated from each other which can be a disservice to the young of all groups.

In all land-based cultures, community is important; however, in this time with many of human's immediate survival needs met by capitalist production, there is less obvious need for the kind of reliance on other non-familial humans that often occurs here in New Mexico. Community education thrives with the inclusion of stories and rituals that make resistance to dominant ideology more of a possibility (Bataille, 1996; Cajete, 1990; Johnson, 2010), and communities have the opportunity to offer the kind of embodied, engaged educations that are often not provided by public schooling systems. The kinds of communication that come from non-family community individuals and organizations are crucial in helping people understand the importance of plant-life. This is not to say that community interactions and organizations would immediately be able to preach about plant importance and the possibility of communication and have their messages be received, but community would be able to offer access, which participant experiences suggest is also an important starting point to seeing and considering plants. Story-sharing which appeared important in families is also crucial in community settings as a fertile place to learn ritual, embrace folklore, and work with embodied practices that tie people to

the land where they live. In my talks with Miguel about how he came to be on his path, he recalled his absorbing of stories.

> We went out there to put those sites to rest and did ceremonies to heal them and so I was exposed to all these natives then I was planting corn with all these land grant activists…just started learning more about it and eventually I got certified in permaculture, Native American permaculture with traditional Native American farmers association and there I learned you know, corn is the mother, she's the teacher. You know there's other prophecies about corn in the true sense of the word the grain corn you know, all the grains are called corn. Maize is what we're talking about…but all the corns- there's indigenous stories of the mother earth making covenants with humans and giving them grain and in exchange the humans give up their wildness and that was the corn mother with the women who did that and that goes along with scientific thinking about domestication because the men were hunting and the women were gathering and they're the ones that established the relationship with the plants and seeds in the first place through their role as gatherers predominantly, and then…so they domesticated the crops which created more sedentary cultures and then that's the basis of all our technology and our class systems and everything. It originates from that, but that's also the same story on the indigenous side but in a different more sacred way with the corn mother and then also part of that my understanding, is that we're in the process of revolution, life on earth, processes on the earth.

For Miguel, community not only gave him his first access to farming and heritage corn seeds, but also at a different time provided him the storied context to make sense of what he was doing with corn and help form a cosmology that he could live by. Human beings are communal creatures. Most everything we esteem as meaningful is built through our webs and networks of communication, and community provides a fertile place to foster and educate about the possibilities of human plant-relationships.

Human teachers who were not necessarily a part of community organizations that participants had immediate access to were also important nurse logs for facilitating the development of participants framing of plants. Some participants' experiences were of being shown or taught to consider plants as conscious beings while others had experiences where they felt crowded by the opposite teachings, such as Marguerita's experience with

her university instructors calling plants only by their Latin names and disassociating them from embodied knowing. Many of the human teachers mentioned in the oral histories aided in narrative shifts by performing what Pezzullo (2001) would call a critical interruption, or a communicative moment that challenges dominant ideologies of how to deal with environmental matters. It is clear from participants' stories that mentors and teachers have the potential to provide a role for those who lack access to community organizations (especially locally) or family that hold relationships with plants. All nurse logs mentioned here held the potential to create rich cotyledon experiences, and it is hopeful in many ways that a variety of nurse logs exist that encourage this kind of engagement with the plant world. In moving forward, environmental narrative-makers and educators should remember that much like other kinds of environmental knowledge and awareness, lessons, critiques of the system; access, love, understanding of the more-than-human world, and perspective-changing or building lessons come from webs of family, community, and outside mentors. Perhaps tapping into families and communities and considering them as ecosystems that dole out ways of knowing, stories, and plant knowledge is a more fruitful (or at the very least, similarly important) method of spreading plant awareness as biological studies.

Learning about plants through themselves

In addition to mentioning human nurse logs, participants also told stories about nurse logs that came in the bodies of plants. Considering plants as beings that are worth learning from presented an entirely new universe of teachers. However, learning from the more-than-human is not as far-fetched as it might appear for Western societies. Biomimicry is a beginning, albeit, capitalistic step that learning from plants has already worked its way into some parts of Western society. For example, Velcro was invented by a scientist in

Switzerland who had cockleburs stuck on his pants and his dog's fur, and a type of hydrophobic sealant was created by copying the water-repellant leaves of a lotus flower. However, many of these biomimicry projects have emerged highlighting the human ingenuity involved in the process of figuring out how to synthetically mimic an occurrence from the more-than-human world, as opposed to the more-than-human world's potential ingenuity in evolving that feature in the first place.

Because Western philosophy is built on the assumptions of vegetal passivity, it is uncomfortable for many to reframe supposedly inert plant-life as an entity that is able to teach. Both Plato and Pliny argued that plants existed for the gratification and health of men [sic], while Aquinas echoed this sentiment, writing on the view in his church doctrines that plants were without sense or intelligence, a view that spread widely across Europe and greatly influenced Western thought (Hall, 2011). It is not necessarily that Aristotle's philosophies and the beliefs of Christianity are completely to blame for the Western world's disregard of plants. Rather, some of the extremely old tenets of hierarchies of species in Christianity and binary-based rationalism were never questioned, especially in the wake of industrial capitalism, a system in which humans' prowess over other creatures and beings was elemental to the survival of the financial system.

Western societies have made admirable (if terribly slow moving) progress towards questioning some of the other hierarchies found in fundamental Christian texts, such as those regarding gender and sexuality, and hopefully the critical theory behind some of these social evolutions is helping to lay the groundwork for understanding plants and other beings in the more-than-human world as potential knowledge-makers.

Conceptualizing plants as potential teachers is an act of humility and a re-positioning of authority away from anthropocentric ideals. For participants in the present study, first experiences that acknowledge plant life as knowledge-makers meant that their dominance in the more-than-human world was given up in order to allow other beings a voice and the possibility of holding a way of being that they themselves had not yet learned. Even in colloquial language, many people use plant identity and knowing as a symbol for other esoteric concepts, using the crutch of a plant process to explain something else. For example, "she's growing like a weed," "we need to lay down roots" and "you should branch out" are all idioms that English speakers use often in everyday speech. In this sense, many humans in the Western world are unconsciously already using plant processes to understand things, as symbolic use of plants as a rhetorical device works to educate and increase understanding between species.

Positioning plants as potential teachers allows for a very powerful breakdown of an anthropocentric hierarchy. Similar to many other cases of the marginalization of certain bodies and beings, fighting for the right of who gets to speak when and how, and who will listen has vast consequences for the redistribution of power. While plants do not have human teaching voices and use of human language, the act of humans allowing themselves to understand plants as teaching figures to learn more about both them and themselves is a radical shift from an anthropocentric standpoint that continues to privilege human ways of communicating and conceptualizing.

Chapter Six: The Tending

In this chapter I ruminate on ways participants, including myself, tend their relationships with plants. In the previous chapter "Germination," I posited that participants in the present study came to their awareness of plants through a variety of cotyledon experiences nurtured by the nurse logs of family, community, human teachers, and plant teachers. These cotyledon experiences ranged from my participants becoming generally aware of plant-life as something worth noticing or integrating in their lives, to realizing it was a possibility to consider plant-life as potentially capable of sentience, to changing or reaffirming the narrative and ideology they held about the way to truly know a plant. Most of these stories were self-selected by participants after I posed the prompt "what are some of your first experiences with plants that you understand as important?" and their stories provided ample data to begin understanding when and how people who have non-binary relationships with plants start considering and exercising that ideology. In this present chapter, "The Tending," I gather and present participant stories that reflect how those relationships with plants written about in the previous chapter are nurtured and encouraged after the original cotyledon moments. These included participants' practices of "place-making" and practices of "relation-making," the second of which included several subthemes such as "plant friends," "making time/changing times," "exchange/gratitude," and "bodies like bodies."

Considering place and relation

Place-making has been a crucial part of my experience in coming to feel like New Mexico is home, and in many ways served as the impetus for how I came to think of place, story, and plants as inextricably bound. I am not from here, and I knew very little about belonging to a place before I moved here, having spent most of life moving through

different countries and ecosystems without a second thought. When I landed in New Mexico for graduate school, I spent a year in Albuquerque before my older instincts kicked in and I began to look for an excuse to pack my room into boxes and adventure elsewhere in the state, no matter how inconvenient it was. In an effort to escape the city and carve out some kind of Wild-west destiny I thought might still be in my cards, I moved five miles up a dirt road with a person I had met in Albuquerque who while particularly fascinating in character, had the most unsavory temperament when unhappy, which I soon learned was often. However, my human bridge of getting to the northern areas of New Mexico became quickly irrelevant, as it took me precisely one day of running my fingers through the thick sagebrush and plucking prickly pear fruit to suck the seeds into my mouth in order to develop an intense obsession with the landscape that I can only describe as romantic in proportions. I think that it many ways, the land still made me feel like I was at a house I hadn't been invited to, or a potential significant other who was very busy pointedly not-noticing me- which made me want to work even harder to be there. That is the way of old places. You don't always just get to show up late and be invited in.

The desert makes games out of belongingness, sometimes folding you in until red clay and rattlesnake backs are the only colors you dream in, and sometimes spitting you out, almost as if it wants to see how badly you want to adapt in order to be part of its splendor, its history. During those months of initial exposure to northern New Mexico I couldn't bear the thought of leaving these hills, this light, and the ever-present possibility of a coyote or hawk crossing my path. This was despite the unsavory aspects of my living situation including a well that had run dry, too much solitude, and the fact that my hair

was falling out from the climate. So I did what many plants do under stress;, I adapted, I cut off my inconvenient hair, and I attempted to lean towards the light.

And there was so much light in that valley. The primary source I sought was a woman named Jill. Jill was one of my teachers who led me to plants, but more importantly, she was a teacher who helped me understand the place I was living in and the relationships that needed to be tended there. Jill lived a half-mile walk down the rutted out dirt road from me, through yet another sagebrush field, past a resident rattlesnake sleeping off the fat bunny it had just swallowed and into a large dusty plateau where you were immediately accosted by two giant English mastiffs named Trucker and I forget the other-Bunny, I think. After hearing a sturdy bang on the door, Jill would yell, "ENTRE" and you would open the door to see her sitting in front of the fire with a rolled cigarette hanging from her mouth, two thin silver braids framing her face and her tiny feet encased in platform shoes crossed in front of her. Sometimes she would cleanse your aura with a sparking juniper sprig when you entered, sometimes she would hardly look up. It really depended on the day.

Jill grew marijuana plants; huge behemoths of sturdy green shrubs that she talked to every day, and grew increasingly more paranoid about when harvest drew closer. She had lived many lives in her 70 years (as a rich girl in the south, in New York as the old lady of the head of a motorcycle gang, in a commune in rural Arizona, as a member of the Native American church[25]), and it was generally a crapshoot whether or not she thought

[25] The Native American church was formed in Oklahoma (USA) in the 19th century and combines traditional Native American beliefs and Christianity with ceremonial peyote use.

you were the devil, but her home provided some of my first experiences to thinking about plants in terms relationships, and developing gratitude.

I remember her excitement when the *cota* started to bloom in its insignificant clusters in what seem to be the most inconvenient locations of sidewalk cracks, roadsides, and disturbed ground. *Cota,* was something I knew from my plant books, and in a possessive and colonial fashion, I had been looking for to tick another item off the lists of plants I had known and used when Jill showed the plant to me. However, one day, before I went out to collect the *cota*, Jill handed me a plastic grocery store plastic bag to place it in along with a packet of loose tobacco that she instructed me place on the ground wherever I plucked flowers. She also told me that I couldn't take the first bunch of flowers I saw, I had to make sure they were in abundance before I touched them.

Jill liked to talk about aliens. She was certain a ghost had moved her greenhouse in the last windstorm, and she wavered between virulent distrust and over-the-top affection for me; but these instructions she gave me felt true and right and old and real for trying to understand how to be allowed to stay here on this landscape. When I returned to her home later in the afternoon to her home, we lay the thin stems out of her table and she helped me roll them into coils to dry and use as tea. She reminded me that *cota* is a blessed gift from this land and that after steeping the herb, I needed to always lay it on the earth outside (just as she had us do with our rolled cigarettes, saying "as we come from, so we return" like a biblical prophet). I have not spoken to her in years, and I'm not sure she knows (or cares, frankly) how much she affected me, and how much she taught me about how to show gratitude to plants and to place...a practice that is sometimes one and the same.

At that point in my life, I had desperately needed a ritual to attach to how much I was beginning to love plants, but here in the Western world, we have so few practices attached to reverence of more-than-humans. Because of this, Jill's practices with tobacco and giving thanks felt like the spirituality I was missing in my life. The celebration of thanksgiving perhaps touches on this want to show gratitude, but ends up giving credit to fictionalized and problematic human stories as opposed to the earth and all other beings and creatures. In our fast-paced lives with fruits and vegetables that we urge to grow more quickly, and larger, in our dead-of-winter months where we somehow still pluck jumbo strawberries and other summer morsels from brightly lit grocery aisles, and in our loss of stories about how to relate to plants instead of use them, we have also forgotten (or declined to acknowledge) the place-making, relation-making, and time required to live a life in which we are in a constant state of tending. At the time I was living that story, I craved access to and understanding of a place. My childhood had been a riotous adventure with my globetrotting parents but I so deeply lacked the attachment to particular landscapes that many New Mexicans appeared to have. From my experiences and my understandings of the oral histories in this project, the lack or loss of these relation-making and place-making practices serve as ways that the act of ignoring plants is continuously propagated.

Place-making and relation-making arose as common and important themes in this study that were tied to participants' ability to relate and communicate with plant life. In a location like New Mexico, everyone had a story of how they came to be in this land that was presented as important. Participants who had lived here for generations and those who were recent transplants all included narratives concerning their journeys that allowed them

to come, and sometimes to return to certain lands. Land, it seems, is intricately tied to plant-relationships. Relation-making also arose as an important theme, and referred to moments and experiences where participants learned to relate to and show reciprocity and gratitude to plant-life, and where they tended whatever initial cotyledon moment they had had into a more consistent relationship. Those who held relationships with plants or affinities for certain lands where particular plants grew did not form them overnight, but just as with any meaningful friendship they had spent time learning how to approach plants, how to be around plants, and what plants were better counterparts for them than others.

Place-making

"Landscapes are not stages, containers, or mere environments for human and nonhuman actors. Landscape is not merely visually akin to a body; it is the skin of the earth. Land is not property or territory; it is a time-being marked by it's own wounds and vitality, a layered material geo-neuro-bio-graphy of bones and bodies, ashes and earth, where death and life meet." (Barad, 2017, p.83)

The first important theme in "The Tending" is "Place-making." Landscape and place constituted a large thematic category in this study, as it appeared that most people who are attached to plants are also highly cognizant of place and of the intricate journeys it takes to truly relate to a place or space and the beings that exist there. As previously noted, nearly every participant had a story about how they came to be where they are, even though none of my oral history prompts asked for specific narratives about place. It seemed that these people could not be in the non-binary relationships with the plant world they deemed important without acknowledging the ground on which they stood and the land from which those plants came. A Basso (1988) wrote, "a placeless event is an

impossibility, everything must happen somewhere." This "everything" includes the events that lead to non-binary people-plant relationships, and the tending of these interactions.

While I had originally surmised that folklore would play a large part in aiding in the development of people's sense of place and knowledge of plants, stories about place appeared more unconventionally than I had thought. For example, there were fewer canned folktales and more fluid interactions of story and place that were bound up in participants' family stories, arrival to New Mexico stories, and stories about certain plants. Arellano (2007) posited that New Mexico was a storied land full of multiple webs of narrative depending on the person and the group they belonged to. These webs of stories certainly revealed the mesas, mountains, city blocks, and farms that were involved in participants' knowledge of plants. The webs of stories also, in many instances, featured place as a primary actor and agentive entity. Again, the term "sympoesis" arose in my analysis as the stories, landscapes, people, and plants involved in this project were intimately linked, and while not always mutually beneficial between parts were certainly mutually affective.

Stories about place as it relates to plants fell most often into categories of arrival at, or historical ties to place. Some of these stories had largely to do with family and heritage, not uncommon in a place with a long history of land-based cultures. Some of these stories did not explicitly mention plants, but it was evident that the participants' relationship with land is part of what made their relationships with plants a possibility. For example, Miguel had extremely strong ties to the land he farms on through a long family history of living in northern New Mexico through childhood memories of the space he now inhabits. His attachment to his land came with a smattering of family stories that

were wound up in his Hispano and possibly Pueblo heritage (he wasn't positive), the histories of land grants, and his immediate and still-living family.

> My grandmother died in 1999 and my family sold this property in 2002 and I elbowed my way in so I been here since 16 years. All my memories from holidays and summer vacations happened on this property I mean these are my fondest memories, the acequia goes right there, the acequia del Medio way up there is acequia Madras so when I was a kid we would just go out in the boonies and play in all this water, and me and brother, you know I got a brother four years younger than me. And my grandfather died in the early '80s and then my grandmother died in '99 so I was like 28 and then yeah my family wanted to sell, three sisters my mom and two aunts so that next door I used to crash on her couch when I was doing my masters and then I started hearing that my other aunt wanted to sell so I let this aunt know that I really wanted this property and my aunt convinced my mom. My mom didn't want me to live here because my dad was here and they were divorced and addiction issues and all that and my aunt Marie figured out I wanted to live here and she just said I'm not selling to anybody but Miguel, I don't care how long it takes.

Miguel's stories show his and his family's historical affinity to the land he now farms on, and how intimately wrapped up his land and therefore his farming practice was in the social structures of his family. His memory of the farm in Taos could not be disassociated from the social interactions that happened in that space, and was bound to his childhood of coming to know the place through sensorial experiences and unstructured play-time. For Miguel, the planting of a land that had been in his blood for generations and that he had fought to keep was important, as was where the seeds he planted it with came from. The level of care necessary for the land was akin to how someone might treat an old family member, as opposed to a commodity that could be bought, sold, and understood separately from it's capability to provide and nurture the members of Miguel's family. In much of New Mexico, land takes on an animate quality due to the layered histories and ability to provide for its human counterparts, as well as for its unpredictability. Even

transplants had a similar affinity for the land here as some of the multi-generational farmers, and were attracted to the ethic of living close to the land that living in New Mexico still allows for.

While Miguel and participants with land experiences similar to his did not articulate specifically that they understood the land as animate, they acted on their relationship with it in a way that gave it a horizontal ordering that allowed for spiritual mutuality. The animate landscape is hard to position as less-than-human when it produces so much affect in the people on it, and plays such a central role in their sense of history and belonging.

Not everyone however has the privilege (or burden in some cases) of feeling and affinity to a landscape that had old ties with family and heritage. Like many people in the present Western world, Dara experienced years of placelessness before finding her version of *querencia* in New Mexico. Her love for the outskirts of Albuquerque came from an appreciation for the plants that grew there but also the space itself, which offered her a sense of home when she had none.

> I'm not from here, I moved here twenty-something years ago and I was a wanderer, an un-rooted ball of fluff floating from the sky and it wasn't a bad thing, I just didn't know what my purpose in life was. I didn't know what I supposed to be doing. I was young enough that that was still fun and games, and then I came out here and, most people associate me with the Bosque, but the truth is I was formed on the West Mesa[26] and that is my birthplace of the person I am.
>
> When I came out here I walked out on the West Mesa and at the time I didn't realize this was happening this is all the wisdom of retrospect, but that was the first that ever embraced me, and drew me in, and showed me that I had a purpose

[26] The West Mesa is an elevated landmass stretching from Albuquerque to Bernalillo in New Mexico that borders the Rio Grande floodplain.

> in life that was beyond my own, and I didn't realize all that was happening but as I walked out there I just felt love and gratitude and direction and it was like you know, literally feeling the breath of the earth come out of those vents and swallow me up in some sort of maternal care and I needed that at that point in my life and I think there's something for me…the plants out there knew more about me that I've ever known or even still know about myself but there's something about desert aromatics that really resonate with me and out there that's a world of desert aromatics When you're walking out there, you know of course it was the land that drew me in but then you get in there and you start looking at the details, you know a lot of people just drive right by the desert and don't even see anything they just see emptiness.
>
> You know everything is so small out there, you have to look at these tiny flowers and you're drawn into the detail and the intimacy and if you get close literally and touch these plants and crush them in your hands and these volatile oils enter the air and they surround you and penetrate you and they dislodge whatever is stuck in you and release it onto the air… and you just, your feet are no longer just on this earth your thoughts are no longer just on this air, you know you're connected above and below and all around all at once this intermingling of our vital forces and breathing in these particles and then breathing out with respiration with plants and all of that is inescapable out there you know you're out in this landscape where you are completely vulnerable and a tiny speck on the earth, and that experience is also very empowering and it opens up this whole world of discovery, and for me there's actually this added appeal of…the West Mesa is this place that's kind of forgotten and trashed and dumped on and loathed and I thought…there's so much magic out here, how could people think this way? I mean that land was literally used for bombing practice and trash dumps and I could see well beyond that and what I powerful place it was and it invited me into a world of discovery well beyond what I've experience on the West Mesa, but the West Mesa set me up to be receptive to all of this and I really think it was those aromatic plants out there, the Artemisia and the snakeweed[27]…those plants are just underappreciated and they are sweet teachers in my life that opened so much for me.

Dara's story demonstrated several themes that most participants' stories about place at least touched on. The interconnected relationship between people, plants, and place, the resonance that some places and spaces hold, the concept of *querencia*, and the agentive power of landscape. Dara's experience with the West Mesa offered a location and an

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[27] *Artemisia tridentata* is the Latin name for the common sagebrush, snakeweed is a yellow flowering grass that grows in the same habitat as sagebrush.

anchor for some of the plants she counts as her closest teachers. The place itself "embraced" her and "drew her in," much like my first experiences in northern New Mexico. Dara's story also showcases what many participants' narratives did in using rhetorical devices to give land agency in their oral histories. Even in my own opening story, without thinking, I attributed quite a bit of power to "the desert" as a character that had a considerable measure of control over me. This theme continued through other participants' stories such as Karen's. Karen discovery of place came from outside of New Mexico, but taught her much about how place had agency and pre-determined associations with certain plants, and could communicate with her how it wished to be communicated with.

> In southern Peru I went to a sacred spot and I went, I went with my tobacco, and my practice is usually wherever I go I put some tobacco and I sit, and in this particular place I had a really hard time connecting, I was seeing a lot of things that didn't feel were about this place but were more about me…so I felt that and I'm like, what's going on? And once I was out of this cave I thought….ah, this cave wants coca leaves, this is the area of coca, this is where you put coca leaves down not tobacco and it felt so strong, I'm honoring my tradition because I'm coming from my way of thinking of like, I'm gonna put tobacco everywhere, but this specific area you connect with coca, so that was a teaching for me.

From Dara's, Miguel's, Karen's and my own account of making place for ourselves, it is hard to separate place from plants. People who understand plants as possibly sentient beings also attribute a similar agency to the places, or land, where they grow. Karen's story gave another example of allowing place an agentive role, and how imbricated plants are in place. In her account, the cave she visited "wanted" coca leaves, as those were the plants that grew on the land around the cave. In her experience, she also showed how plants and place were connected in such a strong way that places knew when something didn't come from them. Most participants' stories involving plants referred to place

simultaneously. Perhaps it is a fundamental lesson from plants that when dealing with them, we cannot ignore place due to the utter rootedness of their lifestyles and the physical groundedness necessary for a plant to flourish. Whether people are farmers or wildcrafters who collect plants that were not tended by human hands, plants are indelibly tied with understandings of place because barring the transfer of seeds and certain potted situations, they cannot be moved, and will always prefer certain places for growing to others.

Once, during a conference panel about place relations, a wise colleague of mine named Maggie Siebert professed that when we do not own our houses or feel belongingness in certain landscapes, we tend to not care for them. She used the example of how people will not plant fruit trees or any other plant that takes a long time to grow at a rental house. Cantrill and Senecah (2001) remind us that humans who have history in or affinity to certain places were more likely to take action in the advent of environmental issues. Sense-of-place appears to be a crucial element in relationships with plants for several reasons. First, people who retain beliefs in plant sentience often extend that sentiment to all other parts of the more-than-human world and from this data, appear to view different beings in webs of relation as opposed to binaries or hierarchies. Second, because plants being are less easily disassociated from place than people are, people who spend a lot of time thinking, learning, and interacting with plant-life have to be able to visit the place where the plants are. Miguel's experiences in growing corn would have been quite different if he did not have access to farmland, and I doubt I would have ever began to try and understand the power of sagebrush if I had stayed living in my previous apartment building in the city. This is not to say that those without access to rural landscapes are without access to plants, but place still matters to the person growing a

potted aloe vera in their home, because the light and the moisture of the air still matter, and disrupting a plant's place by moving it from a window to an office corner will still greatly (and often obviously to anyone) affect its ability to thrive. Perhaps it's a metaphor that air plants and cacti have become the favored decoration of a modern urban hipster generation, the first needing no soil to speak of and easily moved from place to place, and the second requiring almost no tending or water.

A way of caring for, and showing respect to land is by knowing and acknowledging the plants that exist there. A way of coming to know plants is by coming to know the land that they grow on. And again, stories provide a way of accessing and remembering this relationship. Even without a formalized folktale about a certain place, stories about place involve details about plants and when a scene is set in any story that involves more-than-human elements, the type of trees or color of grass present is almost always mentioned. Establishing sense-of-place (Cantrill & Senecah, 2001) is an important step towards understanding plants in a non-binary manner, as in order to allow plants agentive roles, place must also be allowed to act in stories with power and agency.

Relation-Making

> "I just feel like a really know that seeds hold all of that time that has ever happened and all the potential for everything, and I know that people can really connect and really heal and I feel like that's what we have to do, develop relationships with seeds and with their nutrients." *-Marguerita*

While place-making, or coming to understand a place was important in many of my participants' stories, the relation-making processes that were used for place were even more prevalent in making relation with plants. The theme of relation-making refers less to of an individual moment in plant-people connection and more to the practices that participants used in order to form what they understood as reciprocal relationships

between themselves and plant-life. Relation-making was how they formed kinship, how they acknowledged plants as important and capable of relationship, and how they demonstrated respect to members of the plant world. Sometimes, this was how they came to understand their own identities in the scheme of the greater more-than-human community they were a part of. Often, it was about their practices that allowed for an ongoing relationship with plants. Themes that arose included "Plant-friends," or thinking of a relationship with plants in terms of friendship; "Changing times/making times," or acknowledging how it is much more difficult to make time for plants in modern society, "Exchange/gratitude" or consistent practices of showing gratitude towards plants; and "Bodies like bodies," or relating to plants by considering the similarities between all physical living bodies.

Plant friends.

For Cathy, having a relationship with a plant was everything for her personally and professionally. As she is someone who uses plants to heal, much of her philosophy had to do with the relationship to the plant having a direct effect on its ability to help humans; as she said, "The relationship with the plant and the way you make relationship makes good or bad medicine.*"* Like many of the people in this study, Cathy believed that engaging in an exchange with plants instead of using them as a commodity was the most ethical way to go about life, and that the time it took to form a two-way relationship with plants is what made them good healing medicine. An Austrian healer named Florian who lives in an earthship[28] north of Taos also believed this, and posed plants as teachers and as friends.

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[28] Earthships are off-the-grid sustainable housing that were primarily designed by Michael Reynolds' ideas starting in the 1970's.

This allowed him to more easily frame the multi-dimensional experiences he had had with plants throughout his lifetime, and gave plants the space to communicate with him how they could interact with his body. He said:

> Instead of saying, "oh the text book says this," it's like a friend, when you have a friend you have many different experiences together so the same plant or the same oil [essential plant] can actually teach you many things, reveal many things to you, it's not like "oh you're my friend for eating pizza and you're my friend for going to the movies." So that's another dimension, you let the plant show you what it's good for instead of saying oh the book says this.

Here, Florian's experience points out the complicated identities of plants that for many participants required time to access. In my pilot work for the present study, many of the communities I immersed myself in used the term "plant-allies" to distinguish which plants they had closer relationships with or plants that had a particularly strong ability to work with their physiological system. When I asked how plant allies were formed, it was recommended that I take time to sit with a particular plant, noticing it, smelling it, touching it, until the sense that one was getting to know it as a multi-dimensional entity seemed imminent. In the herbalism communities I learned from whose members practiced plant-relationships over simply knowing botanical terminology and medicinal interactions with the human body, people often took weeks to sit with just one plant. The concept behind this was that each plant was complicated enough to require time and space to begin to truly understand it, and the rapid-fire name-learning often associated with Western herbalism classes did not help anyone connect with plants as beings. Some participants even held special and specific relationships with certain species of plants that they had come to know over time. An art teacher named Basia had

particular affinity to aspens having spent much of her childhood in aspen forests; Karen always felt comfortable and connected when she was around tobacco and Marguerita had a close relationship with spider milkweed that she had fostered most of her life, saying:

> When I was like 15, I was in 10th grade I would have all these dreams I would feel her…they were profound, I could just feel her whole being of who she is there's no words or nothing I could just feel how she feels.

Marguerita continued to be visited by the plant in her dreams throughout her life, slowly getting to know the "energy" of the plant as she called it (see "Commune" below for more on energy), when it chose to appear to her. Throughout time, she began to feel a familiarity with spider milkweed, and an ability to learn from her and call upon her for needs.

Participants who had particular plant friends were also participants who had spent time choosing to be around plants and stretching their concept of communication in order to foster those relationships, establishing a familiarity with the plants that was typically learned by the body as a sensorial experience. They were also participants who engaged in regular communication with their plant friends and often took time to let a slow relationship develop with input from the plant taken into account.

Changing times/Making time.

Participants' relationships with plants included regular practices in which they actively engaged in spending time with plants. Many spoke about how a large part of this included slowing down, and posited that in order to be in-relation with plants, one has to be intentionally around them. They also considered how the dominant societal norms in the present day don't support this consistent contact very much. For example, Cheo said:

> Nowadays because I think, it's how times have changed. People have more money than earlier years probably, they can go to Walgreens or Walmart and buy and over-the-counter medication and in earlier years we depended on plants. And you planted the plants and you nourished the plants and you harvested the plants, and that doesn't happen anymore. You go to the store and buy them and they're cut green and they don't even taste like what they're supposed to…I don't think that people spend enough time with plants. Our modern day doesn't allow for that, people are constantly on their phone, or watching TV or indoors.

Cheo's concern for the lack of relationship with plants propagated by contemporary societal norms, expressed a lamentation that several participants held. In many oral histories, there was a sense of mourning for another time when people and plants were more obviously co-dependent, and a framing of the modern day as somewhat lost in its lack of focus on relating to the more-than-human world. While it is easy to label this as an idealization of the past, participants were not so much commenting that past eras were better, only that the necessity people had for plants in their lives is a large loss and a barrier to how close humans could be to more-than-human beings. Most societies are still largely dependent on plants but as Head and Atchinson (1990) point out, many of our plant products come in forms that are so far from their original plant-bodies that people fail to realize it. For example, few people consider that the gas in their car is the product of millions of years of plant decay, or that many of the pills they take were created from studying and isolating certain compounds of traditional medicine plants. Perhaps one of the projects of treating plant blindness is to help people identify the multiple roles that plants play in their daily lives, even in this modern era, whether they are aware of it or not.

Exchange/gratitude.

Another frequent theme in participants' tending of their relationships with plants was the element of gratitude, and the ethic of exchange when working with plant-life. In conversations about how they formed closer relationships with plants, several participants recounted that a system of reciprocity had to be established to be able to have ethical relationships with plants. Like Jill teaching me to leave tobacco before taking any *cota,* participants had ways of giving small symbolic gifts, prayers, and thanks to plants and locations that they took them from. Showing gratitude meant deeply considering and giving thanks both when planting and when harvesting plants, as seeds were often posed as sacred and nobody took credit for the plants ability to grow, even if it was in their own gardens or farms. For example Lorenzo's blackberry harvests were met with thanks, and he felt he had been in a relational exchange through singing and caring for the plants that made them so happy that they regularly produced in over-abundance. Additionally, participants acknowledged that it was not a given that they could take a plant to use, but rather a privilege. As Joey told me:

> I have a sage and I have a rosemary bush and before I pick from both I say "thank you for what you're providing me with and I hope that with me, picking this food, that you guys will then provide me with more." And then next year I come and I have more sage and more rosemary because I go outside and I talk to it and when I cook a burger I'll clip a little piece off and say thank you…and it's just like, being conscious of that life and that it's giving you life, because if you don't think about it as a plain and simple life cycle…all the earth is a life cycle, we live on a life cycle we are a life cycle.

Showing gratitude and creating exchange took time, and required intentional presence. When trying to gather plants, this meant that participants didn't always immediately return with what they sought, but instead had to wait until the exchange seemed equal, like in Dara's story.

> When I go wildcrafting[29]….it's always an invitation for exchange, it's this concept of receiving medicine without taking something physical and so sometimes I may find something in abundance and I wanna pick and so I do, but I never have that intention and so that attitude has opened me up to these lessons about how to essentially be a better person and live my life in this world by learning about plant ecology and observing plants.

Creating relationships of exchange also required trying to join what participants' perceived as "the plant world." This involved meeting plants on plants' own terms in order to feel close enough to understand how gratitude or exchange might be enacted, and when plants accepted the gratitude. Meeting plants on their own terms meant slightly different things for everybody, but most participants saw it as suspending human-centered concepts of time, talk, and movement and attempting to think and be like they envisioned a plant might. For example, Jeannette tried to explain what it felt like to be in-relation with plants in the following account.

> I feel like it happens all the time, not to generalize but for me it's about stopping. Because my life is frickin' crazy (right?) it's that plants give me another world to enter into or be a part of. I know that I have a time every day I can go into a different time and space, those hours are not hours…it's just about slowing down and being in a different world. I feel like those are the moments that you have to get something done but it's not based on the same kind of job or objective that you might have in other parts of your life because there's no end result, no end objective. It's about being with, it's about relating to. That's really key to me are those moments when I can just stop and be with something and then I'm aghast, amazed…wordless? When you feel like there's an exchange happening and maybe the exchange is that your senses tune into something. Maybe it's a sight maybe it's a smell, whether it's the time of something too- I don't think of time necessarily as a clock but time as the relationships, the movement the life of something? It's kind of like being sucked into a microscope all of a sudden it's a different world the colors are different around you.

Jeanette, like many, struggled a bit to put her sensorial experiences of being in-relation with plants into human language, but she recognized that her senses were what allowed

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[29] Wildcrafting is a term commonly used to describe the practices of finding and collecting wild-grown herbs and plants as opposed to growing them or purchasing them.

her to engage in an exchange after she joined the "different world."She also pointed out that "getting something done" and "relating-to" were two different things, showing how the process of coming to be in-relation was not a task that could be easily finished but rather one that needed to be consistently practiced. This is the nature of exchange in plant relationships. It is not a static event but rather an ongoing flow of intentional connection that has to be frequently nourished.

Bodies like bodies

Throughout this research, many different ways of relating to plants emerged from the data. One of these was my own experience of relating to plants through the reality of both of us having material, biological bodies. I found that my relationship with plants changed drastically when I was able to use them to understand newer experiences that were occurring within my physical form when I became pregnant. Something about being part of the cycles of creation, growth, and nourishment made me feel like plants and I were really quite similar after all, despite the differences in how we grew and cared for offspring. Western societies are often very particular about what is counted as a body, and certainly a body worth paying attention to. However, all critters and beings have corporeal existences, simply as a material fact of being alive in this physical realm of earth. The act of being alive is largely a social construction that privileges some modes of aliveness and not others (Chen, 2012). Considering other beings as having corporeal existences also invites the concepts of animacy and materiality.

In her (2009) book *Vibrant Matter*, Bennet works to illustrate a world where everything is in a constant state of vibration, not only plants and animals but also metal and plastic, and therefore a vital player in the world. She forces readers to consider the commonalities they share with all other material things, and the consequences of ignoring

this same-ness. While it may be a difficult leap for many to develop empathy for soda cans, there are several elemental ways that participants in this project and I have managed to envision relative sameness and, therefore, relation with plant-life. One of these ways is through the processes of procreation, a part of some human lives that tends to operate as an extremely powerful experience. Throughout my life experiences, people have no qualms about calling plants "mama" or "baby" plants, or speaking about them as having familiar corporeal processes as humans-being able to sprout, grow, and re-propagate. As Joey said:

> Whether a plant was grown and eventually going to die, or eventually going to fade away and fade away into something else, that's why there's reproduction and plants have reproduction systems we have the same reproductive systems, I mean there's pistils in frickin' plants and plants have different ovaries…how is it not alive if you're classifying these things of being male and female and attaching these terms to them?

All of these ways of framing plants give them the affordances we often save only for animal bodies, and as my own reflection below notes, perhaps this is an elemental method of connecting with other beings ways of doing "body."

> Journal 11/16/18 Taos, NM
>
> I have never felt such kinship with trees as when I became pregnant. People like to make obtuse comments about how "pregnancy changes everything" or "you've never felt so connected to anything" and I would prefer if those people in question would clarify what they mean by "everything" and "anything" because I'm pretty sure they mean one's worldview and the baby, but also that this is a limiting coverage of what the operation of growing something wonderful can allow one's perspective to do.
>
> I have only ever aided plants in growing and so my experience is rather limited when it comes to growing animals inside myself. When the little spark of energy planted (this word means so much to me now) on the lining of my fleshy shifting uterine wall I imagined a kale seed poked carelessly into the earth. When the awkward pregnancy websites told me the egg would snake out a fetal pole and begin to move from the original pink nest so the egg would have nutrients. I could only think of how the delicate white tendril of a root anxiously emerges from a seed pod, pushing itself into the soil in an attempt to connect the fungi and food

> that lives there, in a hope that it would be provided for if it just extended itself a bit farther. There is a shove when leaves unfurl and push off the seed casing that served as their only protection for so long, the tiny leaves expand not without difficulty to the sun, as they have used up all the sugars that came in their portable uterus. I wonder if this is shocking for the infant seedling, that first gasp of carbon entering through the stomata. The terrible danger and heartbreaking beauty of the world outside the womb. I imagine a lettuce sprout growing in my stomach, planted on the uterine wall, leaves waving gently in amniotic fluid. I see my unborn baby cradled in soil, the webs of mychorrizae fanning around her face and heart and feet in a fantastic weaving of nutrient rich communication with the mother tree, the way my blood vessels would gently pulse around the lettuce sprout.

I understand that dominant views in our culture might cause my reflection to be perceived as creepy, as most stories that involve a plant inside a person are about eating salad or obtaining some terrible parasitical situation or have Batman's Poison Ivy involved. It is easier for us to feel kinship with , I think. When we watch a cat birth and lick her newborn kittens we recognize the need to care for them in ourselves, and respect the mother cat for knowing what to do. The giant glossy eyes of kittens are like those of human children, a most excellent evolutionary mechanism to appeal to empathy, a 2.5 times larger window to their tiny souls. When we look at a seedling (if, we look at a seedling) it is more difficult to understand its relationship with its kin around it. It's hard to fathom that the recognition of similar genetics or the need to take care of those smaller and sweeter than oneself in one's species may be present here as well. It's hard to imagine how dependent you and that seedling's species are on each other for survival, and how badly plants and people both need to come-into and re-create material bodies in order to continue this cycle.

My journal entry continued:

> This sent me on a mild existential trip about whether or not it was ethical to eat sprouted things and made me consider that the roasted and salted sunflower seeds I liked to eat were technically processed plant eggs. I wonder if trees ever

have unplanned seedlings, and what might unplanned be in that world? Does it mean that her (I say "her" but perhaps our gendered pronouns are too elemental for the plant world) progeny is born into the soil in a year that is destined to be full of draught? Are her tiny sprouts too close to one another so that even despite the carbon she will nurse them on through her roots?

At the moment I was writing this, I believe I was struggling to make sense of the hidden mechanics of owning a procreative womb. However, this provided a starting place for me to begin to unpack how I made sense of my own body in relation with what I knew about the bodies of plant. Even more so, my ability to grow another human was dependent on trees ability to provide oxygen and other plants' ability to make bodies that nourished my body. This relationship was only accessible through visiting a sensorial dimension of relation, As Abram (1997) writes,

> The recuperation of the incarnate, sensorial dimension of experience brings with it a recuperation of the living landscape in which we are corporeally embedded. As we return to our senses, we gradually discover our sensory perceptions to be simply our part of a vast, interpenetrating web-work of perceptions and sensations borne by countless other bodies –supported, that is, not just by ourselves. (p. 65).

In being "corporeally embedded" in the world, we can tap into the sensorial productions that create stories of same-ness with plants.

Alaimo (2009) called for transcorporeality to be taken into account in interactions with more-than-human nature, writing:

> Human corporeality as trans-corporeality, in which the human is always intermeshed with the more-than-human world underlines the extent to which the corporeal substance of the human in ultimately inseparable from the "the

> environment." It makes it difficult to pose nature as a mere background for the exploits of the human since "nature" is always as close as one's own skin. (p.238)

Here, Plumwood's (1997) assessment that is it impossible to completely depart from anthropocentric thinking due to our inability to embody an experience outside our own might be useful, and indeed hopeful. Perhaps we cannot completely feel in our bodies what it is to be in a redwood or a daisy body, but we can potentially use moments of similarity in both our own and plant life's quest for survival, longevity, and for some humans, procreation. In reflection on this journal entry, I was able to empathize greatly with trees through feeling as though we were doing something similar with our corporeal existences, by facilitating new life and helping provide nourishment for it. In this instance, the material realities of having bodies transcended how different those bodies were.

Still, even in attempting to consider all bodies in the more-than-human world through the lens of relation to human beings, the threat of anthropomorphism looms. Often, in relating to other beings and finding commonalities in our behavior, it is easy to over-apply our human experience lens and reasoning system onto them. Perhaps this is a necessary starting point however, to highlight the sameness that living beings with bodies have as opposed to highlighting the vast and obvious differences. For example, it is known that trees in highly populated urban areas with street lamps have shorter lifetimes than trees in more rural areas. One part of this shorter lifespan is due to how trees in urban areas never get to "sleep" properly, as the constant light pollution make it so they have a harder time going into a dormant state and ceasing to try and photosynthesize (Wollehben, 2016). In this example, most people can envision the exhaustion of nights of trying to

sleep with the light on, and the loss of energy from the body, could be argued as universal. Even bacterium cannot function without proper intake of energy.

Theories concerning materiality and trans-corporeality pose powerful possibilities for multi-species relationships. Trans-corporeality provides a concept that encourages thought on the utter permeability of all bodies. In moving the definitions of sentient life from having a conscious brain to simply having a body, all sorts of creative conceptualizations of relation have space to unfold. In many ways, a conscious brain located in one part of the body is actually a detriment for much of the animal queendom, because any harm to it translates as "game over" for the rest of the body. Plants technically have brains that are their whole bodies, meaning they can easily lose a leaf or part of a root and continue to flourish (Trewavas, 2012). A species of fungi called *schizophyllum commune* has over 20,000 ways of sexually identifying that can match and mate with large amounts of other genders within the species (Scharping, 2017). In a time in which some parts of the planet have more freedom than ever to queer our own human bodies and evolve into different ways of expressing gendered and sexed bodies, to re-define what reproduction is, and what being alive is, what might we have to learn from plants and fungi about doing or performing body?

Nurturing relationplace

This chapter discussed "The Tending," or the ways in which people who have non-binary relationships with plants nurtured and envisioned those relationships. "Place-making" and "relation-making" were the two strongest themes that arose from the oral histories and auto-ethnography. "Place-making" included stories of affinity to certain landscapes from family heritage, and also stories of moving to New Mexico and finding a sense of home upon arrival. All stories made it clear that plants and place were extremely

tied, which allowed me to propose that part of understanding plants in a non-binary way is conceptualizing plants, place, and people in a mutually affective weaving of one another and difficult to talk about without recognition of all elements. While this is only one data set specific to New Mexico, it seems possible to argue that people who feel close to plants tend to have intense attachments to certain places, and feel affection and respect for the landscapes that were wrapped up in their stories. Participants performed "relationplaces" and "relationplacing" in their deft practices of forming and maintaining dynamic relationships with land, people, and plants simultaneously. Because some participants were so attached to certain places, I argue that their stories are also attached to those places, making certain locations both the containers and main characters of many of their life stories. Not only does folklore seem to rest in places as Basso (1988) and Ryden's (1993) claim, but personal stories and stories about plants do too. Learning to know place is part of learning to know plants, and the tending of both relationships are closely tied, as participants had to care about land in order to fully engage in relationships with plants.

"Relation-making" was the second theme that arose in how participants tended their relationships with plants; it was divided the several sub-themes of "Plant-friends," "Changing times," "Exchange/gratitude," and "Bodies like bodies." "Plant-friends" showed how participants sometimes engaged in relationships with plants by conceptualizing them as friends, with all the multi-dimensional attributes that one might wish from a human friend. Framing plants as beings that were capable of friendship offered a challenging way of thinking, as the term "friend" is universal, complicated, and conceptually loaded in human languages and lives. Another way that plants and especially plants medicinal to humans were framed was as "allies." As most people in the

communication field would argue, words matter, and they have the ability to help us make sense of both ourselves and the more-than-human world (Carbaugh, 1996). Referring to plants as friends or allies imbues them with the symbolic power already attached to those words and makes it easier to look for ways that plants could be perceived as friends.

The theme of "Changing times/making time" referred to participant experiences of feeling like the norms of the modern world worked to create a barrier between people and plants, severely cutting down on the amount of time people spent working with or around plant-life. Within this theme, it seemed that some participants perceived Wandersee and Schussler's (1999) plant blindness as a condition that is most predominantly located in current times but has not always been the normal way of living. While "time" was a theme that ran through most of this chapter, participants specifically attributed a lack of plant relationships to a lack of time spent around plants, and noted that many humans have forgotten how necessary plants are historically and presently to humans' survival as a species.

"Exchange/gratitude" referred to practices of showing thankfulness to plants and actively trying to engage in relationships of reciprocal exchange with them. In the opening story I shared for this section, I wrote about how I was taught to ask a plant's permission before taking it, and to always leave an offering. Many other participants also had practices like this though their type of offerings varied. Here, the importance of ritual in engagement with the more-than-human world becomes very apparent. As Bataille (1996) and Cajete (1999) remark, stories and practicing ritual are ways of performing resistance and honoring place. Ritual provides repeatable practices that hold symbolic meaning for both the performer and the watcher, and can be done and redone in a way that brings

attention and importance to the subject of the ritual. Using rituals of gratitude when working with plants communicates their importance and allows people to consider their use of plants as a privilege as opposed to an unquestioned right. Rhetorically framing relationships and interactions with plants as an exchange also helps to position people and plants as more equal than what the hierarchies of binary-based worldviews promotes. It also gives plants an agentive role where they are discursively posed as conscious members of an exchange instead of passive recipients or providers.

The last subsection in "The Tending" under "Making relation" was titled "Bodies like bodies," and included a discussion of the materiality of all early beings as a possible bridge towards relating to plants. Using an auto-ethnographic journal entry written shortly after I became pregnant, I considered the ways that thinking about plant bodies and human bodies as being capable of many of the same things can make it easier to relate to plant-life. Drawing in Alaimo's (2009) concept of transcorporeality and Bennet's (2009) re-visitation of materialism, I ruminated on how processes like procreation might help humans (including myself) see themselves as simultaneously imbricated with and similar to other beings in the more-than-human world. Though not used extensively in the present project, theories of materiality, and re-conceptualizations of corporeality or what it means and is to have a body and who/what has this privilege could be extremely transformative in evolutions of human and more-than-human relationships. Additionally, this portion of analysis opens up several questions about gender, sex, and body in relation to plant-life which, with more analysis, could offer important reflection in adding to theories of queer ecology.

In the following and final analysis chapter, I discuss in depth another important element in making-relation with plants: communication. The chapter, “Commune,” summarizes some of the many ways that participants conceptualize and operationalize communication with plants, and how these fit into theories of communication, biological research on plant communication, and future possibilities for more expansive definitions of communication that include the more-than-human world.

Chapter Seven: Commune

> "In the same way that the organs in our body communicate with one another to maintain homeostasis the whole system, there are all kinds of communication systems happening that are not just selfish but part of a larger system." -*Florian*

In the current chapter, I use the term "commune" to describe some of the ways that participants experience communication with plant-life. The term commune is used alongside communication because the methods that participants provide for communicating with plants do not fit neatly into some of the ways that communication is framed within the academic field, requiring new terms to suit the elasticity of communication that people experience when communing with the more-than-human world. When participants use the term communication themselves, I use this term to analyze their stories, but when they describe communication as something more multi-dimensional, I use the term "commune."

Throughout this chapter, my analysis shows that participants in this study understood and enacted communication with plants through conceptualizing it via three main themes. These included "Feeling energy," "Words," and "Traditional/observational science." The theme "Feeling energy" had to do with nonverbal communication people had with plants and their use of terms like "energy," "vibrations," and "intentions," with a heavy emphasis on the verb "feel." The section titled "Words" discusses the dialectical tensions many participants had in placing and using human language in the context of plant communication, as many simultaneously needed and fought for certain ways of speaking when talking with and about plants, and eschewed classification-based words for their limiting capabilities to engage with other nonverbal forms of communication. Lastly, the section "Traditional/observational science" discusses the instances of how some participants understood plant communication through a more traditional scientific

lens of observation and evolution. This didn't necessarily mean that they considered plants as insentient or incapable of communication, more that they regarded their personal methods and conceptualizations of plant communication as based in "rational observation."

Feeling energy

Many participants used words like "energy," "vibration" and "intention" to try and explain the wordless communication that they felt plants could emit, and most participants' experiences communicating with plants were largely nonverbal. Almost all participants used the word "feel" to discuss how they communed with plants, a word that is often posed as illegitimate knowledge gathering in Western cognitive-privileging epistemologies. For example, Keith said that when people came in to his herb shop, he could just feel what plant on his herb shelf was going to match them best. Or, when Karen was trying to get to know new plants, the communication happened through feeling them in her body as she moved around them.

Lorenzo understood plants to commune with what he termed vibrations and energy. Lorenzo was very tied into the energetic resonances of the plants around his farm and while professing, "I have no scientific proof," he felt that the abundance of his fields was at least partially due to his relationships with plants and his regular practice of tuning into them, especially when the plant was unwell.

> When a plant is sick I feel it, I can feel its vibrations. It doesn't tell me what is wrong…but I know that it's unwell so I pay closer attention to those plants, this is a very concentrated effort, you're not working with anything you're totally focused like any art like music or painting to poetry it takes total focus, no outside influence, just you and that living creature. So it's a meditation. And I go about my business, I pull weeds, I don't speak to all of them directly, but as a group of creatures around me I'm always aware of their existence their presence, their vibrations.

When asked about a plant communication moment she had experienced, Dara also shared that communing with plants was a way of meditating, and that truly engaging with them meant taking a quiet and receptive role where information from the plant comes in the form of energetic "reverberation."

> I originally grew this because I wanted to harvest mullein[30] flowers was my original idea, and every day I would go out and look at this and it had very long bloom time so I had many days going out and looking almost longingly at this party of life that was happening all around it, you know it attracted so many bees and other pollinators so every time I went out to look there was just this incredibly strong reverberation of life all around it that literally penetrated me, and every day I would come out with this little cup thinking I was going to pick flowers <laughs> and every day I would just stand there like Oh my god how can I even disrupt what's going on here, Right? Then one day I came out with my cup in hand <laughs> and it was a totally different experience, I felt clearly invited to the party that day, and I don't know what changed, but I felt like I was being invited to partake in this glorious exchange of vitality that was occurring around this flowering to… it became not a mundane task but rather a mullein flower meditation and every movement was done with deliberacy and love and intention such that it brings on almost like a trance-like state and as I told you…I'm a person in my logical mind by nature and one of the things plants had to teach me first was to be a more balanced human being.

Dara found that establishing commune with the "reverberation of life" around the mullein plant made her understand that it was not ready to be disrupted, and once the mullein was ready to be picked, Dara had reached a meditative state of commune with the plant that allowed her that knowledge. In Chapter Six, Jeanette talked about being able to relate to a plant through dropping out of the more human constructed sense of time and space and dropping into the plant's perceivably different plane of reality. Dara found that commune with the plant came focusing on the living system of beings around the plant and tuning

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[30] Mullein is a tall plant with a yellow rod of flowers that is often seen growing on roadsides in New Mexico. It's flowers can be used for ear infections and it's leaves for asthma.

into whether or not she was "invited" to the energetic and figurative party the plant provided for other beings in the area. Similarly, Cathy thought that plants communed through an energetic force that could be accessed by paying attention in one's own intentions when approaching plants, but instead of Dara's metaphor of a party, she described it in terms of the soul as a way to frame the nonverbal energy necessary for plant communication.

> Part of the way to communicate with plants is getting out of our own way, because it's a soul to soul communication so it's finding that part of ourselves that is able to be, in a way, passive, and allow a plant to come to us, and that's a very difficult change for many people because we're in a society where it's all about "we are in control." We go out and do anything…but I couldn't communicate with you if I thought I couldn't communicate with you and if I didn't say….there's no doubt, when I say something to you I'm gonna say it. I'm not gonna say "oooh I'm gonna try and communicate with you." It's nonverbal but it's the same energetic.

Both Cathy and Dara practiced allowing the plant to take the lead in attempts for commune, which like those who positioned plants as teachers or friends, allowed plants a relative amount of agency in their relationships with humans. Marguerita had also had experiences of plant agency in communication. By way of dreams, one of her favorite plants had visited her over the years, an experience that Cathy had shared as well. Both of them counted the dreaming as another way that plants had the ability to commune with humans. Marguerita additionally felt that seeds were a way of communing as well as plants as a whole, as hey held an important resonance that had the ability to connect humans to other people.

> I just know, I could be full of shit but I feel like I really know with all my heart that we can connect to our ancestors through seeds, even if they weren't the one's your grandma had, just if they were from your area or your lineage because I feel like they're super connected, they're like infinity and it's heavy.

In questioning people about where they felt the communication with plants, a variety of answers arose ranging from "my whole body" to "my bellybutton" to "I just do [feel it]." I found it difficult to tease out what participants meant specifically by the more ambiguous terms that they used, even with further questioning. What was clear was that for the most part, their communication with plants was mostly nonverbal, and occurred in a process that involved both body and mind and that was difficult to put into words.

Words

"There's no words or nothing, I can just feel how she feels*." –Marguerita* [about spider milkweed]

The topic of words also became a major theme, as there seemed to be difficulties and discrepancies, even within single oral histories about the role that human language played. Some participants positioned words as barrier for communicating with plants, while others saw it as a necessity. Some saw them as both simultaneously. While some participants' stories posed words as a barrier to being able to obtain the kind of energetic or sensory communication with plants that many claimed was required for commune, other stories positioned human language as important and also understood by plant-life. The data in this section showed that most people had tensions with words and more nonverbal forms of commune where they oscillated between the sense-making necessity of words and the fluidity that nonverbal commune provided. This created a dialectic between words as important to conceptualize communication with plants and words as a barrier to embodied or nonverbal ways of conceptualizing. Additionally, participants' stories supported that many people struggled to put plant communication into words, as it seems that humans possess a lack of words that work for both human and more-than-

human experiences in at least the English language that these oral histories were recorded in. As Jah said:

> I think it's like really hard to communicate in the same species, I find it hard enough to get my point across without missing half the things I wanna say and using the words and emotions I want to put through, so that's one gap already between us [people and plants].

Participants often spent considerable time pausing during their interviews in an attempt to figure out the right words to explain a relationship or communication moment with a plant that occurred, or checking back in with phrases like "it's hard to explain." And, "did that make sense?" allowing me to surmise that they were often unsure how to put their experiences into easily understood explanations.

Lorenzo provided and excellent example of the tension between words and nonverbal, as he seemed to exemplify a dialectical understanding of words with communication in plants. He said that the people who have the best chance of talking to plants were children, because children were more willing to communicate without words from human languages, having not established a dependency on them yet.

> They think in pictures. They have no language to interpret what they see it's all just all energy flowing back and forth and it's nice to watch, it's actually very fortunate that I'm able to think the way I do and to put it into practice.

Still, he also believed that the loss of the Spanish language in the youth of New Mexico was an enormous detriment to forming relationships with plants, as many of the agricultural plants here had learned to be in-relation with humans through the language of Spanish and might no longer be able to recognize their tenders. Lorenzo's tension is particularly interesting because it highlights the entanglement of human languages and the potential of more-than-human and human languages with the complicated histories of New Mexico and the discrepancies of how to frame ecocultural connection. On one hand,

Lorenzo saw energetic communication as crucial for relating to plants, but on the other hand, he felt the language associated with that energetic communication was also important. Here, Abram's (1997) account of Merleau-Ponty's (1970) work becomes useful. Merleau-Ponty conceptualized perception as a participatory event of sensing bodies, and the interchange of language happens in both the body and the bodies of other. He posed language as not specific or special to humans as it is made by interaction between the earth and ourselves. With this in mind, Lorenzo's mourning for the Spanish language as a way of properly speaking to the plants may reflect the way that language and land co-construct one another (Basso, 1988). Indeed, as Carbaugh (1996) and Milstein (2009) point out, human language is a necessary sense-making tool for the more-than-human world so learning how to interact with possible more-than-human language systems might still require a reliance on human language to contextualize input.

Miguel also explained plants as possibly very energetic in their way of communicating, but had a theory of plant communication that involved a mestizo folktale about gender in history that helped him make sense of the importance of plant communication as well as the relationship between gender and plants.

> The story I got was that the women would communicate with the plants. The men were out there doing a communication that didn't involve words because we were chasing the animals but the women were involved in a communication that was intimate with the plants because you know, if you eat the wrong plants you'll die. And so their language took on a different context, their language development, you know women in terms of language and conceptualization (here we [men] are trying to lean to run down animals or chase them off of a cliff or track 'em down) so they would be gone for days at a time hunting in silence and the women of course were gathering piñon and figuring out seeds and all this. You know so there's that whole aspect of that too, but that they were able to communicate with the plants and figure

> out "oh, osha[31], that's good for you," and also to observe…the it was the role of communication between women and the plant world to figure out the remedies, the medicinal plants, when I'm starting to freak out now to fast forward to where I freak out on the whole thing now is thinking about vibration and intention and why is it that some of these plants are good for everything?

In Miguel's conceptualization of the plant communication, human language was actually quite dependent on relationships with plants, as it was only when plants needed to be communicated about more that human language began to develop in full. The roots of this folktale pose interesting opportunities for relation that also reflect Abram (1997) and Merleau-Ponty (1970) because it once again positions human language as ultimately entangled with the more-than-human world and humans' desire to know it, name it, and survive in it.

Another participant Joey was less concerned with the possible contradictions of using human language to talk to plants. He expressed that felt fine about speaking to them as he would to anyone else, and felt understood and listened to regardless.

> I'm just a person who talks a lot and who feels everything and sometimes I just go to my garden and cry to my plants and after I just feel so much better whether I'm just sitting there talking and just letting all my emotions out to my plants or to my dog or whatever it is it's just like…that talking aspect of talking to another life. Sometimes I'm talking to my dog while I'm talking to my plants and they're both listening and just absorbing everything I have to say and I think also…I think talking to that plants and releasing all these things and just having it be absorbed without judgment. It is a therapy to sit there and talk to my plants.

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[31] Osha is a medicinal root that grows at high elevation in the Southwest that is used for several ailments in New Mexico including respiratory issues and immune system problems.

Participants' stories can be placed in two camps concerning verbal communication. In one, verbal communication is necessary and useful in communication with plants, and in the other, verbal communication is a type of communication that staunches peoples' ability to communicate with more-than-human bodies. As Joey, Miguel, and Lorenzo (at least sometimes) placed importance on verbal languages, several other participants thought that language could be a dangerous way of dissociating for plants, like Cathy, who said:

> Words actually distance us from each other because we can use systems of communication of plants with each other, and actually get a lot closer to each other, words are barriers.

Cathy thought that the nonverbal communication systems she deemed necessary for plant communication could be used between humans as well for a different kind of depth that words could not adequately communicate. In later stories, she echoed what other participants had said about taxonomic systems, and how she distrusted learning plants only by these systems, because the words got in the way of the "soul-to-soul" commune that was what made an actual relationship. This argument is reminiscent of some of the struggles noted in "Germination" that participants experienced in navigating the taxonomic classification systems that people often come to know plants by and a more corporeal way of knowing.

Observation/traditional science

Some participants had ways of conceptualizing and performing plant communication that fell less under the umbrella of energetic and corporeal ways of knowing and feeling and more aligned with traditional Western ways of doing science. This included basic observation through scent, sight, and long-term evaluation of what certain signs meant in the plant world. While participants who thought this way didn't

necessarily think of plants' signs and signals as astringently as Schaefer and Ruxton (2011) who wrote about plant communication as a near mechanical firings of cues and signals, they were more likely to involve evolution in their understanding of the basic tenets of plant communication. For example, Florian made sense of his commune with plants through the co-evolution of plants, insects, and human beings.

> Even before medical school, the question of why do we have neurodopamine transmitters these molecules that are in the human brain and actually very important to human functioning are actually plant molecules…and why do we have a sense of smell? The molecules we smell are made by plants and long before humans walked the earth flowering plants and aromatic plants co-evolved with pollinating insects so they figured out how to communicate through scent and I think that our brains from the beginning of evolution evolved to be able to connect with plants and one medium of that are these aromatic molecules and that's why we have these seemingly strange, really originally plant molecules in our DNA and in our cells.

Jah similarly understood plant communication as a system of co-evolution that is in many ways, much more efficient than words.

> Maybe I'm over rationalistic, not into the woo woo hippie stuff my mom loves but for me, the way plants communicate for us are these co-evolutions, you know how the reproductive system of plants is a really intricate co-evolution with insects and bats and mammals for a mutual aim (you know, I'll feed you if you spread my seeds) and that takes loads of different shapes and forms, stinging nettle ooh don't touch me, the cactus ooh don't walk on me, the really beautiful plant ooh pick me or for me, that's how I see the way we interact together and that's what I could call plant communication.

While Jah was fairly cemented in his botanical science background that lead him to think of plant communication as a product of evolution, it didn't mean that plant communication was necessarily a constant automatic response. For him, plant responses and people responses both came out of necessity to communicate certain important things pertaining to staying alive.

Miguel had many spiritual beliefs about plants but when it came to actual communication, he felt that it occurred most often from observing signs that were learned, the way that anyone must learn certain signs of internal states in any kind of relationship. When asked about plant communication experiences he had been a part of, he told a story about a time where he read the signals his plants were sending out, and was able to because of the amount of time he had spent around them.

> One time my dad comes out here years ago and he's like, "dude the acequia was flowing full blast!" and he's looking at my squash plants and he's all, "dude why don't you ask the mayordomo[32] for some water? There's clearly plenty of water and your squash clearly needs water." And I go, "they don't need water dude, and he's all, look at them, they're all sad and pathetic their leaves are all droopy," and I was like, "they don't need water. It's hot, that's what they're doing, you and I are gonna be out here until we go in the shade, they're not gonna go in the shade. This is how they do it." I tell him, "come out at night and it's a different story, and if I come out in the evening and they're still having a hard time perking up, then I say "hey mayordomo I need the water.''

Participant stories that conceptualized plant communication as based in evolution, signs, and signals offer another way of considering more-than-human communication. While it appears as more traditionally scientific, communication like this also relies on corporeal knowing in many ways. Just was human beings growing up learn or intuit that a smile is generally an invitation or sign of goodwill, people looking for signs on plants can read where a plant is in its life by its flower, or if its lacking nutrients by the color of its leaves. This part of the data was particularly interesting to this project because it showed clearly where people

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[32] Mayordomos are community members who help make decisions about the maintenance of acequias and the distribution of water.

with non-binary relationships with plants and traditional sciences that seemingly eschew these relationships are really quite similar. The discordance between these two groups comes less from the mode of communication and more from the perceived intention or agency behind the communication.

The Trouble with language

> "I think its reductionist and slightly insulting to the plant world to say that their only aim is reproduction. We came after plants, everything that's on this planet is a part of us and all we have to do is contact, we're cut off from it, and when we actually communicate with plants we're not making a new relationship, we're reactivating something that we already know, and something that's in our DNA." –*Cathy*

In the above quote, Cathy was responding aggressively to another person's comment about the evolution of living things and the reasons they developed languages. Cathy vehemently argued that plant communication is an old way of knowing, and framing plants as only communicating for the purpose of reproduction is very harmful to human-plant relations. However, many people in this study positioned evolution and scientific observational models of signs and signals as viewpoints that didn't necessarily negate the more "energy" and "intention" -based commune that many participants understood as highly possible with plants. Instead, participant stories reflected that there was space for several ways of knowing and communicating to exist simultaneously while still holding relationship with plants.

All participants in this study were open to forms of communication and commune that did not fit more hegemonic conceptualizations of the term. The methods they used to commune with plants made them very accepting of nonverbal communication as a way of communing that both humans and more-than-humans shared, and they needed to rely on somewhat vague terms like "energy" in order to talk about their experiences. While most

academic fields in Western society certainly acknowledge nonverbal communication as enormously important to human communication and understanding, very little inquiry has been done on nonverbal communication with more-than-human bodies. Even less inquiry has been done on the ways humans receive and interpret nonverbal communication messages. For example, when a human crosses their arms and glares in an argument with a friend, does the friend receive the message that they are frustrated simply through having learned what that body language meant as a child, or is there another element of intuition that relies on something…else? Similarly, when a mother or father gets a gut-wrenching intuition that their child is in trouble, is it because they watched their child closely all day to know that something was amiss before the child departed, or is it that, and something more unexplainable as well? Questions like this provide space for the myriad of unknown ways that beings in this world might send and receive messages.

Participants' commonly used the term "energy" to explain their commune with plants. Energy, as defined by the Merriam-Webster dictionary, is strength and vitality for sustained activity, power derived from resources, and in a physical science sense, the property of matter and radiation with the capacity to perform work like causing motion or interaction of molecules. Participants' use of the word energy aligned more with a "spiritual energy" definition. According to Science Daily (2019), energy in spirituality is the "widespread belief in an interpersonal, non-physical force or essence" (para. 1) and a reliance on the view that everything in the universe is made of energy. While this definition of energy is often dismissed by the Western scientific community, the ability of matter (or all things, according to Bennet, 2009) to perform motion or interaction of

molecules, and the spiritual energy assumption that everything in the world is made of energy are not necessarily discordant.

Terms like "energy," "intention," and "vibration" are fascinating due to how vague they are. "Intention" is a difficult enough word when only dealing with humans, as it refers to an unseen and highly un-provable internal thought. While both "energy" and "vibration" have primary definitions from traditional Western science, they have a much more flexible definition when used by people with non-binary relationships with plants. These ambiguous terms show us where we have holes in at least English, where the words to describe and contextualize certain phenomena do not yet exist. They also demarcate phenomena that are, at least in this study, very closely attached to the state of having a body made of matter t hat can receive and distribute "energy."

Seegert (2016) argues that the body has the potential to provide a powerful site for exploring communication with more-than-human animals, and Abram (1997) argues that language is directly connected to the experience of having a body. Maybe these holes in the English language to be able to describe communication that does not revolve around rational empiricism also relate to holes we have in the understanding of the capacities of our bodies, and the persistent habit of Western thought to create large binaries between body and mind. Based on Alaimo's (2009), Abram's, (1997), Bennet's (2012) and Rogers' (1998) discussions of materiality, I argue that intentional language can be conceived as a product and process of having a material existence; that is, a body. Under this worldview, many, many, species of beings have the potential to communicate in one manner or another, and possess ways of doing language we humans may not have even imagined yet.

Participants' emphasis on the word "feel" continues to position commune with plants as an embodied act. Unfortunately and not coincidentally, the action "feel" has been unfairly associated with femininity and has therefore suffered a concordant amount of disregard as women have historically experienced in the Western world. Those ways of knowing that are associated with femaleness, materiality, and corporeal knowing put knowing through feeling and plants themselves in a dangerous position of being not only passive, but also irrational and disorderly (Merchant, 1990). I propose that in order to allow more creative ways of understanding communication with more-than-humans, the perceived chasm between knowing and feeling needs to be reevaluated, and that discounting the word "feel" which is used for nearly everything that does not have a Western empirical experiment backing it up, cuts off the possibilities of other ways of thinking, knowing, and communicating. New ways of thinking must be felt far before they are known, evaluated, and tested. The more recent discoveries in plant-to-plant communication show the vast amount of channels that plants communicate through, including mycorrhizal networks (Barto, Hilker, Muller, Mohney, Wedenhamer, 2011; Wohlleben et. Al, 2016, Gorselak, Asay, Pickles, & Solar, 2015;), and vascular systems, volatile signaling, and electromagnetic spectrums (Karban, 2015; Trewavas, 2014). The diverse methods with which plants share nutrients, warn one another of danger, attract pollinators, and, as Pollan (2009) sees it, convinces humans they are important, are relatively new discoveries. If this is all such new information, how are we to know that we too, don't have many more channels of communication than what we already study?

In this chapter, the ways participants' oral histories spoke about communication and commune with plants took several different tracks. While many understood commune

with plants through hard-to-define concepts like “energy,” and struggled to put into words the largely nonverbal, affect-based communication that they used and received in commune moments with plants, others struggled with tensions between words as a barrier to the kind of embodied commune plants required but also an important way to reach out and talk to them. Finally, some participants understood their communication with plants as a product of co-evolutionary responses. In all of these sympoesis (Haraway, 2016), or the tangled, powerful imbrications of human and more-than-human communication systems, were apparent. While participants had vastly different ways of getting to the process of plant communication, they all believed it was absolutely possible. Additionally, all of them envisioned the communication or commune as existing in an intensely interconnected world of systems, where dreams, energy, intention, vibration, evolution and more-than-human participation all mattered.

Chapter Eight: Gathering

The purpose of this study was to explore plant communication and relationships from a story-driven perspective. Because so little research has been done focusing on how people's communications and relationships with plants actually occur or function in a Western context, the study aimed to provide primarily exploratory data and thematic categories. The hope, was that identifying some themes on this subject might provide a basis for asking better questions about the intricacies of people-plant relationships, an important and pressing set of knowledge, especially in the wake of current environmental destruction through deforestation, overconsumption, and other harmful practices. Recent effects of climate disruption causes the irrevocable loss of many species (Pimm, 2009), disruptions of important communication between plants and pollinators (Mermott, Craze, Waswer, & Price, 2007) and forced migration of plants as well as extinction of those species that cannot migrate quickly enough to escape the changes of climate disruption (Neilson, Pitelka, Solonom, Nathan, Midgely, Fragoso, Lischke, & Thompson, 2005). To say the least, all of the more-than-human world exists in a state of precariousness right now, and humans are beginning to come to terms with our troubled Earthly existences in relation to other beings and creatures. If there was ever a time when tuning into the more-than-human world socially and scientifically was of utmost importance, it is now. This chapter reiterates the major themes that emerged from this data, and describes the limitations and future directions of this study.

In this study, I aimed to gather themes that could provide a response to the research question "How do people who have non-binary relationships with plants understand and enact communication and relationship with them?" I chose to ask this question because of the enormous gaps in research on how human-plant relationships and

communication occurred in Western contexts. These research gaps are troublesome to me, especially due to the astronomical impact that industrial practices in Western societies have on the more-than-human world and plant-life specifically, as well as the prevalence of plant blindness. In response to the research question, I found that non-binary people start relationships with plants largely through external influences such as kin, teachers, community, and through plants themselves. I also had enough data to suggest that forming relationships with plants takes time, an ethic of reciprocity, willingness to think beyond human-centered ways of relating, considerations of materiality and similarities between different ways of doing body, and knowledge of and attachment to place. For all participants, relationships with plants formed over years of spending time with them and patiently getting to know them in one way or another, and for all participants, knowledge of place was very bound to their relationships with plants. Finally, I found that communication between plants and people tends to occur in three primary ways, through nonverbal communication by way of "energy," through human language, and through traditional Western science methods of observation. I also observed that words were a contested subject in human-plant communication, in that non-binary humans were unsure how to use words from human languages to describe their experiences, and were often wary of the possible barriers words placed between themselves and plants, while still needing words to conceptualize what was happening. The findings from this study provided important directions for future studies on plant-human relationships and communication, as in knowing more about how they are formed and maintained, as well as more about how communicative interaction takes place, deeper questions regarding the realities and implications of these relationships and connections can be explored.

This study used oral history and auto-ethnographic data in a combined methodology to generate stories for data. The combined methodology worked well to provide diverse data and transparent, multi-layered analysis that privileged the phenomenological aspects of personal experience as forms of truth and ways of knowing (Kirby, 2008). For my data pool, I gathered 14 oral histories and over 25 pages of my own personal essays and journal entries on the subject of plants. Oral histories were all collected in New Mexico, and from people who identified as from here or choosing to live here, and included a diverse mix of cultural backgrounds. Keeping my data pool centralized in New Mexico made me more confident in analyzing some of the more region-specific stories about land grants, acequias, trying to belong after a transplant, and botany specific to the Southwest.

Analysis of my data consisted of four main steps. First, oral histories were listened to and auto-ethnographic data was combed through at least five times each with attention paid to a different radiant of meaning (Carbaugh, 2007). Next, stories pertaining to those radiants and plants were transcribed. After, these stories were once again organized under the different radiants, and lastly, the most prevalent themes were evaluated and made into major sections in this study. These included, “Germination,” “The Tending,” and “Commune,” all of which had several sub-themes. As much as possible, I tried to keep stories intact throughout this study to provide context to the reader, honor participants’ experiences, and acknowledge the way that stories about plants access are multi-dimensional narratives that simultaneously tell about family, community, land, history, and self. Throughout the writing process, I brought in the term “sympoesis” (Haraway, 2018) as an analytical framework that I kept in mind throughout my analysis process and

that I hoped might make the reader more understanding of the cross-hatch of stories provided in this dissertation. Doing this kind of research meant analyzing stories on the terms of stories- meaning embracing how any life story worth retelling often is about many things at the same time. Additionally, I asked readers to think about stories with Le Guin's (1989) carpet-bag metaphor, and consider this dissertation as a porous sieve as opposed to an airtight container for these ideas.

In Chapter Five titled "Germination," I organized data into different themes regarding my participants' first big experiences they had with plants. These self-identified big experiences were sometimes as simple as becoming aware of plants for the first time and sometimes as ideology-shifting as thinking of plants as conscious beings for the first time, or beginning to understand them in a way that accessed "corporeal knowing," or knowing without the authority of a Latin name. I labeled these experiences "cotyledons" as they were much like the first tiny leaves a seed puts out before learning how to photosynthesize. These experiences were often the first small steps in people's lives of learning to relate to plants. Cotyledon moments most often came by way of a "nurse log" character, or a being who helped foster this growth. Nurse logs were typically family, community, or human teachers.

Sometimes, people made developments on their ways of thinking of plants from experiences with the plants themselves, where we were taught something important about plants' importance through a plant teacher. Data in the chapter showed the importance of social relations for encouraging plant relationships, and how crucial the communication that takes place around and about plants is for allowing people to start relationships with them. It also showed how experiences with plant teachers provide hopeful recognition of

plant agency, in that the positioning of a plant as a teacher figure disrupts narratives of insentience and provides possibilities for animistic ways of thinking. These kinds of stories support arguments for ecocultural education as a group endeavor, where communities and families are necessary networks for increasing humannature relationships and human-plant relationships especially. The data also propositioned childhood as an important and common time for learning about plants, but did not suggest that plant relationships couldn't be started and developed as an adult, simply that many people who have relationships with plant-life receive opportunities for closeness with plants as young people.

In Chapter Six, "The Tending," I discussed some of the ways that participants, myself included, go about tending their relationships with plants. Sections in this chapter are titled "Place-making" and "Relation-making" as data showed the importance of place as a major factor in developing and maintaining relationships with plants. "Place-making" grouped stories about learning to be in a place or having a historical affinity for a place. Place-making was an important theme because it showed how participants had a hard time talking about plants without talking about place, and also how place-talk was also, again, talk about family, community, land, and self (Basso, 1988; Carbaugh & Cerulli, 2011; Ryden, 1998). Specifically for people who held plants as important in their lives, where they put their bodies and their seeds mattered quite a bit, resulting in more dependency on being close to the land as a way of life and more vocal appreciation of land.

"Relation-making" included stories on how people went about tending and growing their relationships with plants after the initial cotyledon experience. Themes that arose included "Plant-friends," or thinking of a relationship with plants in terms of

friendship, “Changing times/making times,” or acknowledging how it is much more difficult to make time for plants in modern society, “Exchange/gratitude” or consistent practices of showing gratitude towards plants, and “Bodies like bodies,” or relating to plants by considering the similarities between all physical living bodies. From the data in this chapter, I drew the conclusion that making-relation with plants is a time intensive task that involves getting know plants by attempting to enter their world, sense of time, and way of existing. Additionally, it involves choosing to consciously include them in one’s lifestyle. It also requires moving away from interacting with them as commodities and instead involves acts of gratitude through prayer, thanks, and gifts before picking or consuming, and considering all interactions as two-way exchanges. Finally, I posited that theories of materiality and transcorporeality might be fruitful locations to start considering other ways of relating to plants. Through my experience of pondering procreation, I found similarity in the widespread experience of making offspring that humans share with everything from bacteria to chimpanzees. Here, I argued that the relational state of having a knowing body is a way to sidestep Cartesian obsessions with bodies and minds as separate, and consider the relative amount of same-ness we share with other beings just by being made of physical matter. This specific argument could have been expanded into a dissertation in and of itself, and provides the starting point for future work I hope to do.

The final chapter of analysis Chapter Seven was titled “Commune.” These findings had to do with participants’ stories about communication or commune with plants. I used the term “commune” as an alternative form to “communication” in order to leave room for the various ways of interacting that participants provided which did not fit into operational definitions of communication in the communication field of study. Participants

communicated with plants through hard-to-define methods like “energy,” “vibration,” and “intention.”

It appeared that there were not specific enough words in the English language to describe the ways they exchanged information with plants, and that also that the kind of communication they had with plants didn’t operate like human-human communication did. Instead, it had to do with unseen waves that passed between bodies and could communicate complicated concepts like “intention” with plants. From what humans are learning about plant communication, it is not an impossible reach to consider that participants might be tapping into something scientists have already proven, such as how plants can communicate with other species through electromagnetic signaling (Karban, 2013). In future studies, a productive direction might be to begin creating working definitions for terms like “energy” and operationalize the specifics of how people who can feel energy experience it, and what scientifically proven phenomena they might be tapping into.

A second major theme that came up in dealing with plant communication was “Words.” The section about words explored the dialectic attitudes some participants had about the importance of words when communicating with plants. Words were posed as necessary and simultaneously as barriers to communication with plants. This section represented the diversity of people’s experiences with plant communication based on the different worldviews they approached language from.

Here, participants’ wrestled with the importance of human language and holes in human language. One participant thought of language as only becoming necessary when relationships with plants became necessary, because people had to have a way to organize

plants. Stories like this offer optimistic framings of human languages as having co-evolved with the more-than-human world, and follow more corporeal philosophies of language provided by Abram (1997) and Merleau-Ponty (1970) which posit language as a bodily experience. While the position of human language in conjecture with the more-than-human world is still completely inconclusive, these experiences offer at least a starting point to begin considering how human languages could, and possibly already are, dependent on corporeal relationships with the more-than-human world.

The final theme in "Commune" was "Observational knowing/traditional science" which included stories that looked at communication through a scientific lens of observation, where the sight and scent of plants are what functioned as their communication method, and how this was intimately tied up in the co-evolution of plants with other beings. This section brought up an interesting question about plant communication in that it showed that the previous biological research (Karban, 2011; Shaefer & Ruxton, 2011; Trewavas, 2012) on the subject and people's experiences with it might not be all that different in practice, only different in the way that the intention of the communication is framed. In most biological fields, communication is written about in terms of evolutionary advantages with the primary goal of information exchange as procreation or protection. However, even participants who understood plant communication as an organized system of signs and signals based on biological necessities didn't necessarily think that this made them insentient or inanimate. This shows how the bridges that theories of new materialisms, posthumanisms, and feminist materialisms aim to build between empirical science and humanities might have even more common building material than originally thought. If observable signs and signals

from plants are provable by empirical paradigms, and if people who believe in those possibilities can see and use those signs and signals ranging from scent, water, and taste to more ambiguous uses of "energy," common ground between fields has the potential to be found. Additionally, the specific topic of plants provides subject matter for even more studies, philosophies, and ways of being that do not pit scientific and humanities-based perspectives against one another but rather look for commonalities and places where they could fill in the other's gaps.

Study implications

The implications of this study are hopeful. As an environmental communication researcher, I find the constant barrage of apocalyptic environmental instances and the supposed overwhelming apathy of the world to be demoralizing on most days. This study is a foray into research that attempts to focus less on how relations between humans and more-than-humans are terrible, and more on how they could be, and sometimes are already, full of connective, generative, and communal possibilities. Studies like this are necessary additions to scholarship that fall somewhere in between acknowledging the dire current circumstances of the Earth and sugar-coating those circumstances. Instead, studies like this create information that helps humans to, as Haraway (2016) writes, stay with the trouble. This means diligently continuing to chip away at harmful dominant worldviews to make space for generative ways of making connection and understanding, despite the difficulty, and without forgetting the consequences of failing at this.

This study also offers information useful to both practical and academic directions. On a praxis level, knowing that people are likely to form relationships with plants through family, community, and teachers helps provide the basis for community movements that work to undo plant-blindness, and serves as a reminder that ecocultural relations start

close to home and develop through communication. The study also provides reminders about the relationship between place, plants, and people and how people who are close to plants also have a sense-of-place. Sense-of-place is tricky to establish in an often highly mobile modern society, but figuring out how to get more people to intentionally focus on the importance of place to their humannature relationships could open up more people to holding responsible practices in their living environments, whether they are new there or not.

On an academic level, this study contributes to cross-disciplinary bodies of work by providing another example of how mixed-methodology and literature from multiple academic fields can be brought together into a cohesive study. It also contributes to the burgeoning fields of plant-studies and plant-humanities by providing a deeply engaged look at plant communication and relationships that hopefully sparks more questions, more studies, and more engagement in this subject. This study is a useful addition to the communication field additionally, because data presented several enigmatic topics that require more research, such as the lack of words available in English to describe more-than-human communication, the tensions some people feel between verbal and nonverbal communication, and the different ways communication can be interpreted.

Limitations

Limitations in this study include the number of oral histories I was able to collect under the tight timeline of graduate school, and the method of analysis. While my method worked fantastically well for story collection and for being able to visualize thematic entanglements, conclusions from this study form a suggestive platform of ideas rather than a set of generalizable results. However, I hesitate to list my data type as a limitation, in that this project is largely about the legitimacy of the living story and the individual

experience. However, I can only truly generate as oppose to generalize from this kind of data.

The goal of this project was not to be able to conclude that across the Western world or even across New Mexico that plant relationships and communication are formed and tended in these ways. Rather, the goal was to produce enough story data to *begin* learning how to ask the right questions about humans' relationships with plants. While more rigid generalizable data on this subject is possible with narrowed down interview questions, a much larger and more diverse participant pool, and no auto-ethnography, generalizable data often has difficulty paying attention simultaneously to regional dialects, landscapes, relationships, and history. In striving to achieve universality or generalizability, studies can staunch the webbings of stories and miss the interconnectedness present in enactments of human and more-than-human relationships. Perhaps a way to take this data out of a phenomenological zone might be to produce comparative case studies in other regions.

Future directions

In expanding on this research, there are several directions I would like to go. I would be curious to investigate how learning about plants in childhood is different from learning such during adulthood, and about how both age groups conceptualize plants before going through cotyledon moments. This is a study that might need to depart from oral history interviews and move towards more semi-focused interviews. Additionally, I was deeply interested in the acknowledgement of gender's relationship with plants that the data provided. Participants' use of gendered pronouns with plants sparked questions about how gender or sex is experienced in plants and how human associations of gendered qualities are often placed on plant-life. Even in my auto-ethnographic portions, I related to

plants through the materiality of reproduction which could be framed as a deeply gendered act, and I assumed that mother trees had similar qualities of nurturing femininity as are common in dominant human cultures. I believe that an extension of this discussion could add much to the fields of feminist materialisms and queer ecologies. Lastly, I would like to engage more with the communication part of this study and spend more time and focus operationalizing some of the ways that people perceived plant communication for a more detailed body of work on praxis-based considerations of how communication occurs between humans and more-than-humans.

Cartographies of roots

As I close this dissertation, I can see the tiny be-furred aspen seeds blowing around outside my window. Allergy season is upon New Mexico and the puffs of yellow juniper pollen skate across the mesas like clouds of fairy dust, fairy dust that is the bane of most people's existences. As I watch Taoseños snivel their red-eyed paths through the grocery store, it occurs to me how much plants are communing with people's bodies all year long. Perhaps this commune isn't intentional (or welcomed for that matter), but the pollen is in their sinuses creating effects, communicating with immune system responses and serving as a blatant sign about what is going on in the bodies of juniper trees at that moment. If even something as small as pollen can create such a raucous effect on our bodies, how could we ever maintain an argument that plants are passive, insensitive, beings? Or that we are not in constant relation with them? I rub my eyes considering this, as my very pregnant belly lurches again against the desk with the baby's offensively strong karate moves. This sudden movement is most likely due to the chocolate I just ate finally reaching her amniotic fluid. Chocolate made of cocoa and sugar that came from the plant

world, once again, a powerful show of plants' abilities to excite this unborn baby body physiologically, and effects on our human selves and bodies.

I have come a long way from my first memories of talking to plants in the garden and hiding it from my elementary school classmates. I like to think I've come full circle, in starting out as very aware of the possibility of their sentience but obscuring it, to finding them boring and inactive, to using them mindlessly for their medicinal qualities, to learning to learn from them, to now. In having the privilege of studying other people's journeys with plants, I was able to delve into my own. This resulted in reflections of cosmological proportions, where through interactions with the participants in this study I was given the opportunity to study, practice, learn about the possibilities of more-than-human connection and was gifted a toolkit of relation-making, place-making, and communing practices to better enact those relationships. As I learned from participants, this doesn't mean that my work is done, as in any relationship constant maintenance, time, and tuning-in are necessary for flourishing connection and intimacy. This project has allowed for several maps of where to find the foots of encountering this intimacy to be drawn. A map of my own life experiences with plants and hopefully for my participants, a multi-dimensional storied map of theirs. Another map of New Mexico through the stories, plants, features, homes, and histories that participants shared with me. A map of how to find one's way into relation with plant-life, a cartographic write-up of both our own storied roots and theirs.

Despite the troubling headlines on the state of environmental relations, human relationships with the more-than-human world are not a lost cause. In many people, even in the Western world, such relationships are alive and thriving. More than that, they are

possible for anyone and everyone who are willing to allow for the possibility of a madly alive, vibrating planet of beings and creatures. In the opening of this dissertation, I provided a quote by botanist and writer Kimmerer (2013) discussing the rules for reciprocity and respect with the plant world. This quote was important, as I believe it gives and instruction set for how to approach non-binary relationships with plants. As I close, another quote of hers comes to mind. She writes,

> Knowing that you love the earth changes you, activates you to defend and protect and celebrate. But when you feel that the earth loves you in return, that feeling transforms the relationship from a one-way street into a sacred bond" (2011, p. 121).

Fostering communication and relationships with plants has the power to allow people to experience a "sacred bond" with the more-than-human, an experience that for both humans' and plants' sakes, I deeply hope is in the reality, or at least the future of the endless possibilities for communication and connection that all species have on this planet.

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Appendix A.
Oral history prompts

(Used to guide interviews when appropriate)

- When did your relationship with plants begin?

- What are some specific memories you have of plants throughout your life? In childhood? As a teenager?
- How do you best like to engage with plant-life?
- Have you had any communicative moments with plants that you would like to share?
- If you do communicate with plants, how do you do it?
- Is there a certain plant you feel closer to than others? Why?
- How did you come to live in the ecological area that you do?
- Where do you find plant connections in the city?
- What kinds of plants do you interact with regularly?
- How did you learn to communicate with plants?
- Do plants feel? How do you know that?
- How can you know if a plant is hurt or feels great?
- Do you feel like your gender affects communication with plants?
- Do you feel like your religion affects communication with plants?
- Tell me a special moment you might have had with a plant being