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Agents of Pollination:

Native and Indigenous Lives & Bodies, and US Agricultural Technosciences

A dissertation submitted in partial satisfaction
of the requirements for the degree of

DOCTOR OF ANTHROPOLOGY

by

Krisha J. Hernandez

June 2021

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ABSTRACT

Agents of Pollination: Native and Indigenous Lives & Bodies, and US Agricultural Technosciences

Krishna J. Hernandez

European honeybees, *Apis mellifera*, are largely promoted and studied as necessary pollinators for their economic importance and agricultural viability. *Apis mellifera* receives widespread attention due to two key factors: national and global agricultural dependence on them and the high volume of bee deaths across the country and worldwide. My work cares about the relationships and (im)material realities that are (re)created when and where settler colonial scientific research practices center *Apis mellifera* honeybees and Euro-Americian agriculture systems and the ways that Indigenous Land and Native bee pollinators are taken up in these systems of research. I attend to such attachments as they flow through research institutions where they have palpable material, immaterial, social, and political consequences, and I do so in ways that are adapted to my relationships with science and Indigenous Land and Peoples.

This methodological work contributes to Indigenous Science, Technology, and Society (I-STTS), an emerging subfield of Native American and Indigenous Studies, and is an effort in creating Indigenous theories of the technosciences. In it I show how agents of pollination, be they human or not, are altering Indigenous Land, lives, and bodies and ways that institutional research can be done differently through decolonial research practices and by following Indigenous Land protocols and ethics. In this vein, this work discusses how researchers can learn from Indigenous research

practitioners who in their life/work, reclaim and remake research practices that honors Indigenous Land, and who co-create and co-think with their Land-bodied relatives through mutually (corporeal) caring and Indigenous centered *more-than-research* practices. Attending to bee pollinators and research institutions within US agricultural systems provides better understandings of (im)possibilities for good research relations by which they may disrupt colonial legacies and ongoing settler colonial realities toward Indigenous sovereignty.

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This dissertation is a co-creation of many beings, communities, friends, colleagues, relatives, loved ones and families. The extent of my gratitude for each and all of them cannot be contained nor truly expressed on page.

I am an Indigenous Yaqui/Bisayan scholar made of relatives and ancestors that stem from what is now occupied Indigenous so-called Mexico and so-called Philippines, and from Spain. I was born and raised on settler occupied Tongva Land, also known as Los Angeles, CA. During the course of this research I lived with, worked on and with, and learned and benefited from Indigenous Tongva Land, Cahuilla Land, Serrano Land, Tohono O’odham Land, Shoshone, Paiute, Goshute and Ute Lands, and Amah Mutsun Land, and ‘Āina o Kanaka. I also lived, worked, and learned from my paternal ancestral Yaqui Land and relatives.

I am especially humbled by and deeply grateful to the Native Pollinator and Plant communities from whom I have had the honor and privilege of learning and sharing extended time and space. Mostly, they have taught me love, and it is my hope that their teachings as I have learned and experienced them is legible in this dissertation.

I had the privilege of working with Native and Indigenous elders, aunties and uncles with whom I’ve learned for many years as their student and friend. Much of my living, knowing, doing, creating and learning is thanks to Tongva and Cahuilla Peoples, Land, ancestors and communities. I especially thank my formative teacher, Tongva Elder Barbara Drake, and too, Auntie Lori Sisquoc (Cahuilla/Apache), for

their unending support, love, encouragement, knowledge sharing, practice teaching, and friendships. I am humbled by and grateful to Dr. Katherine Siva Saubel (Cahuilla) for sharing with me her experience and wisdom while I had the privilege prior to her passing, of sharing space and time through the greater Cahuilla Malki Museum community.

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I thank Otis, my research partner and ability companion for creating safer spaces through his capacity to express the very sort of care that was needed to do this work.

Thank you, Jaxon. Thank you, Jorge. Thank you, Choki. Thank you to the 5 generations of Native desert cactus bee broods who live, love, and care together in

our shared home that resides in and with Cahuilla/Serrano territory in so-called Joshua Tree, California.

In remembrance of, and with loving care and (re)memory-making to Tongva Elder Barbara Drake, who left this world only months ago.

This work was funded in part by the National Science Foundation.

CHAPTER 1
INTRODUCTION



Image 1. Research co-creators and my teachers: Diadasia bees and Cholla flowers.

This research focuses on the interactions between and across bodies and technologies: Native bees, Honeybees, Humans, and Agricultural Sciences and scientists. Honeybee pollinators are a national concern. Honeybee Colony Collapse Disorder (CCD) has caught people's attention across the US and, indeed, around the industrialized world. And yet, Native bee pollinators are also in decline. This research takes seriously the work of Indigenous scholars who refuse settler colonialism and insist on relationships that acknowledge and attend to human beings as political

agents in their own right (Simpson 2014; Todd 2016a). It does so by engaging entanglements among bee pollinators and US agriculture technosciences amid environmental ecologies in settler colonial projects. The overarching question is: How can an examination of European honeybees who have permanently settled on Indigenous lands in the US, and the technosciences that deem them “valuable” while pushing out Native bees possibly to annihilation, generate greater understandings of how multiple bodies, not just human bodies, are actors in the settler-colonial project? Building on existing anthropological work by Indigenous and non-Native scholars (Kohn 2013; Nadasdy 2004; Todd 2014), this research engages Indigenous and non-Native, non-human actors as political agents who hold real bodies and lives and who together co-create their overlapping and shared worlds.

As a demonstration of national concern for honeybees, President Barack Obama’s presidential memorandum for heads of executive departments and agencies, “Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators,” was released June 20, 2014. The memo centered the “economic importance” of honeybees to the agricultural economy, and it rallied over 14 governmental agencies (e.g., Department of Defense, National Science Foundation, Army Corps of Engineers) and various stakeholders. Yet, the action plan failed to address the ongoing effects of conventional agriculture systems on the health of honeybees “and other pollinators.” Akin to the Spanish colonization of Indigenous Land that is now globally known as Mexico in the 1500s, who, with their pathogens and sheep, permanently transformed peoples and lands (Melville 1994), the

industrialized agricultural complex in the US is rooted in colonial practices and European settlement of the Americas, specifically, animal domestication and large mono-crop plantations. Inherited constellations of colonial legacies remain embedded in the land and conventional agriculture technosciences. Simultaneously, conventional agriculture systems are implicit in settler colonialism and reinforce colonial legacies via plantation-modeled systems.

Agriculture in the greater Southwest region produces more than half of the nation's "high value" specialty commodity crops (e.g., alfalfa, cotton, sunflowers, avocados, and melons (Garfin et al. 2014). Southwest crops require heavy irrigation, and those requiring pollination largely depend on honeybee "services." While the paradoxical condition of growing crops requiring heavy irrigation in desert regions is of common concern, an unnoticed but similarly alarming situation prevails: of about 4,000 known Native bee species, the Southwest desert region hosts a rich proportion of the diversity of them.

Apis mellifera are deployed throughout US agricultural sites despite the diverse array of Native and Indigenous insect pollinator bees. Furthermore, non-Native bees introduced to Native lands demonstrate possible negative consequences, including but not limited to increased competition, pathogens harmful to Native pollinators, pollination of exotic and invasive plants, and overall disruption of Native plant pollination (Goulson 2003). Such practices operate within settler colonial political contexts in the US, where powerful corporate entities and governmental agencies prioritize settler colonial structures, bodies, and lives in ways that directly

and violently conflict with Native and Indigenous lifeways. Given these un-settled contexts, attending to bees, not as a metaphor (Tuck and Yang 2012), but as beings with real bodies and lives with personhoods and life paths, makes visible settler colonial logics, imaginaries, and desires relative to humans and non-humans. Attending to bees with care as kin allows me to reframe them through Indigenous lifeways and conceptions of land and life.

This dissertation treats bee pollinators as political agents and actors in ongoing communities through ethnographic fieldwork in the US Southwest among a diversity of humans and non-humans. The research operates from within related Indigenous conceptual frameworks and engages Indigenous ways of knowing and living. In particular, I engage institutionalized pollinator scientists and agriculturalists who work with European and Native bee pollinators. The work examines everyday agricultural technoscientific research in relationship with making and privileging certain bodies and lives and the unmaking (or ignoring) of others. Through a cross-comparative approach to understanding laboratories, workspaces, farms, and fields of the Southwest, including parts of California, Arizona, and Utah, this work illuminates key systemic and overarching conditions of agricultural sciences and technologies. Its emphasis is on institutional research and the messy ways that Native and Indigenous bodies and lives are (un)made to matter within contexts of a settler colonial state and remain attentive to Native and Indigenous dispossession of land. As ethnic studies scholars Angie Morrill and Eve Tuck have stated, “The opposite of [. . .] dispossession is not possession[. . .]—it is mattering” (Morrill et al. 2016). I am

interested in the making of bodies and lives that matter, produced and qualified through scientific practices. My entry points to answer these questions include accompanying academic scientists in their labs and by accompanying scientists, agriculturalists, and bees to their farms and fields.

My analysis addresses materialities, relations, and practices that produce and intersect with pollinator agricultural technosciences as well as Native and Indigenous bodies and lives. The research interrogates how humans and non-humans are materially, socially, and politically (un)made within settler-colonial contexts through agricultural technosciences. Following Viveiros de Castro, this work is not preoccupied with people and their words but is more concerned with lives and worlds and the things and beings that make up worlds (de Castro 2013, 272–75). While an individual as small in physical stature as an insect, such as a bee, may seem inconsequential, pollinators and agricultural technosciences demand to be reframed through Indigenizing interventions that manifest more cooperative human and non-human relationships, ethics, and practices. This reframing creates new parameters that are generative in learning how agricultural agents of pollination have far-reaching affects on humans and their Land-bodied relatives and counterparts.

This research provides foundational approaches to the research through literature reviews, foundational theories, and grounding methodologies. I address how the research interfaces with anthropology, Native and Indigenous studies, feminist studies of science and technology (STS), settler colonial studies, and critical Indigenous feminist environmental scholarship. My analysis builds on existing

scholarship in anthropology and closely related disciplines. Here I give examples of this scholarship and its findings. This research is an ethnographic intervention into the structural violence of settler colonialism. I am interested in the politics and materialities produced by US agricultural technosciences and the potential for reframing their Eurocentric regimes by engaging Indigenous praxis. This work brings together literature on decolonization, Native and Indigenous studies, anthropology of science, science and technology studies (STS), and settler colonial studies. STS studies have engaged bees (Kosek 2010; Suryanarayanan and Kleinman 2013), and anthropological work has been done on insects (Raffles 2010), but none have aimed to intervene in the sciences to tackle the genuine challenges that Native bees face—which is death. Nor do they attend to bees as beings with political agency and their entanglements amid settler colonial projects. My research builds on a growing body of inquiry in Anthropology and Science and Technology Studies (STS) that grapples with questions of more-than-human socialities, nature and matter, and ontological politics. I add to those approaches a decolonization lens adopted from an emerging field of inquiry: Indigenous feminist materialities.

Anthropologists working at STS interfaces and grounded in the materialities of science are rethinking nature-culture divides (Holbraad 2004; de la Cadena et al. 2015; Latour 1993, 1999). Anthropologists have also worked to reconsider nature and culture as interconnected by engaging multiple related frameworks, including those that address more than human socialities via post-humanist approaches (de la Cadena 2015; Meyers 2015; Tsing 2015), multispecies engagements (Helmreich 2009;

Kirksey 2014), and planetary ruins (Tsing 2012, 2013). More recently, anthropologist Kristina Lyons has emphasized considerations of nature and matter while learning from selva farmers in Colombia, where farmer's everyday lives, among contaminated ecologies, and ongoing relationalities contest the bifurcation of nature from humans. Instead, she sees humans and non-humans as inseparable.

My treatment of materialities is rooted in intimate connections between Indigenous lifeways and land, which Kanaka Maoli scholar Noelani Goodyear-Ka'ōpua calls "land-centered literacies" (2013). It also embraces what Indigenous Studies scholar Vanessa Watts describes as a physical embodiment, or Place-Thought (2013), where land is more than a site for human history-making and the accumulation of histories (Goeman, 2008). From these perspectives, nature, culture, and ontologies are not starting points for academic research and analysis; rather, the work is reframed within the widely shared Indigenous conception that (non-human and human) bodies, land (and all that is from the land), and life are related to each other. Are not bees living beings with bodies and lives? In other words, (non-human and human) bodies and lives are intimately connected, both in spirit for those with that understanding and materially. Accordingly, all living things contain a spirit, and, therefore, they hold agency (Watts 2013). In this way, the work is concerned with the connectedness of things and beings, seen and unseen. What worlds are co-created in non-humanizing moves of "non-human" beings in the ongoing work of human-centric conventional agricultural science and technologies?

This work, in other words, is rooted in Indigenous articulations and relationalities to settler colonial power (Corntassel, Dhamoon, and Snelgrove 2014; Smith 2012). Unlike colonialism, settler colonialism is defined not by colonialism's labor but by the accumulation and ownership of land, eliminating Indigenous peoples who are tied to the land while making permanent settlements. Thus, the settler never leaves (Wolfe 1999, 2006); 2). Rather, he makes claims of sovereignty, and such claims are reasserted daily throughout his occupation (Tuck and Yang 2012); 3). Kahnawake Mohawk anthropologist Audra Simpson shows how "much of the political work that Native people do is structured by the claims that settler colonialism places upon their land, their lives, and their aspirations" (Simpson 2014, 178).

This dissertation builds on such scholarship while emphasizing environments that are erected, moderated, and (mis)managed through technoscientific procedures, processes, and (settler-oriented) protocols. How might agricultural sciences and technologies (re)produce settlers, and thus Indigenous dispossession, through its routine practices, or "microtechniques of dispossession" (Corntassel, Dhamoon, and Snelgrove 2014; Raibmon 2008). Still, the interfaces between Native and Indigenous Studies and settler-colonial studies remain unreconciled and are presently in conflict and collaboration; thus, this work attends to how "white settler subjectivity [can be] the monolithic lens through which to examine settler colonialism and dispossession, both in the context of whites and people of colour, in ways that obscure differentials of power" (Snelgrove, Dhamoon, and Corntassel 2014, 9–10). I remain attentive to

Audra Simpson's call for more even-handed inquiries of Indigenous politics and settler governance (Simpson 2014).

My work follows Sisseton-Wahpeton Oyate anthropologist Kim TallBear's intervention into science and technology studies with feminist methodologies and Native and Indigenous studies. It argues that technosciences produce scientific narratives that thread through and potentially rescript social-historical fabrics with real material consequences (2013, 7). The work is attentive to co-production, where entities such as state, science, and society are understood to be co-constitutive of both ideas and real material things. However, due to power imbalances, there are no evenly distributed flows (Jasanoff 2004; TallBear 2013). Feminist scholars who pushed at the sciences for greater accountability and re-situated their claims to universality, objectivity, and neutrality (Harding 2006; Haraway 1991) were placed alongside Indigenous epistemologies deconstructing empiricist objectivity and declarations of neutrality. This intervention created a space for Indigenous scholarship that is attentive to materialities between humans, non-humans, and land, with a critical Indigenous feminist lens (Todd 2014).

Furthermore, this work employs a critical Indigenous feminist lens, is decolonial, and actively centers Indigenous resurgence and is an intervention that contributes to an emergent subfield of Indigenous Studies: Indigenous Science, Technology, and Society (I-STS). Jessica Kolopenuk's methodological piece "Miskâsowin: Indigenous Science, Technology, and Society" demonstrates how I-STS theories of technoscience disrupt colonial ontologies of knowledge and

sovereignty through relationally produced/created Indigenous knowledges and practices, and that is what this ethnographic work seeks to do.

Data Collection and Analyses

This work seeks to participate in solidarity, alliance, and grounded practices that “help create post-imperial futures” (Goodyear-Ka’opua 2013, 11). It draws the study population from a sample of a limited pool of individuals and are not be random. They fit the population characteristics specific to this study. This research is entirely ethnographic. I am trained and certified with the Collaborative Institutional Training Initiative for Human Research and Responsible Conduct of Research and the University of California Laboratory Safety Fundamentals. This work is entirely domestic; therefore, I was declared exempt from any additional language requirements or training, as English is the only language needed to complete this work. Thus, the work employs three core research methods: multi-sited inquiry, observations, and interviews.

The work is multi-sited in that I conducted the research in person and online, in “cyber-space” without centering on any “location” but focuses on sites of agricultural sciences and technologies (e.g., laboratories, farms, conferences, meetings, listservs; Marcus 1995). While “multi-sited” work has been established in anthropological methods, this “multi-sited” work follows Laverne Roberts’ concept of the hub, a Native and Indigenous method presented in Renya K. Ramirez’s *Native Hubs*. I use hub and hub-making as methods for conceptualizing worlds as co-created with “signs and behaviors [that are not] based in space but include virtual activities”

(Ramirez 2007, 3); such (emerging) worlds are often referred to as “networks.” As presented in *Native Hubs*, the hub and hub-making concepts are powerful, specifically for and to Native and Indigenous communities. I do not imply that Native and Indigenous hubs and hub-making are in any way similar or the same as practices in non-Native/non-Indigenous circles. However, this work is multi-sited and attends to networks by drawing on hub and hub-making to understand relationalities between places, things, and beings, including overlapping and interlinked human communities (e.g., scientists and agriculturalists) and non-humans (e.g., honeybees and Native bees).

At the same time, this work is situated with place, specifically Indigenous land. I present the ways in which working with more-than-human pollinators and bee scientists while on Indigenous Land interconnect with (Land)bodies— tangible and intangible — and how together they form and re-form me, my research, and each other. I look to the work of my supervisor, Dr. Nancy N. Chen, whose work is situated in China and spans critical inquiries such as biotechnology of food, traditional medicine, generational sharing, body sensory, and (Land)body health and wellness to name a few. Her recent work, “Making memories: Chinese foodscapes, medicinal foods, and generational eating” delves into the realm of body sensory and relations as they intertwine with vinegar-medicine amid SARS/COVID in China (2020). Thinking with place, which, in this study is situated on and with Indigenous Land, facilitates learning and co-creating that uplifts, affirms, and often centers Land-

bodied beings as the very real actors that they are. Engaging place, specifically Indigenous Land, is crucial to this work because Land is life.

Indirect observations were conducted by searching for messages that flow through agriculture research institutions and their counterparts via print publications (e.g., public scientific papers), social media, internet sites, and various public outreach and commercial endeavors. I conduct the analysis by processing Imagery interpretively. It also engages with indirect observations via archival research (Vitalis 2006). Archival resource centers are vital to this component of the work (e.g., Agricultural Library at the University of California, Berkeley, Agricultural and Resource Economics Library at the University of California Davis). I conducted participant observation in research labs and on farms, gardens, and plantations. Conducting “multi-sited” participant observation at these sites provides a greater understanding of bee behaviors and interactions with their human counterparts. Participant observation also explains everyday work and engagements among scientists, agriculturalists, and bees and their relational encounters and connections. Bee interactions and behaviors are taken seriously. Thus, human language is not a limiting factor to the research and, therefore, challenges human language as a primary way of knowing. I kept a daily journal of field notes and, where possible, make immediate jottings of my observations and interactions. The notes were analyzed using interpretive readings (Bernard and Ryan 2009). Regarding direct observation, I took part in and observed online discussions on social media sites and in listservs and

forums where agriculture science researchers discuss topics related to agricultural sciences (i.e., SANET-MG, SAEA listserv, NATO Science Programme NATOSCI).

I conducted direct observation of agricultural scientists and bees in public spaces at outreach events (Bernard 2011). I observe and record keynote addresses, code programming materials, and planned session conference paper titles via daily field notes to analyze direct observations. The field notes were analyzed via content analysis, textual coding, and indexing techniques (Bernard and Ryan 2009). I also conducted informal and unstructured interviews via snowball sampling and chain referral sampling of agricultural scientists, practitioners, and farmers (Bernard 2011: 147, 156–7). Informal interviewing allows the flexibility required for a socio-cultural researcher to tread lightly when researching researchers. As anthropology and STS scholars have found, doing research on researchers can be a complicated task and presents unexpected challenges, quite reflective of the power and bureaucratic barriers of their employers. The interviews have no formal set of interview questions, as the work is to observe and participate in participants' everyday practices. I recorded interviews via daily journal notes and analyzed the notes via textual coding and content analysis (Bernard and Ryan 2009: 291–294).

Part I of this work centers on pollinator research laboratories and academic arenas (e.g., lab meetings, conferences, and lectures). An emphasis on laboratories studying bees is essential for this research since most pollinator research in agriculture studies bees. Part II centers on actual fields (e.g., farms, fields), removing the limitations of bench-science studies by following participants to the sites where

pollinators are (or once were). Part I was conducted in university research laboratories with Principal Investigative (P.I.) researchers and their teams, at professional conferences (e.g., Entomological Society of America), in library archives, and using online university research-based listservs and cyber-forums. Part II was conducted on-site in field labs, farms, and fields with agriculturalists. The funding period commenced on January 2, 2018 and lasted 12 months; the research addresses Parts I and II of the dissertation. Both parts integrate locales in Arizona, California, and Utah. As ethnographic conceptualizations occur in everyday circumstances within the purview of the research questions (Schwartz-Shea and Yanow 2012, 71), the research is designed to care for the participants by considering their availability, work schedules, and need for revision of our agreed upon engagements. Demonstrating various forms of care is necessary in all avenues of life and is particularly crucial in decolonial and Indigenizing work and spaces. For this reason forms of care, such as time-flexibility and availability were built into the research as a method of care.

Overview of Dissertation Chapters

Chapter 2 examines how categories come to matter, particularly for pollinators. In addition to bees, a multitude of insects, environmental forces, and material entities pollinate. I use participant and direct observation of pollinators in desert regions and interviews with and direct observations of scientists who study bees for agricultural purposes to juxtapose the multi-media analysis. The juxtaposition provides a multi-dimensional view of how bee pollinators are

categorized and impacted through agriculture systems made to benefit humans. Altogether the chapter challenges the categories that bees are placed into and the category of “pollinator” itself by emphasizing research with land-bodied relationships and ancestral ties.

Chapter 3 uses field notes from participant and direct observations in bee research labs, interviews, and group discussions with bee scientists to describe the internal workings of bee research labs, where bees are either purchased or bred for research—where most of the bees never fly or pollinate but are kept in small containers and fed through feeding tubes. Additionally, I present a biographical story that follows one queen bumblebee through her life in the laboratory, named “NIF001.” I deeply think and feel with the internal workings of a bee research lab and with the bee research methodologies and processes as taught to me. I also identify with a select group of Native persons working on tribal pollinator projects with a team of USDA research scientists to demonstrate how better ethics are possible while respecting bees as agents with lives.

Chapter 4 narrates an embodied and experiential approach that (re)imagines ethnography and ethnographic practices rooted in place and place-making, and it works to contribute to healing and Indigenous survivance¹. Here, I (re)make ethnographic practices using “place.” By engaging with maíz methodologies

¹ See Gerald Vizenor (Anishinaabe), *Survivance: Narratives of Native Presence* (Vizenor 2008). Survivance is a verb that simultaneously activates Indigenous pasts, presence and futures that refuse to be encompassed by survival, which is for Indigenous Peoples, defined by ruin, victim-narratives, and is anchored in “the” past.

(Rodríguez 2014) and land-centered literacies (Goodyear-Ka'opua 2013), this work builds on place and place-making through the concept of (re)making. To do so, I amplify the Indigenous episteme of in xochitl, in cuicatl (the flower, the song) through archival learning.

I conclude the dissertation by opening up space for engagement with broader publics and transformative practices for science/society by understanding that there is more research than what the academic literature affords. I consider ways to think and move beyond research to-human on the human/non-human binary by removing the boundary through the methodological theory that I call *academix*. The concluding discussion about *academix* opens, for me, not only the ability to describe practices that are ethically and materially concerned with researching with more-than-human beings but also allows conversations about that sort of work to be named.

Creating a Caring Research Community

In my preliminary research I engaged with Kanaka Maoli and local Hawai'i communities who have taken long-standing positions against agribusiness and genetically modified crops, open-air dust pesticide testing, heavy US militarization and occupation, and after completing the preliminary research, the construction of the Thirty Meter Telescope (TMT), to name only a few. Many of the aforementioned state, private, and scientific institutional systems, if not all, were founded and/or are based in the continental US, but their efforts are tested and deployed on islands in Hawai'i and the continent. This approach invited a cross-comparative and integrative approach to my research.

While doing that research, my attention became attuned to the elusive ways in which US agriculture technosciences participate in settler colonial structures and colonial underpinnings. Two graduate seminars fine-tuned my research interventions during the 2015-2016 academic year: “Planetary Transitions: Critical Ecologies of the Anthropocene” presented by anthropologist Anna Tsing, and “Anthropology at its Interfaces with Feminist, Postcolonial, and Decolonial STS” presented by anthropologist Kristina Lyons. During this training period, my focus became refined to the complexities of bee colony collapse disorder and pollinators in US agriculture. I contacted several Principal Investigators in California who study Native bee pollinators and whose field sites are in the Southwest. In winter and spring 2016, I conducted preliminary research with Principal Investigators and doctoral researchers; observed greenhouse research labs and open-garden research labs. I also attended a prominent honeybee health and sustainability conference, where I could discern nuanced variations amongst a niche group of scientists and their research endeavors. The conference made me keenly aware of the academic impact that pollinator research in California has on national institutional research, large-scale farmers, commercial beekeepers, and commercial seed distribution centers. The department chair of a California-based entomology department, who has a national footprint in bee sciences, offered me institutional affiliation while carrying out this work giving me access to key lectures, meetings, and everyday workings of bee research(ers). I was also invited to directly access key United States Department of Agriculture (USDA) bee research labs for my dissertation research.

Ultimately, this research is fluidly situated in and with the Mojave Desert and Sonoran Deserts and at their interface in what bioscientists call the Colorado Desert. I worked in other contact zones that connect the Mojave and Sonoran deserts. They included two of the 46 ecosystems in the US to be designated by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) as a World Network of Biosphere Reserves: Joshua Tree National Park, Death Valley National Park, and Anza-Borrego Desert State Park, and Santa Rosa and San Jacinto National Monument. In addition to my work in the furthest western areas of the Mojave and eastward in the Sonoran Desert of California and Arizona, I worked in two of the World Network of Biosphere Reserves areas: Joshua Tree (National Park) and Anza-Borrego Desert State Park.

I have a long standing interest in the United States agricultural complex, food justice, food sovereignty, and decolonization. This interest formalized in 2009 with my undergraduate Ronald McNair Post-Baccalaureate Scholar research based on local community seed saving and gardening in my home of North-East Los Angeles. I amplified this interest during my master's program, for which my master's thesis discussed the social movements and dimensions of biotech foods in California. While my M.A. thesis was attuned to biotechnology and seeds, that work was the context in which my approach to the relational materialities and politics that collide at agricultural sites of institutional research, massive corporate entities, and governmental bureaucracies. I attended the University of Santa Cruz (UCSC) to study in an academic environment where anthropologists, feminists, social scientists of the

History of Consciousness, and science studies and justices converge. The Anthropology Department at UCSC has afforded me this opportunity.

Alongside my supervisor, medical anthropologist Nancy N. Chen, I work closely with Native Ho-Chuk Tribe feminist anthropologist, Renya Ramirez, with Sisseton-Wahpeton Oyate anthropologist, Kim TallBear, and Kanaka Maoli Indigenous studies political scientist, Noelani Goodyear-Ka'opua. Together, this community of scholars, who have committed to me and my work, uniquely and diversely contribute to questions related to the interplay of environment, governances, sciences, and Indigenous relationships with place.

With this community of scholars, I am forced to reflect on the possibilities that they of their own accord have opened for and with me. With them and their generous time, labor, and visions, we have co-created a community-based body of work that consciously cares for the worlds and communities in which we move, and *for each other*. In this sense, then we have collaborated in ways that extend beyond the academic realms of productivity. How might such practices of care be translated into organized research practices of care circulating and oscillating among non/academic communities? Mutual corporal aid and intentional care practices in the academy that I have experienced can (in)form connective research tissue that holds the possibility of far-reaching practices of trans-communal healing among human and more-than-human co-laborer and co-creators.

Mutual Corporal Aid and Care in the Academy?

Mutual aid is political². Mutual aid is social and participatory. Mutual aid can also be cultural. Mutual aid is not metaphorical, nor is it charity. Mutual aid is a community-based collectivity that centers on horizontal framings of care and compassion. Mutual aid is located in place and moves temporally as deemed most appropriate by those who practice such communal care as it holds many shapes and forms. Mutual corporal aid and care is primarily practiced among underserved Black and Brown communities and is an ongoing source of concern among 2STQBIPOC (Two-Spirit/Transgender/Queer/Black/Indigenous/PeopleS of Color) spaces, projects, and communities. One cannot help but observe that by and large, “mutual aid” in organized conscious community contexts are by and large practiced among those who live and must navigate through the hegemonic misogynistic, bigoted, racist, patriarchal, white supremacist settler colonial systems.

Indigenous survivance has always valued mutual aid and yet settler colonialism not only affects Indigenous Peoples, it also harms and burdens 2SQTBIPOC folks in significant ways. How might mutual aid be practiced in an organized and systemic way protocol in the academy? I pose this query in juxtaposition to more common academic organizations via individual concern and support as many faculty members and university community persons do of their own initiative such as the ones with

² Portions of this section were previously published in *Catalyst: Feminism, Theory, and Technoscience* (Hernández 2019).

whom I have the privilege of co-creating. I ask instead: How might mutual aid be organized and embedded into everyday academic practices?

Angela Davis, UC Santa Cruz alum professor/scholar/activist/theorist/liberatory leader has informed academia in many ways; in this context I consider how she, who as a member of the Black Panther Party, contributed to the Party's mutual aid work. The Panther's multifaceted work transformed Black community 20th century activism and activism and Black community since. Engaging organized mutual aid via Panther community building empowered Black communities through corporal action: feeding over 20,000 children breakfast before school, pest control in Black homes where landlords were "slumlords"; they created health clinics, and food pantries. The Black Panther Party also established their own community-based education system that supported and honored Black children and learners. Academic work often *studies* such past/present histories and actions, but, largely lack the actions described in their texts.

In the wake of COVID 19 (Corona Virus Disease of 2019), the name given to the disease caused by the novel coronavirus SARS-CoV2, due to the utter lack of resources for the personal protection of people— all people, as all people were/are susceptible to it— public-facing and organized mutual aid groups formed. I, too, was one contributor during the height of COVID outbreaks in the summer of 2020, with one small but local and impactful mutual aid group in the Mojave Desert communities of Joshua Tree (the town where during my dissertation fieldwork initially worked as my home base/writing "retreat"), Morongo Valley, and Twenty-

Nine Palms, which all reside on Cahuilla, Serrano, and some portions of Chemehuevi territories. During this time, the anthropology department graduate students at the University of California, Santa Cruz, my home campus and department, initiated a mutual aid group who focused on monetary support for BIPOC persons (with, at first, no mention of Two-Spirit nor transgender bodied folks).

Discussion of radical mutual care of 2STQBIPOC is not a metaphor for whom or how to care for persons. Rather it parallels how settler-centered academics must reflect and act on aiding and caring for the real bodies and lives of fellow persons, which includes their more-than-human counterparts.

The graduate students raised, with contributions from the Anthropology Department, significant amount of monetary funds to distribute among Black, Indigenous, and Persons of Color in our department. I chose not to participate in the mutual aid group due to existing and working amid an already harmful field that is Anthropology. I have already over-labored myself academically within and beyond the department. As an observer, the mutual aid offered was significant and appreciated, especially as the organizing effort emerged from students (as it so often does). It made me feel hopeful that future cohorts in our department will be more supportive of their 2STQBIPOC colleagues.

This kind of mutual aid work should be (and should have been) included in the department's support of 2STQBIPOC grads. However, while I appreciated this work, I found it painful to reflect on prior instances where support for 2STQBIPOC in the department was absent, even when it was sorely needed. In response to their work and my observations, I wrote to the group with the help of a white femme

accomplice³, a confidential, anonymous memo to the group parts of which I now share here because it, in my methodological, pedagogical, theoretical, and everyday realities, directly translates and transforms the very work I hope to accomplish in research practices with more-than-human persons.

How does white disregard in the academy of Two-Spirit/ Transgender/ Queer/Black/Indigenous/Persons of Color speak not only human bodied persons but also translate and hold possibility for transforming research with more-than-human bodied persons? While different in form, all such persons exist in overlapping worlds. All are forced to embody and exist with the myriad of deeply harmful settler colonial ways, worldviews, and practices that are always and overtly placed on them which here results in an invisibilized and terrorized existence where all such persons are mistreated under the guises of justice, reform, multiculturalism, postcolonialism, activism, white feminism, and of course, not to forget *academic research*.

In what follows in this section of the chapter, I offer select and adapted excerpts from the larger memo⁴ and forthcoming journal article, “From (White)

³ An “accomplice” is engaged in Indigenous-centered settler collaborations and direct actions that confront and unsettle colonialism. Whereas, allyship is rooted in white/settler guilt and shame and is often a move to innocence (Tuck and Yang 2012). According to the 2014 article, “Accomplices Note Allies: Abolishing the Ally Industrial Complex, An Indigenous Perspective,” accomplices labor alongside and behind Indigenous Peoples through reciprocity, care, and mutual consent. Accomplices, with Indigenous persons who lead them, attack, disrupt, and dismantle settler colonial ideologies, structures, endeavors, environments, practices, and all forms of settler-colonial projects. Accomplices utilize their power and privilege to redistribute resources, information, support, care, aid and more. Please read more on accompliceship over allyship at www.indigenouaction.org.

⁴ Thank you to my accomplice from who’s name I have yet to receive permission to publish, for their labor in reviewing and adapting the above referenced memo for the anthropology graduate student mutual aid group, and for acknowledging me, my labor and the painful emotional and intellectual labor that was necessary in communicating these insights and experiences. In addition, I am thankful to them for acknowledging this work as “an act of care, especially for those in the process

Disregard to Radical Mutual Aid and Care in Academia—A Call to Action” which entirely centers and uplifts the connectivity between corporal mutual aid of Two-Spirit/Transgender/Queer/Black/ Indigenous/Persons of Color humans and more-than-humans in/beyond the academy:

The university’s intimate social relations and power dynamics often discourage 2STQBIPOC from speaking up or filing grievances against those who commit acts of racial violence against them for fear of retaliation. Many 2STQBIPOC who have not had the lifelong educational privileges of white/affluent grads find that although high expectations are placed on them, they cannot provide the resources or support needed to meet these expectations. 2STQBIPOC students may be experiencing uniquely traumatic or overwhelming life circumstances beyond their control, and yet these circumstances are rarely, if ever, considered. As a result, 2STQBIPOC grads find themselves doing extra work to catch up and keep up in the program, let alone excel. Meanwhile, those with more educational privilege who are not burdened by inequitable circumstances and expectations do not have this problem. This inequity does a great deal of harm to 2STQBIPOC students, not only to their ability to do the kind of scholarship that inspires them but also their ability to maintain their mental and physical health while going through the program.

Though it may seem that this harmful environment is primarily the purview of faculty and departmental administration, fellow grads are often just as responsible for

of unlearning internalized white supremacy who desire to build a safe, healthy, and equitable intellectual community where the brilliance and hard work of BIPOC colleagues are appreciated and allowed to flourish” (Anonymous. 2020. Memorandum).

being complicit in allowing the inequity to continue. White and affluent grads must be better at demonstrating appropriate consideration and respect for the work, circumstances, and struggles of their 2STQBIPOC colleagues. Without realizing it, white faculty and grad researchers too often fail to consider:

- The systemic challenges 2STQBIPOC face in simply living/surviving.
- The valorization of a dominant white masculine and mainstream academic voice to the detriment of others.
- Their complicity in staying silent while those in power deploy institutional acts of violence.

The primary way for white accomplices, including fellow grads, to support their 2STQBIPOC colleagues is through sincere demonstration of mutual support and care through that which is sensed and felt, materially and immaterially all of which includes corporal attentiveness. In active sites of protest and protection one may find white persons choosing to place their bodies on the front line knowing that their white bodies create a barrier knowing that their bodies are confronted in drastically different ways to those whom may otherwise physically harm 2STBIPOC bodied persons.

Due to the insidious nature and fear of retribution, the lived realities and burdens that 2STQBIPOC embody and navigate are rarely considered, acknowledged, or voiced in academic departments. The greater culture of white capitalist supremacy that drives our institutions encourages productivity at all costs and these costs take up the lives and bodies of select groups of humans and more-than-humans, some groups more frequently and significantly than others. This atmosphere rejects necessary

displays of a vulnerability and humility across the board. However, 2STQBIPOC people are most acutely affected, often fearing being seen as "struggling" in the program, and that expressing these struggles may lead to a negative perception of their academic performance/ability or tone-policing accusations of lacking "collegiality." This atmosphere is not only the responsibility of faculty and administration. White graduate students may not recognize how their actions and silences maintain the status quo and subsequently, their privileges. These privileges prevent white grads from recognizing, acknowledging, or even knowing of the burdens that 2STQBIPOC face.

One crucial but unacknowledged aspect of mutual aid and care that collectives in the academy must commit to is radical peer inclusion— socially, academically, and otherwise. Social inclusion is essential as 2STQBIPOC folks already experience heightened feelings of invisibility, marginality, loneliness, and isolation. They may have little if any community to "safely" lean on while away for graduate school. 2STQBIPOC folks survive by being surrounded by their/our communities and being in the grad program means that access to the support system necessary for their/our survival is diminished. I call for a commitment to engage socially with 2STQBIPOC, especially consistent invitation to social events big or small. Some 2STQBIPOC may often feel out-of-place in academic/colleague/social spaces, or generally uninterested in social experiences with those who, in the academy, do not hold similar identities. Nevertheless, consistent invitations, be they declined or not, may demonstrate

collegial support if not possibilities for friendships that may foster the potential for accompliceship beyond academic endeavors.

White members of the mutual aid collective should practice "calling out" and "calling in" their peers, faculty, admin, and staff who are not acting in radically inclusive ways. White colleagues must take on this work as 2STQBIPOC people may have difficulty expressing issues of exclusion, despite the overwhelming impact of these institutional harms on their experience.

Unfortunately, the harmful acts and atmosphere described above are most likely going to continue, so it is vital that accomplices do their part to affirm and sincerely support 2STQBIPOC grads in ways beyond concrete monetary or physical acts of care. Accomplices need to commit not only to put their bodies and funds on the line for 2STQBIPOC colleagues but their comfort and status in the department as well. Just as a white accomplice must take on personal risk and put their body on the line in demonstrations where 2STQBIPOC are in physical danger, they must also take on professional and social risk by standing up to injustices within the institution.

2SQTBIPOC persons always and already live and embody institutional risks that their colleagues are called-in to join.

Accomplices, be they faculty or graduate students, need to commit not only to put their bodies and funds on the line for more-than-human and 2STQBIPOC colleagues but their comfort and status in the department and academia as well. Just as a white accomplice must take on personal risk and put their body on the line in demonstrations where 2STQBIPOC are in physical danger, they must also take on professional and social risk by standing up to injustices within the institution.

Accomplices need to be beside their 2STQBIPOC colleagues and more-than-human counterparts and confront those in power among or “above” them, *even if they may be putting their privileges, social capital, and professional success on the line*. Radical mutual aid in the academy is not limited to funds and the like.

My experiences in the academy and in anthropology are filled with various forms of harm (e.g., sexual, physical, psychological, emotional, financial) exclusion, and institutional and campus-community trauma. Despite the harm, I have been resilient because of my self-determination with commitments to Land, community, and care. I have been fortunate enough to receive authentically caring and radical inclusion that were transformational in my life/work. In what follows, I describe a small selection of mutual (corporal) care and aid in the academy as I have experienced it⁵.

During my doctoral residency at UC Santa Cruz Anthropology Department, it is Dr. Nancy N. Chen who, in addition to her scholarly work, is particularly central to my experience of radical mutual care and aid— academic, corporal, and beyond — and how I view and now expect to be treated along with fellow 2STQBIPOC in the academy. Through her direct, sincere, and humble support, Dr. Chen is key in my success and in supporting me, acknowledging me and my work as valid, and has created a sphere of care, protection, and boundary making in the academy that enabled/enables me to access a caring academic community of which I am now part.

⁵ Note that the experiences described in this section in no way encompasses the tremendous amount of love, care, aid, support, and generous communities that I have been a part.

As my supervisor, Dr. Chen has and continues to generously uplift and affirm me as a multifaceted Indigenous person. In accompliceship, Dr. Chen has never wavered in her support of me, my physical and mental health and safety both on and off campus, access to life-saving and critical campus services, community and campus material support services; she responds and acts with urgency in times of crisis and shows me countless acts of care and generosity. I am in awe of her ways of practicing accompliceship. Her care and support have profoundly taught me ways in which one indeed can be radically caring and aid folks in community within and against the academe industrial complex and settler institutions.

Dr. Kim Tallbear has, since the concluding season of my Bachelor of Science program, when we first met at the AAA (American Anthropological Association) in 2012, shown care and aid to me in ways that I hope to emulate with students and community broadly speaking. Dr. Tallbear's generous offer for scholarships, fellowships, and funding to me during the year of my doctoral application period left me speechless. Never could I have imagined that a professor with the likes of her work would consider me as their fully-funded graduate student. Since then, Dr. TallBear has consistently made herself available to me as a mentor, collaborator, colleague and friend. She has utilized her stature as a tenured Indigenous professor to support me as a rising scholar through access to shared projects, signing of letters of recommendation, invitations to workshops, conferences, speaker series, funding, grant writing, and the list goes on. While some may assume that what I have described here is what faculty do for their students, I assure you that *many do not*. Dr.

TallBear's support has directly impacted my presence and participation in the academy, in academic associations, with colleague-friends from whose work I learn and admire, financial possibilities that helped me support myself and my son in increments, including grant money, fellowship monies, honorariums, travel funds, and more. She utilizes and places her social capital and academic statuses on the line by affirming and uplifting me and my work.

In the spring of 2014, I reached out to Kanaka Maoli professor Dr. Noelani Goodyear-Ka'opua at the University of Hawai'i Mānoa to discuss our shared research interests, where corporate and governmental institutions collide on sites of industrialized agriculture crops. Dr. Goodyear-Ka'opua wrote a formal letter of invitation for my research in Hawai'i and facilitated my research among various grassroots organizations and individuals actively working within the Hawaiian sovereignty movement for life and land through 1) community farming and Kanaka traditional agricultural practices and foods, such as taro and 2) grassroots political groups. Dr. Goodyear-Ka'opua also generously facilitated my introduction with multiple Kanaka intellectuals, scholars, researchers, and professors who also shared our interests. Subsequently, I conducted preliminary research in Hawai'i in the summers of 2014 and 2015. Dr. Noelani Goodyear-Ka'opua, in large part, was the earliest Indigenous scholar who welcomed me into the greater Indigenous Studies community. For that, I am humbled and feel a deep sense of gratitude for her and her generosity, trust, and care. In so many ways, Dr. Goodyear-Ka'opua teaches me how to welcome rising Indigenous scholars into a community of caring friends and

colleagues whose environmental research and Land-based scholarship disrupts settler colonialism and co-creates and (re)imagines shared Indigenous futures.

Dr. Audra Mitchell, a global political ecologist at the Balsillie School of International Affairs/Wilfrid Laurier University/University of Waterloo, has shown me how a friend/colleague/ accomplice commits to those with whom they create decolonizing projects through community-based efforts and direct Indigenous-led unsettling actions in and beyond an academy that affirms and uplifts the repatriation of Indigenous Lands and (all-bodied) lives. Dr. Mitchell, a white settler scholar, continuously cares for me in ways that leave me in deep gratitude and amplifies energy/sensory/body wounds that need healing. Dr. Mitchell has many times supported me by spending countless hours by email, text, phone, and one-to-one conversations discussing the academic harms that I experienced and possibilities for creating new unsettling futures together. She has fostered my academics through her generosity, invisibly performing close readings of my work. Dr. Mitchell and I continue to co-create pathways for publishing in peer-reviewed journals while joining international Indigenous community-creating gatherings that foster collaboration and caring friendships with folks from so-called Indigenous Australia, Canada, Borneo, and New Zealand. In addition, Dr. Mitchell included me in at least one of her large grant-writing projects, which enabled me to travel with two of my Native auntie-teachers from Southern California, their ancestral home, to the 2019 Native and Indigenous Studies Association meeting in Aotearoa. We, as a collective, shared space and co-created with our growing community composed of Indigenous and non-

Indigenous teachers and thinkers. In these ways and more, Dr. Mitchell has redistributed financial and institutional resources and humbly weaponized her privileges and academic access as a modality toward Indigenous sovereignty. Dr. Audra Mitchell is my accomplice.

The stories that I share about accomplice-ship, mutual aid, and (academic) care make me think about “radical mutual aid” directly parallel to a necessary change in research. Indigenous scholars before me have already called in scholars to these points of action. Yet, there is a continued need to reiterate, restate, and reframe them. The ongoing fight for the care of Indigenous Peoples and Land-bodied beings in academic research, like so many other critical issues of care that connect with 2STQBIPOC’s experiences in and beyond the academy, is often tiresome if not exhausting for Indigenous scholars. Nevertheless, the work continues to be a call to action that we take up because it is an obligation.

Radical mutual aid and care among Indigenous Peoples are not named “radical mutual aid”—it is “community” and includes Land-bodied beings and, too often, it is in the name of survival.

Survivance for Indigenous Peoples, not survival, demands much more than “radical mutual aid”—it takes *community*, which is always and already practiced by Indigenous Peoples. Non-Indigenous accomplices must be at the sides of Indigenous communities if they too want to survive a deeply wounded and exploited land whose very life-force is under attack at every given moment and the side of more-than-human beings. Indigenous Peoples have always practiced mutual aid, not only for each other but also for more-than-human persons—Land, directly ancestral or not.

While COVID-19 has shone a bright light on the urgent need for care of each other, it is again ever-so clear that the settler state will not care for those whom it claims to support in the colonial state. Biological scientists study mutualisms in their ecological studies of species interaction. Does the mutual in mutualism enter the frame, at the minimum, in environmental studies research practices? And what of environmental anthropologists who study and work alongside more-than-humans?

Doing academic work that listens to and thinks with more-than-human beings as having bodies and lives worthy of living through to their fullest meaning is, indeed, a challenge in areas where settler futurities take precedence over all else. Place/land and all beings tied up with them, despite having much to teach, are rarely treated and centered as living beings in academic analysis (Tuck and McKenzie, 2015). In other words, taking up this sort of work has proven to be such a challenge that academics often skip over it, and quite possibly for a good reason. Engulfment in worlds largely filled with settler logics creates seemingly insurmountable barriers to those who may otherwise wish to co-create Indigenous futurities with/in academe, particularly with Indigenous Land.

*Radical mutual aid with/for more-than-humans and 2STQBIPOC—
bodies and lives that are by-and-large disregarded, exploited,
and abused— goes deeper and is necessary to create any
real, lasting change as a collective force.*

How do these points speak to the need for community care protocols & practices as one co-creates with more-than-humans in research and beyond? Scholars who work to co-create bridges that link the gaps between human-centered worlds and the many more-than-humans already living among them/us are of particular guidance

to me in the challenge of co-creating Indigenous futurities with/in academic worlds. I am grateful to geographer Sarah Whatmore (2006) for gifting communities in/beyond the academy with “more-than” terminology, where, in English, one is provided with language that shifts landscape from a plane to a land—a living actor. I look to Tonawanda Band of Seneca scholar on literature, race, and ethnic theory Mishuana Goeman (2013) when considering the necessary decolonizing work that is to (re)claim, (re)name, and (re)vitalize—where “(re)” creates Indigenous futurities that are simultaneously past and present but made anew.

Sisseton Wahpeton Oyate anthropologist Kim TallBear’s (2013, 2014) work illuminates how worlds and beings are co-constituted in relation to others. Collaborations are sites for new knowledge formations, creating space for an academe that is more than research. I often think with the work of Kanaka Maoli political scientist Noelani Goodyear-Ka’ōpua (2016), who reminds one that Indigenous Peoples forge their relationships with place/land and land-bodied beings. Therefore, researchers are obligated to such land beings far beyond the scope of a research project. Political scientist Audra Mitchell (2018), a settler of Ukrainian, Polish, Scottish, and English ancestry who lives on the Ancestral and Treaty Lands of the Attawandaron (Neutral), Haudenosaunee, and Mississaugas of the New Credit, demonstrates ways in which non-Indigenous scholars might honor the efforts of Indigenous resurgents who seek to repair protocols and relations between particular peoples, plants, animals, and many land and water beings.

However, I am committed to learning from her and my fellow colleagues-in-community in ways that affect my academic work, corporal existence. Drawing on these lineages of thought and scholarship, my work strives to co-create Indigenous futurities with more-than-human beings. This effort simultaneously envisions Indigenous futurities as it takes up and works against settler colonial modes of being and separation.

This work contributes to an emergent subfield of Native American and Indigenous Studies: Indigenous Science, Technology, and Society (I-STS) (Kolopenuk 2020). Jessica Kolopenuk's piece, "Miskâsowin: Indigenous Science, Technology, and Society," presents how I-STS disrupts colonial ontologies of knowledge and sovereignty. Unlike colonial technoscientific research that subjectifies Indigenous Peoples or, at best, creates some spaces for inclusion, I-STS research begins at the Indigenous researcher's relationally adapted methodologies. According to Kolopenuk, I-STS is engaged in the capacity-building of "scientific fields so that they are capable of producing and backing highly interdisciplinary, relational, and Indigenous research and training approaches" and that I-STS scholars "explore how Indigenous peoples' engagement with science and technology fields, when done in and on their own terms can support their communities and territories" (2020, 4-5).

Kolopenuk asks,

How do the logics of nature, exploration, and discovery, and the scientific and political technologies that they bring to bear impact bodies, peoples, relationships, relatives, and spaces? How have political and scientific philosophies of humanness, morality, legal personhood, and citizenship come at the expense of Indigenous peoplehoods and through re/iterations of indigeneity? And further, how can we disturb assertions of assumed

geopolitical dis/possession to territory and the exceptionalism of academic freedom to reconfigure balanced relationships with each other and with misewa (all that exists)? (2020, 5)

Through this line of engagement and questioning, I find an academic home in I-STIS, an international community of thinkers, creatives, and scholars. Together, this community honors Land-bodied beings seen, unseen, and felt while co-creating Indigenous futurities through scholarship.

The next chapter discusses status-quo environmental anthropological ethnography, where it co-exists with fundamental decolonial inquiries. I interrupt the status-quo with a few possibilities that Indigenous-created ethnographic research practices may offer by centering the understanding that the ethnographer does their work as they corporally move through and with Indigenous Lands, environmental spaces, and places, and through varied practices and experiences of time.

CHAPTER 2
ANTHROPOLOGICAL RESEARCH
AND MORE-THAN-HUMAN BODIES AND LIVES

Socio-cultural and anthropological research *of* the environment has been problematized by authors such as Stefan Helmreich's (2009), whose work presented thoughts on anthropological studies of oceanic microbes (2009), Julie Cruikshank's (2010) work discussed her encounters with stories *about* glaciers, and the presuppositions of "traditional ecological knowledge" (TEK, 2005), and Vanessa Whatmore argued that anthropologists need a renewed sensibility about their research objects as having a fluid existence and meaning in the world (2002). While efforts since then continue to strive for decolonizing anthropological methods, anthropology remains in desperate need of continued methodological disruption by engaging work that intentionally works *with* Land, and that is what this study does.

This study treats the conditions under which pollinators must survive as real material bodies with lived lives, not only as metaphors. Thus, it promises to have four kinds of broad contributions. First, it provides new theoretical understandings of relations between human and non-human beings within settler-colonial contexts through engagement with Indigenous praxis. Therefore, new understandings arising from the research are impactful to anthropology and beyond, as this perspective has never been documented ethnographically. Given the incontestable political tensions in the US, where powerful corporate entities and governmental agencies, together, directly and violently conflict with Native and Indigenous lifeways, such as the

Dakota Access Pipeline—threatening traditional waters and treaty-guaranteed Great Sioux Nation territory—it is crucial that anthropological interfaces with science studies engage decolonial methodologies. How can anthropology and anthropologists engage settler colonialism as an analytic while not actively striving to contribute to decolonization and Indigenous repatriation of land and life? This work addresses anthropologist Audra Simpson’s plea for anthropological research that responds to “the very urgent, the very deep and lacerating issues that [Indigenous peoples’] communities and nations are dealing with,” through research that “takes into account the history of anthropology, settlement, and power relations at once” (Simpson 2014).

Second, reframing a critical environmental issue to include new parameters and complexities in the frame opens new possibilities for scientists to understand how agricultural technoscientific practices on and with the non-human-human have far-reaching effects on non-human and human, Native and Indigenous, and settlers’ bodies and lives. The work (re)conceptualizes who settlers are and who bees are (in contexts of agricultural technosciences and a settler colonial state) and how a decolonial reconfiguration can have tangible outcomes for all peoples living within settler colonial contexts. Third, in conducting an ethnographic intervention, I root the research within my perspectives as an Indígenx person of lineages that stem from familial ancestral lands in Sonora, Mexico, Visayan islands in Philippines, Northern-Central Mexico, and Spain (Smith 2012). Therefore, I actively engage with my research partners in the field toward the initiation of and participation in opportunities for collaboration; and I strive to redirect institutional projects—projects which have

real consequences on Indigenous peoples, communities, and nations—where and when institutional researchers address such issues. Fourth, it contributes to postdoctoral, graduate, and undergraduate anthropological teaching and training by providing an ethnographic account of decolonial anthropological research that interfaces with science and technology studies—that is, Indigenous feminist materialities generating new forms of intersectional ethnographic methodologies.

*I have land-bodied ancestors with wounds deep and wide,
among the world's largest open-pit mines.*



Image 2. Buenavista copper mine in Sonora, Mexico— one of the largest open-pit copper mines in the world. Source: <http://www.banderasnews.com/1408/nr-88schoolsclousedovertoxicminespill.htm>

Imagine being afforded an opportunity to participate in healing unimaginably painful wounds, wounds that transcend colonial time—wounds that go so deep, the

pain is felt across and through multiple worlds. For Indigenous bodied peoples, imagining this sort of pain is unnecessary— because it is our lived reality. Together in this project, we travel through some of my family’s most painful yet beloved places, places where my Indigenous ancestor’s brown bodies landed by force and where they exploited as laborers on massive Euro-American settler Agricultural plantations in two regions: O’ahu, Hawai’i, where my ancestors worked as “sakada” after being shipped off on boats from their village on a small southern island in the Philippines; and in Sonoran Desert region of Arizona, where my ancestors lived and worked as cotton growers north of the US/Mexico border.

We travel, not through the lens of “looking back,” but rather through transformative processes enacted by embodied modes of practice (Tuck 2009). Cued by the notion of un/making ethnography, this piece is concerned with re-making. It will do so by bridge-building with ethnography as healing (axis z, the vertical dimension represented in Image 3). The z-axis shown in Image 3 is the representative movement of ethnographic research through space and time as it is co-created with decolonizing and Indigenizing practices. Below I discuss the methodologies that make up the Euclidean space within the spherical realm of a universe that the researcher occupies while conducting ethnographic research. First, I take up reflexive ethnographic practices that are only one point along a decolonizing axis and are common in Anthropology (Clifford and Marcus 1986; Fortun and Fortun 2010; Marcus 1995). Second, I present possibilities for Indigenizing practices— an

understanding of co-creating ethnographic research with more-than-(but including)-humans.



Image 3. Labor camp cemetery mural that overlooks my family.

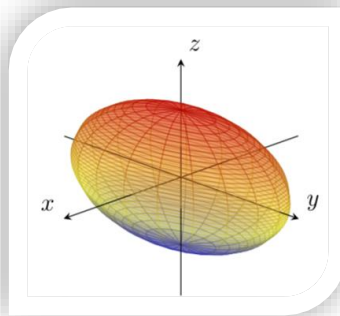
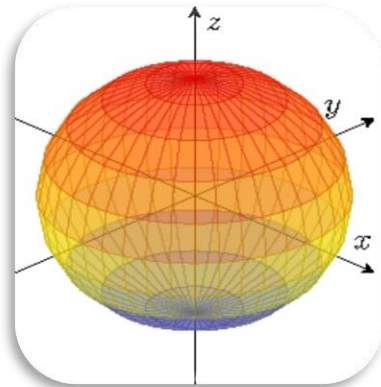
In the process, we journey along two axes: first, a *decolonizing axis* (*y*), where decolonizing ethnography in a settler colonial state is briefly presented as a foreground to status quo “reflexive ethnography;” second, we journey along an *Indigenizing axis* (*z*) where we discuss embodied methodologies for healing. Within this sphere, I present three sorts of Indigenous ethnographic methodologies that I use in my research. I work with more-than-(but including)-humans and where such methodologies apply to those who work with un/embodied beings seen and unseen and sensed.

Together we revisit experiences held during preliminary and dissertation research where I learned to “Follow the Pain.” Following the pain, as I now understand, can enable access to healing. This chapter speculates on the idea that we, ethnographic practitioners, can heal ourselves and thus, heal the Earth and each other⁶. Following Mishuana Goeman, who (re)mapped geographies through Indigenous storytelling to lift and reaffirm Indigenous Peoples, places, and place-making (Goeman 2013), this piece attempts to re-make ethnographic practices. It does so by building on Kim TallBear’s feminist Indigenous approaches to inquiries that are rooted in caring about making Indigenous lives better (TallBear 2014).

Anthropological ethnography, whose primary method is participant observation, has proven to be a valuable tool for those who engage feminist epistemologies of sciences and technologies. Scholars who care about decolonization and Indigenization share some overlapping concerns in research practices with those who practice feminist epistemological work. In her book, “Decolonizing Methodologies,” Dr. Linda Tu-hi-wai Smith discusses Indigenous contexts for research, where critical questions likely are familiar to institutional researchers who are asked by Indigenous communities, activists, and thinkers. Whose research is it, and who owns the data? Whose interests does the research serve? Who will benefit from the inquiries, datasets, and dissemination of the conclusions? Who has designed its questions and framings? Who will carry it out? Who will write it up? Where will

⁶ More on following the pain as methodology is later discussed in Chapter 4 where I present Nana theory where temporal pain is inextricably embedded within one’s materialized body.

the data and its discussions be published? Who will speak to it and for us? (Baldy 2015; Smith 2012). Considering the possibilities for decolonizing and Indigenizing ethnographic research, I discuss the interconnectedness of the two interventional inquires as they and the ethnographer move through space and time.



Images 4 and 5. Geometric spherical representation of x,y,z axes in space and time (RQ9cT.png (384×334) (imgur.com)).

Axis x: Decolonizing Ethnography

As it was originally designed, ethnography explored cultural phenomena, representing subjects and their cultures as objects in ethnographic texts. It emerged alongside mapping as a colonial tool in the 1700s. However, I argue that ethnography holds the possibility of creating much more than colonial texts and texts that

reproduce colonial practices as Indigenous knowledge accumulation repositories. They hold the possibility of more than simply knowing for knowing's sake. In this vein, I ask what possibilities might an Indigenous ethnographic practice open given Indigenous temporal, sensorial, tangible and intangible realities? And how might such possibilities interface with preexisting feminist anthropological/social-scientific practices?

Feminist anthropologists have struggled with the discomforts of ethnography. For example, Marilyn Strathern described the relationship between anthropology and its methods to feminism as “awkward” (Strathern 1987). Specifically, the “awkwardness” was described “as the result of opposed processes of self-construction through opposition to others—processes that begin from different sides of [power divides]” (467; Abu Lughod). Thanks to the hard work of feminists, anthropological ethnography today is widely practiced as a reflexive process (Tsing 2015, 2005), and at interfaces with anti-colonial and decolonial feminist studies of the environment, science, and technologies (Anthropology and View all posts by Decolonizing Anthropology n.d.; Chen 2003). Reflexive anthropological ethnography is primarily concerned with relationships of power, knowledge, production, representations of people in the text through objectification, and its colonial roots. Therefore, I next think on reflexivity as it connects (or not) with decolonial methodologies.

Dimensional Point, x1

Reflexive ethnography serves as a helpful tool in attending to anti-colonialism and post-colonial and US-based subaltern studies scholarship. Yet, when settler

colonialism enters the frame where post-colonialism is not at play, scholars who aim to practice decolonizing methodologies may find that a reflexive ethnographic practice becomes incomplete. At the interface of STS, a reflexive ethnographic approach likely engages foundational feminist STS epistemologies such as strong objectivity and situated knowledges. Situated knowledge, for example, is helpful to many scholars who engage embodied forms of knowing (Haraway 1988), but it also prompts one to acknowledge multiple ways of knowing.

Considering engaging with multiple ways of knowing, I ask, how might an ethnographic practice be transformed and transformative given the actual pains inflicted by settler colonial violence onto Indigenous bodies and lives? How might we, ethnographic practitioners, be agents for such transformative work toward healing? Here, I speculate on the possibilities of anthropological/STS ethnography coupled with Indigenous (embodied) methodologies toward healing.

Axis y: Indigenizing/Embodied Methodologies

Dimensional Point, y1

First, the ethnographic practice is engaged in the practical dimension, likely familiar to most anthropologists and socio-cultural field researchers, where the embodied practice of “participant observation” occurs. Participant observation, the key mode of ethnographic practice in anthropological/STS ethnography, affords practitioners a unique opportunity to show up and engage face to face with their research friends and partners with the intention of relation-building, and not only with humans. The practical dimension “opens the door” to opportunities for healing

ourselves and others, as it affords ethnographic practitioners to encounter and engage with others physically. Participant observation is therefore reclaimed and remade as a physical use of the body, much like a sobador (healer) as a hands-on healing method.



Image 6. Sobador healing advert. (Partera, curandero o sobador; una solución económica para la salud | México Nueva Era (mexiconuevaera.com).

In what is often referred to as Traditional Mexican medicine (TMN), which varies from community to community, sobador is a practice of healing that when translated to English is massage. Sobador is practiced in a way that moves beyond what is commonly found in Euro-American forms of massage. It is widely known that Euro-Americans consider massage to be a means to relaxation, or stress relief. In its upmost state, Euro-Americans view massage as physical therapy.

Sobador, however, is a healing practice that physically, emotionally, spiritually, and energetically shifts the health, well-being, and wellness of the recipient. Individuals often seek a sobadoro or sobadora to aid them with a myriad of

concerns and conditions. Many who seek out sobador healers may understand that a physical ailment is directly linked to an intangible condition of concern that is in need of healing. One with a uterus may be concerned with their inability to conceive a child. The inability to conceive may be understood as not only a physical ailment but also hand-in-hand with issues of negative energy placed on them by another person who wishes them harm. The sobador may then decide to aid their client with a physical massage to the pelvic region, using specific protocols, to adjust the position of the uterus, for example. Embedded in the session are measures that simultaneously attend to the person's energetic and spiritual ailments.

Like a sobador of sorts, persons can work with Land in small and incrementally healing ways. Based on my own experiences as an Indigenous urban person, learning how to move differently with Indigenous Land of which I am not ancestrally connected was and is a learning process that required/s conscious and consistent work. In learning Land work with Indigenous women and community leaders who are ancestrally connected to the lands from which I have lived and benefited, I was taught that indeed I have the power and ability to promote healing of their ancestral lands. Based on the teachings shared and shown to me through corporally engaged exchanges between my teachers, me, and their Land, I learned that one does not need to be an identified healer to promote healing. In fact, I was taught that the power and impact that people who are not ancestrally linked to the lands from which they benefit actually hold the potential to create remarkable healing with and for the Native people and their territories through Land care work, honoring

and respecting the Land and through community engagement. Craig Torres, a Tongva uncle and teacher, often teaches the broader communities of non-Native folks in Los Angeles, CA to practice respect, recognize, responsibility, re-indigenize: respect the Land; recognize the Indigenous Peoples of the Land; act responsibly to the Land and Native peoples of the Land because it is your responsibility and obligation; re-Indigenize by listening, learning, and practicing the Land care protocols taught by Native Peoples.

Now, we all live here together, non-Indian and Indian. Anywhere you go, you should learn how the Native people who lived, how they live now, who they are, so that's why we share, because we want people to be aware of our traditional ways and how we took care of this land, and utilized these plants, and they're here now to respect that. A lot of our great helpers come from the outside community that really helps support us, so that we can do what we're supposed to be doing.”
— Lori Sisquoc, Cahuilla leader and teacher

Sobador work reminds me that physical/material work overlaps work that is not necessarily material. Rather, sobador teaches me that the material is already and always interconnected with realms and bodies beyond the material. There is not “material itself,” there are always (im)material realities and in a settler colonial state, healing (im)material bodies is possible. Moving in a direction that begins at the material is a powerful modality of healing and ethnographers have the opportunity to contribute to Land healing possibilities.

Ethnographers, in a standard form of fieldwork, literally move across land and primarily focus their attentions on humans and their interactions with each other. For example, I have conducted fieldwork on Oahu, Hawai’i as an invited guest. O’ahu is the island to which my Indigenous ancestors from the Philippines were exported and

exploited as cheap labor to benefit massive *haole* (white) settler Ag projects. I was invited to join a small group of folks to land that is traditionally managed. I was taught appropriate ways of entering the land according to Kanaka Maoli protocols. Then, and only then, are we allowed to enter the land and the wet lo'i: caring for the soil, giving your *mana* (life essence) to it, moving and smoothing it, creating a warm environment for the Kalo stalk to root itself, planting Kalo, a Kanaka relative. One of the most revered Kanaka plants and food. Before planting the Kalo cuttings, we shared breath with the Kalo stalk, breathing into the cut end of the stalk, gifting one's breath to the Kalo gifts life, igniting its mana from yours. Then and only then may one plant the Kalo stalk into the soft, wet Lo'i soil. This is at once a material exchange and an unseen, intangible one. As one breathes life into the Kalo stalk, they transfer their mana and breathe life into the long-standing Indigenous Kanaka sovereignty and ongoing resurgence movements.



Image 7. Protocol entrance to Kanaka Maoli taro fields.



Image 8. Planting in wet taro farm.



Image 9. Dry taro farm.

Many Indigenous scholars' works discuss Land care work in and with Hawai'i. For example Indigenous Chamoru poet-scholar Craig Santos Perez presents in poetry

relationships with land that encompass living with troubled environments all the while caring for the land and each other (Perez 2020). His recent collection of eco-poetry shows his Native Pacific Islander embodiment lived realities as he intertwines with the ecological harm of his ancestral Lands. Perez confronts the impacts of environmental injustice and lost habitats. His vision of the future requires sustainable living that are shaped by Indigenous ethics and relational practices across human/more-than-human communities. Kanaka Maoli geographer Katrina-Ann Kapā‘anaokalāokeola Oliveira teaches the importance of Kanaka Land relations by emphasizing the importance of place-names (Oliveira 2014; 2009). Jamaica Heolimeleikalani Osorio integrates Indigenous theory, decolonization, and Indigenous queer theory and Indigenous feminisms. Jamaica is a Land protector and scholar who embodies aspects of Land care that requires corporal risks and sense of Kanaka body politics and Indigenous queer identities that are materially tied to Kanaka Land (Osorio 2018). I am particularly drawn to Brandy Nālani McDougall’s work, a Kanaka Maoli scholar a Kanaka poet and essayist whose recent work delves into the realm of material art, environment, poetry and essays, with sustainability, and environmental ethics (McDougall 2019). Dr. McDougall’s recent journal article, “What the Island Provides: Island Sustainability and Island–Human Relationality” draws the reader into the interior structure of an art exhibit all while extending the reader to the presence of her ancestral island Land.

Axis y: Indigenizing/Embodied Methodologies

Dimensional Point, y2

Next is the *sensorial dimension*. The root of the term “sensorial” is the Latin word “senses,” where bodily sensations are experienced and where emotional feelings may arise. This is where and how meaning-making is formed. Thus, the sensorial dimension allows for meaning-making through feelings and experiences that emerge from within the fibrous tissues of the body but are linked with the intangible, such as a feeling, a vision, or an experience that is not visible and that is un/embodied, like a dream related to the work.

Diadesia—Native cactus bees in the Mojave Desert—reminded me of the sensorial dimension on my way to the Sonoran Desert. An aggregate of Native cactus bees was going about their day this past spring, gathering pollen for their offspring in the nest below ground. The bees sensed my companions and me coming toward them, even several feet away. They noticeably scatted, hover slowly, hesitate to return to their nests. I saw their hesitation but also sensed it. I could feel a decrease in the buzzing around your body, where it went from high-speed intensity to a slow whisper. Here you may capture the hesitation of this mother bee to exit her nest for fear of any disruption or disturbance upon discovery of them. As much as I could sense her hesitations, she could sense our intrigue. And she was correct. Here, the scientist companions of mine disturbed this bee’s urgent work by capturing the bee while on a cactus flower. Any disruption in her urgent work is potentially harmful to her entire lineage, as one Native bee foraging holds the potential for thousands of

bees through her nest, and she only has approximately 3 weeks above the ground to gather enough food to feed her larvae for the next year, as she will have already died. The bee's sense of danger was correct, as my companion captured one bee for observation. In observing this capture, can you sense the worry in her bodily expression and movements? This transitions us into the third Indigenous methodological dimension.

Dimensional Point, y3

The third dimension is the *visceral dimension*: that which is felt and experienced within the body. Here is where emotions and deep sensibilities come to the surface. They may flow freely and are valid as a way of knowing. It reminded me of the visceral dimension on my way from the Mojave Desert to the Sonoran Desert to work with USDA honeybee scientists. Upon receiving a National Science Foundation grant for summer field research, I headed further east from my established research station of Cahuilla/Serrano territory in the Mojave to the Sonoran Desert of Tohono O'odham territory in Arizona—the largest Native American reservation in the United States, equaling 2.8-million acres with 62 miles along the international geopolitical border that is the United States and Mexico. There I worked with one lab and their research team to learn distinctions of Euro-American studies of bees, honeybees or Native.



Image 10. Honeybee research: In the Sonoran Desert, USDA with researchers and their research honeybees and hives.



Image 11. Honeybee research escapee.

Desert Driving

*driving in west to east, then south
one loving desert to another.
my eyes catch the sign
10 fwy you can't miss it, "Goodyear," "Litchfield"
right there off Indian School Road.
the name of a city
the cemetery
a corporation
the plantation
(worthy of a sign?)
that forced my people to
crack the earth open
and who cracked my family
away.
the place that harmed
and saved
them/us.
that kept them in a shack.
that kept them alive.
that kept them,
and keeps them still.
settler colonial lands: embedded:
on the signs
in us
on her
even where my Nana and tata are laid to rest.
they're surrounded
and buried
in the very soil that is deep and full of their
sweat
their tears
our blood.
their very bones
are swallowed up there.
but not their spirit,
their spirit is with me.
The sign brought their pain to me
like I drove through a brick wall
of suffering and loss.
it shattered my body
my foot let off the gas.
for a moment*

*a split second
i was floating
no, sinking
into their struggles.
as if their pain/s
were my own.
hairs raised up
the tears flooded my eyes
soaking my face and shirt.
there was no holding them back.
—etnografía poética fieldnotes*

For the first time, I worked with European honeybees and scientists who study them in the Sonoran Desert of Arizona. I entered the visceral dimension a handful of times. For example, the scientists removed frames from a collection of 20 colonies to develop biological control agents through experimental research. Here, they were harvesting Varroa Mites, a suspicious parasite that, according to many scientists and honeybee keepers, is one of the contributing factors in large-scale honeybee deaths.

Bees are removed from their bee boxes, brushed off of their colony homes—aka “frames”—into a box where they are doused with an agent that has small bead-like pellets. The scientist then vigorously shakes the box where the pellets push the mites off the bees, landing the mites into the harvest screen. The bees try to escape with their lives from the process but are unsuccessful at doing so. They are disturbed, disoriented, and disrupted. Within days, it is assumed that the bees would recuperate and that the agent was a non-lethal substance known as everyday sugar. After the experiment, all 20 colonies died.



Image 12. A doused honeybee who did not make their escape.

As has been shown, the three dimensions (practical, sensory, and visceral) are methodological approaches that are not only engaged with humans. Such approaches do not limit practitioners to human language, nor are they constrained to dominant notions of able-bodied-ness (i.e., speech, vision, hearing). Thus, these forms of learning and knowing open up space for multiple ethnographic possibilities to examine human and non-human engagements.

Inquiries for Methodological Consideration

Two questions arise: 1) How might ethnographic practices that engage and prioritize these three dimensions of Indigenous methodologies presented here enable access and give rise to healing processes? 2) How does one know if they are to practice these approaches?

I argue that to pinpoint healing flags for wounds. Wounds imply injuries. As ones who seek to practice feminist epistemologies and reflexive ethnography in an anthropological/STS interface, we cannot consider the possibilities of building on

inquiries of care without naming the infinitely deep pains, massive open and re-opened wounds inflicted by settler colonialism. This system requires exploitation, excavation, and elimination of Indigenous bodies and lives (Wolfe 1999, 2006).

In her book *Rock My Soul, Black People and Self Esteem*, bell hooks (2002) describes how many Black folks “name the pain of racism and demand accountability.” Further, International Studies scholar Audra Mitchell and Indigenous Metis anthropologist Zoe Todd are currently working on a project in which they ask participants, “Where does the earth hurt for you?” Naming and locating pains are essential. However, pains such as those experienced by my land-bodied ancestors are felt across time, space, and place. Indigenous Peoples have pains that move through our bodies, affect our spirit, and live between and within us even in our un/embodyed states. Thus, I argue, naming and locating the pain is a starting place.

To address the second question, I return to the outset, where the overlaps between decolonizing/Indigenizing concerns and feminist epistemologies of science was discussed as outlined in Tuhiwahi-Smith’s “Decolonizing Methodologies.” Yet, there are additional qualifying questions required of those who seek to practice Indigenizing methodologies; qualifying questions required of many projects of healing, projects of reclaiming, reformulating, and reconstituting. These sorts of projects require answers to questions that many researchers could not prepare for, nor may they be able to answer the questions correctly. Thus, this sort of approach is not intended for all practitioners. “Is her spirit clear? Does he have a good heart? what other baggage are they carrying? Are they useful to us? Can they fix up our

generator? Can they actually do anything?” (2013, 10). Finally, one may ask how decolonizing/Indigenizing programs such as “ethnography as healing” at the interface of anthropological/STS might be generative of healing ourselves, each other, and the Earth?

It becomes a possibility when taking “co-production” seriously, or rather, “co-constitution,” where both “natural” and “social” orders are mutually constitutive, “ethnography as healing” or “ethnographic practices that allow access and give rise to healing processes,” emerge (Jasanoff 2004; TallBear 2013, 23). In taking co-constitution seriously, one can imagine that healing ourselves, each other, and the Earth is possible. I echo Strathern’s sentiments by acknowledging that the relationships between anthropological/STS research and decolonization/Indigenization projects may be awkward and not without wrinkles. And while “Naming the Pain” is of critical import, and this work offers Indigenous embodied methodologies that engage more-than-but including-human-beings by bridge-building with “ethnography as healing” along the way.

In this project, I speculate on following a different sort of “object”: rather than status quo approaches such as “follow the person/follow the thing,” as is the general “rule of thumb” in anthropological ethnography (Clifford and Marcus 1986; Fortun and Fortun 2010; Marcus 1995), this chapter shows how one might instead (given certain protocols are adhered to and qualifying questions are sufficiently answered), they may “Follow the Pain.” In so doing, ethnography as healing and bridge-building

with (more-than-but including-human beings) reconstitutes the ethnographer and those with whom they co-labor.

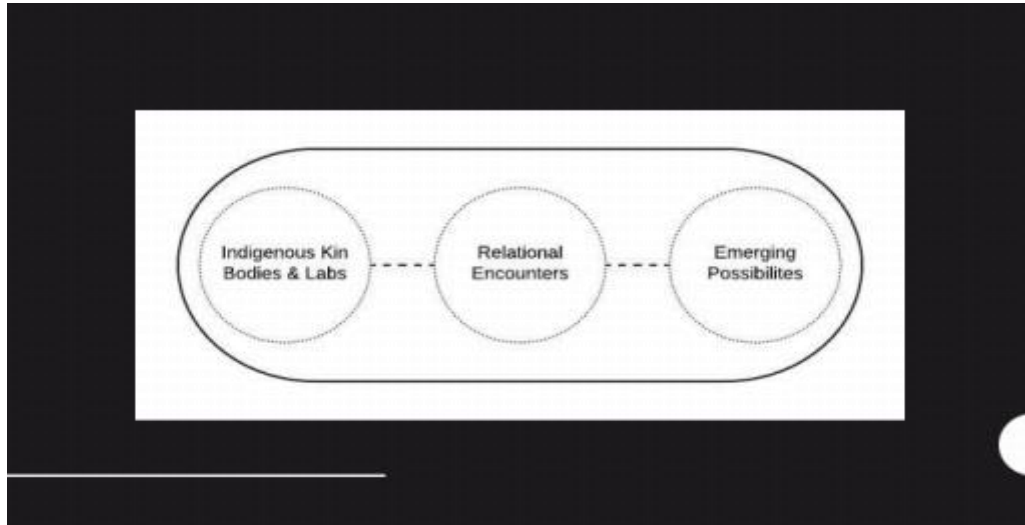


Image 13. My schematic presented at the 2017 Society for Social Studies of Science (4S) that visually demonstrates Indigenous kin bodies and lab practices, relational encounters in the lab, and emerging possibilities in bioscientific research with bee pollinators through transdisciplinary intensives and collaborations.

Learning a Bee Lab

The lab has a name. Its pseudonym the Pickering Lab. The lab is a room inside an old tall four-story building. The lab is nestled in a corner of a hallway, alongside other labs held within the confines of their assigned square footage of space. I was directed to enter the lab through a ground floor door of “the new building” outside the building that houses the lab. Instead, it is its latest add-on appendage. It is a building that has been constructed to its side. More literally, it is its new side.

The Pickering Lab Principle Investigator directed me to find lab 445 and enter on the first floor of the new building made of cement. I found the new building and

entered. An immediate sense for modern aesthetic and contemporary interior design strikes my eyes. I see what I think of as updated-mid 20th-century modern interior design all around me. Sharp edges, contrasted with round objects like globe-shaped lighting fixtures and brightly painted walls. Bleached wood tables and trendy lime paint on some select walls with its equalizing neighbor, a brightly colored image of some animal specimen such as a close-up of a dragonfly pictured at its closest lens zoom but printed to be larger than my 125-pound canine service companion, Otis. Floor-to-ceiling glass windows line the newer building's hallways. I begin my climb up a clean and sterile-looking flight of hard-lined cement stairs carve up to the fourth floor.

As I continue to step upward, one ledge at a time, I happily enjoy a beautiful view of the tall redwood trees, and a peek at the ocean bay through the transparent floor-to-ceiling windows that lead the way. Fourth floor at last. An orange wall this time, and its neighbor, the giant guppy fish, immediately greets me with a bright "Hello and welcome!" Or maybe it is with a bright signal that means to send me a warning: "Turn around!" I round the corner, and giant cold metal beams frame the seams between the space where the old building used to end and the sutures that try to mend its new side appendage.

While stepping over the foot-wide steel beam that circles around the floor, up the walls, and overhead, I leave behind the bright, modern, and airy atmosphere and enter into the dark, old, and musty room. It was as if the metal beams mark the line of transition between different spaces and different times. I wondered if this

Frankenstein aesthetic of stitching structures between past and present, new and old, provided me with any clue of what was to come. Frankenstein has officially welcomed me into its hall of labs. The cold tiles and outdated fluorescent lights hurt my senses. The air felt thick, as if it forced my lungs to inhale an invisible dust cloud. There I stood in front of the door to the lab, the first door of many that line the long tunneled hallway. I'd later learn that the line of heavy wooden, dark stained slat doors with knobs are keepers of unknown things and beings, behind closed doors, under locks and keys.

“Well, hello! Welcome to our lab! Come in, come in.” The wooden door creaks in the widening swing. It is as if Frankenstein's creator has found me out but is excited to share the findings of her discoveries while not recognizing the double bind of her project. The shock of the bright lights in the lab hit me like a wall of heat. It was as if I had left my grandfather's old and rusting avocado green garage Frigidaire refrigerator and stepped into a sterile operating room of the hospital E.R. I was the one on the table under the lamps.

The lab room felt still, as if the world had stopped turning, and Kronos had pressed the pause button. Although there were living humans (and possibly other living beings) occupying the lab space, the odd sense of stillness and silence was deafening. The stillness amplified the movement. Tops of human heads rolled up as if linked up to a foosball line rod. Together, they look up to take a peek at the newest lab specimen. Sets of eyes peer out from behind a microscope. Others can be seen. Deeply hunched over backs working at lab tables slowly lift what appears to be a set

of heavy necks and heads. As their eyes scan me, I scan the room. My untrained lab eyes see mostly cabinets and drawers. Birchwood cabinets engulf the room, which seems large enough to house three Volkswagen Bugs but too small now to hold even one because of so many cabinets shooting out from three of the four walls.

It contrasts the bleached wood with the black tabletops, which provides a flat secure surface to three large microscopes. Hanging lab coats hooked to the back of the door with three pairs of plastic eye goggles. It's not so silent after all.

“Mmmmmmm.Mmmmm.” I look around to find the source of the humming. I'm told, “It's the hood ventilators. They're so loud. I wish that they could be turned off.” The sound emerged from the walls and ceiling overhead, but the stillness surrounding me prevailed. The only thing that moved was me. A room of lab researchers returned to their sitting hunched positions at the tables and scopes.

Lab Tools and Bee Bodies

Researcher 1: We use the bowl traps to trap the insects with soap and water.

K: What happens with the insects you trap?

Researcher 1: We are studying biodiversity on campus and on the farm. It's a project funded by the U.C.C]. Is funded for one year and is part of my current GSR.

K: What's involved?

Research Assistant 1: We collect the insects trapped at each site and then use forceps to take them out of the alcohol they are stored in. And then, move legs and wings around to straighten them out. We pin them using the thickest pin possible because we have labels to pin with them too.

Research Assistant 2: Today, we are pinning the bees.

Researcher 1: They pin by genus.

When asking permission to take photographs as the researchers pin the bees.

Research Assistant 2: I like photos being taken of me doing science!



Image 14. Researcher with forceps in hand, manipulating bee specimens who were captured in traps.

Research Assistant 2: If my hand is feeling kind of shaky, I put one finger down [onto the tabletop] to keep it steady.

Researcher 1: We have spent a considerable amount of time pinning. We work here [weekly] from 8–10 [in the morning]. It's the only chance we have to work together. And our equipment is kind of limited—the microscopes—that microscope has a really good camera feature. You have fifteen grad students using this lab, plus interns and undergrads, and there are only three scopes. It can get a little hairy in here.

Research Assistant 1: We do a lot of pinning.

K: You do a lot of pinning?



Image 15. Bee manipulation before pinning, via forceps.

Research Assistant 1: Yah, I'm a beginner. But we try to avoid the thorax. Pin it in the center [of the body]. Then, once the insect is pinned, we use this little lever, a wood-step, to level out the pin. See? I very delicately and slowly inserted the pinned bee into the top stop of the woodblock to level out its distance from the pinhead to the length of the pin.

Using a wood block allows for evenness between a collective set of pinned insect bodies. This day, it was bees being pinned by two or three research assistants. They had trapped the bees in blue cheap disposable plastic bowls only full of soapy water. Now the bee was to be pierced by the sharp-pointed pin and made to become level to its boxed counterparts. At the very least, Research Assistant 1 attended to the bee pinning with extreme and detailed care. Still, how do researchers who are interested and deeply invested (temporally, physically, economically, intellectually) in environmental biodiversity, and thus concerned with stable bee and overall insect populations, negotiate the paradoxical condition that lies between desiring

biodiversity and the physical act of piercing the body of an insect so iconic as a bee pollinator? In fact, as I had learned during my first visit to Kite Lab, bees are being studied in this very lab over concern of colony collapse disorder, a bee disease that is causing bee colonies across the US to die off.

RA1: Then, all of the specimens are evenly level in the box. Then we will use the [middle] in the level to do the tags. Right now, we are doing just one species. But to make a really good identification, we spread out all of the wings and legs. Each leg and wing helps to have a better visual to identify it. We aren't just messing with them to be cruel or anything.



Image 16. Researcher pinning a bee using a wood-step leveler.

How might those interested and deeply invested in environmental biodiversity negotiate the paradoxical condition between desiring biodiversity and the physical act of killing and piercing an insect's body emerge from the lab or our brief discussions that day? Mostly, my questions would go unanswered. Still, I was provided some brief glimpses into the relationships between scientists and their specimens.

Every day, imagine bee encounters and chart bee travels. You build bee houses and look for healthy places for bees to gather nutrients. You try to predict bee

behaviors and understand when bees decide to do things differently. You think of bee health, but also bee happiness. You've stared at bee bodies and caressed bee backs and bellies with your fingertips. You talk about bee sex, watch them having sex, consider mating and bee reproduction.



Image 17. Two bees having sex. Though not mating as they are both males.

You talk to bees and think of them often. You imagine what bees are thinking, planning, and saying to each other, to other insects, to plants. Your life is devoted to understanding bees and learning what role humans play in bee population health. You spend your days considering and nights dreaming of bee-life. Yet, what looms behind all of the joy you get from your time spent with bees and thinking of them is sadness. You live with a distressing pain from knowing that bees are dying, possibly/probably due to the behaviors of your species—humans. Bees—they are dying. They are all dying from what is currently called colony collapse disorder (CCD). You are a human who lives in a bee's world, and you are on a mission and are committed to remaining

immersed in bee worlds. Perhaps bees can be saved. Perhaps you are the one to save them because you are the one who knows them.

*J: When I see **honeybees**, I'm like – I love you! I know every single aspect of their bodies. Legs and faces. Hair and wings. Bellies. I have been staring at them in my hand, in flight, and under microscopes for seven years. Pinning them. Doing weird things with their bodies. [Honeybees] are hard to work with. Their hives are heavy, and you can't move them around easily. So I work with these [other] bees. When I see a bee from the corner of my eye, I know what they're doing. I know what they're looking for or what they were doing right before, just based on how they're acting.*

Their connection to the bees. Not as something studied, but as beings. From their perspective, they had become friends with each bee at a seemingly intimate level, intimacy in the form of emotional bonding. They felt an emotional surge when seeing a bee: love. They felt an intellectual connection: knowing.

We arrived at a collection site and jumped out of the truck. I grabbed the tool bucket then swiftly walked over to the driver's side, where Jessie kept the cooler. Jessie opened the cooler lid, and the outside sunshine immediately filled the rectangular white container. Inside the bucket were what looked like small business-card-sized boxes with various black Sharpie markings on each one. The boxes held cocooned bees inside. Jessie lifted one box out of the pile, and I imagined some fictional version of the cocooned bees feeling somehow “chosen” or notable for having their friend who brings the light, and who chose them for this site specifically; their fellow cocoons saying goodbye as their dear Jessie closes the cooler lid and darkness returns.

J: See? They look like little peanuts! Look at them! They're so-oo cute! I just love to hold them and look at them. Aren't they cute? I lo-o-ve them.”

Each cocoon was brown, and while I would say they were shaped like Piñon nuts, Jessie felt they were shaped like peanuts. Still, the bee cocoons did look like a little a small pile of roasted brown nuts. Cocooned bees are kept on ice in a cooler and pre-sorted by sex the night before bees are assigned to a “house” (bee nest). The researcher sorts purchased and refrigerated cocoons by sex. Sex is determined by the size of the cocoon. Smaller, thinner cocoons are said to be male, and the larger, thicker cocoons are more than likely female. Ultimately, the sorting process is based on a reasonable guess using the relative thickness and thinness of cocoon sizes.

My initial response to hearing Jessie talk about their feelings of being connected to bees, emotionally and intellectually, was one of surprise. But why was I surprised by Jessie’s feeling of connectivity to bees, not simply as their research specimen but as fellow beings? Perhaps it could even be said that in some ways, the bees are Jessie’s research partners for whom they have great affection and care.

Thursday night beer brainstorms. The professor quickly got the seminar going with a small group of graduate students sitting quietly and stiffly erect around the arranged rectangular tables, which created a feeling of stagnant air. It became challenging to breathe. The corporate executive boardroom-style seating added to the staleness of the room. The fluorescent lighting made the pressure of impending and unknown expectations feel enhanced many times over. Cooking over us was only one part of a set of fluttering specimens in a petri dish dashing about with anticipation under the hot heat lamp of a professor’s microscope eye.



Image 18. Cocooned bees kept on ice and pre-sorted by sex.

After a long but semi-comforting presentation by the professor, where they described their research and books, reviewed the course syllabi and seminar expectations for outcomes, and general how-tos for seminar structure, a discussion about book one was opened up to the floor. Crickets. Not the sound of actual crickets, but crickets as in no one said a word. But I could hear the crick and crack of the leg of a chair from one person's fidgeting body movements, perhaps in discomfort from the seemingly prolonged silence looming over the room. I did a glance across the executive board tabletop. Books were open and seemed to have been read, with some pages marked by pencil, margin notes, paper flags for particular items of notation, and some highlighted words via fluorescent markings. Our eyes began to catch each

others': grad students glaring across the tables at each other, waiting for someone to brave the new intellectual waters of the first seminar session.

As if they were throwing their fellow grad students a life vest, Jessie said, "These books sucked." They had broken the silence of the room and cut through it with a larger-than-life-sized knife. We were transformed from energetically scurrying specimens in a pea tree dish under the lamp to a room of chuckling students and one grinning professor. Perhaps Jessie was comforted by the chuckles to continue in their opening comments, "Well, what I read of them. I didn't read all three of them. We all know grad students are too busy to read the books, right? Well, anyway, of what I read, I didn't particularly like them. I hope the next ones are more stimulating and interesting. At least, that's what I thought. Not sure what everyone else thought." For some reason, Jessie and I caught eyes as she was stating her opinion of the uninteresting "sucky" books; we both did a quick smile. I hoped the professor didn't notice my smile in support of her statements. At the break, a small group of grad students gathered in the hallway and began to hold an informal chat. Jessie and I were a part of it. I didn't say much, not even my name. I was just smiling, mostly. It was clear that the others knew each other. I was the outsider. One of the others said to Jessie, "You're always so bold and matter of fact" (chuckles to insinuate playfulness). "How do you get away with it every time?" Jessie replied, "I don't know. I'm just honest and straightforward, I guess. No time to waste."

My first impression of Jessie was based on Jessie's bold, no-frills, unapologetic authorial voice in class, or "straightforwardness," even as they described

themselves being in the hallway that day. Perhaps it was the first day of the seminar incident coupled with learning about Jessie’s research with insects and microbiological background that had me unconsciously categorizing them into my “usual STEM suspects” of campus life. Jessie arrived in class just on time, as if hurrying from a day laden with serious research endeavors and tasks. I imagined Jessie doing a day full of note-taking on the farm, then long hours of one eye pressed against a microscope, and projections of insect Images onto a white screen as they worked furiously to discover some unknown insect story. Jessie would arrive at the seminar with heavy dirt-packed boots, blue jeans, and outdoor gear, keeping them warm through the quarter term. A general rugged appearance paired with stern eyeglasses and demeanor provided me with a less than good understanding of Jessie’s bond with bees.

The Jessie I came to know is very different from the Jessie I imagined last quarter. Unlike the cold and bold Jessie I created in my head, this Jessie was full of pith and perk. The tone of Jessie’s voice pitched upward to a height that I had not heard from them before. It seemed to be an expression of excitement or enthusiasm. Jessie’s enthusiastic-sounding words returned my focus to our building of the bee “houses” there in the garden.

J: I know every single part of a bee. You see their bodies, all of that stuff, really up close because you look them fifty or more times a day—in your hand, under the scope. I watch them all the time. Seriously, knowledge from observation takes a really long time. I have been looking at them, observing them, watching them do their thing outside and [in a lab] under a microscope for so long. Years. I feel that I really-y know them. We probably know each other by now!

Jessie connected their painstaking observations of bees to their present connectivity with bees: not just one bee in particular, not even one species of bees, but bees in general. They felt that they really know them, and, by default, the bees know Jessie. Who am I to say that bees don't know Jessie? After all, Jessie is doing more than simply "researching" insects, as if that were some flat, one-dimensional thing. Jessie has been meticulously observing bees for nearly seven years now. Jessie watches them in flight, observing bee behaviors on plants and inside of hives. Jessie imagines bee feelings and physical struggles when encountering routine obstacles, such as little water nearby or pesticide-ridden fields. Anthropologists value participant observation as a critical method toward creating a deeper understanding of humans. More often than not, anthropologists develop deep, meaningful relationships with some research partners in the field. Why would Jessie's research partners, the bees, be any less significant? Jessie's longitudinal immersion into bee culture had, indeed, developed into a meaningful relationship.

I use bond as a metaphor for debt, a promise, and payment of sorts. Jessie feels a sense of owing to bees, not only because bees nourish her by pollinating plants that she eats, but she also feels a sense of indebtedness to bees because of the category of her species—human being. Human beings are held to be the primary cause of colony collapse disorder. In these ways, then, Jessie and bees are bonded through debt, payment, and promise. Jessie builds them comfortable homes where their beehive can flourish, with resources nearby and evenly distributed amounts of males and females for a healthy bee population and potential for reproduction. In

return, the bees share their knowledge with Jessie by “showing” her the ins and outs of bee life and culture while pollinating foods that Jessie and others will eat.

*J: I need to save the bees from dying if I can.
They save me, all of us, every day.
I owe them big time.*

Beyond daily encounters between Jessie and the bees, Jessie considers bee-pasts by searching for provable explanations of causes for colony collapse disorder by mining into the pits of the stomachs, searching for genetic clues. At the same time, Jessie primarily focuses on human futures by way of bee bodies. Jessie hopes to develop achievable solutions to preventing bee deaths by generating change in how agriculture is done in the US

In talking with my colleagues who study insect ecologies in an environmentally focused framework, I have learned that to study the impacts humans have on insects, the insects must die for the cause, not by choice but by trickery. They are tricked into believing that they have found a much-needed water source amidst a drought-ridden land that is California. Instead of finding fresh water in what appears to be a brightly colored flowering plant, the insect dives into a throwaway plastic bowl filled with soapy water. The soapy surface creates a chemical condition just tough enough to prevent the insect from fleeing its death. All the insects caught in the traps are pierced with sharp pins and then labeled as if they were books on a shelf undergoing a Dewey-decimal system of sorts. Others are sent off to a different lab where they are smashed up, and the pieces of their pounded bodies are placed on small slabs so that computers can map the contents of their guts. Then, the DNA

sequencing of their guts is added to a database of “microbiomes,” the modern terminology for genetic microorganisms of an environment; in this case, the “environment” is the guts of the insects whom are bee pollinators.

The paradoxical condition is that university research efforts striving toward biodiverse, agroecological, and sustainable agricultural objectives remain rooted in Euro-American scientific ideologies. It is as if the very agribusiness models it hopes to deconstruct are employed at a scale of very small environments like those of insects and bee guts. Despite the varying perspective of insects from the different agriculture science-related groups (ranging from support of diverse insect ecologies to the supporting uses of pesticides), it would seem that all still manage to support the killing of insects. Of course, the difference in the scale of killing is relevant since big agribusiness is actually big (not just economically but also spread widely with multiple environmental impacts). However, I am unsure of a study that can attest to the number of insects killed in the name of environmental science, biodiversity, agroecology, and sustainability.

I now focus on two ideologies that I found to be reoccurring during this research: 1) the ideology of “rights” and 2) the ideology and ever-pressing need to “know.” Both ideologies amplify how even in well-meaning scientific endeavors, environmental degradation is deeply embedded in American society. The two are intrinsically interlinked in many ways, though I hope to unpack them succinctly and separately. In America’s Bill of Rights, the first amendment attends to freedoms. The second to rights. The second bill to address a person’s rights directly supports

violence—the right to “keep and bear Arms”—and speaks to the underlying justification for nature control, a prime driver of environmental degradation in the Anthropocene. Despite the well-meaning efforts of scientific research which aims to study and find preventions for bee colony collapse disorder, research that encourages the biodiversity of plants and insect populations, sciences that are proponents of agroecology, and other “sustainable” and environmentally prone approaches, the ideology of “rights” perpetuates environmental degradation in the following ways:

1. It allows for the right to control;
2. It justifies the right to kill; and
3. It encourages the right to know, without limit.

The pursuit of knowledge is deeply linked with the right to know. In 1945 President Franklin D. Roosevelt initiated the inspiration for the development of the National Science Foundation (NSF) in his report *The Endless Frontier* (US NSF 1998). There is no end in sight to what can be done in the name of science, and “endlessness” was the main thrust from which the NSF was founded. The “right to know” has by now permeated as a widely held ideology in the US. Even protestors against biotechnology of food, for example, have re-appropriated the notion in their recent state and national campaigns demanding the right to know what scientists are doing at genetic levels in the foods that are distributed in mass markets across the US (Explore Local GMO Issues n.d.). The endless pursuit of knowing, or seeking knowledge, has had profoundly widespread deprecating effects on living beings and lands.

For example, my Hawaiian friends are serving as protectors against university and state efforts to enforce TMT International Observatory corporation's "right to build" a thirty-meter wide telescope atop Mauna aWākea, the world's tallest mountain. More importantly, it is a sacred site for Hawaiian peoples and lands. While this example may be anecdotal, it is reflective of ongoing struggles that living beings have to contend with in the name of science. Scholars in the Studies of Science and Technology (STS) are searching for new concepts, methods, terminologies, and ways of generating more equitable sciences (Reardon and TallBear 2012; TallBear 2013). Despite my many well-meaning attempts to generate collaborative and meaningful research relevant to environmental and social conditions, I still travel to conferences by airplanes powered by jet fuel and drive a car that uses gasoline, among many in my lists of "environmental-research paradoxes." Euro-American scientific research that confronts people's love of nature, deep concerns for human impacts on non-humans and the "natural" environment, and personally held desires for sustainable bio-outcomes remains unreconciled.

Bee Researchings

A bay is a noun only if water is dead. When the bay is a noun, it is defined by humans, trapped between its shores and contained by the word. But the verb wiikegama—to be a bay—releases the water from bondage and lets it live.

— Robin Kimmerer

Jessie and I spent most of our time together outside, building bee nests (bee-habitat), checking on bee access to water and mud (bee-health), and checked on the nests to ensure sturdy construction. Jessie and I visited the lab together in a different

type of encounter, not for a lab meeting, but simply to see Jessie's lab cabinets and other things Jessie thought I might find interesting.

We slowly go through the lab, as Jessie points out different objects, some of the pointing and explaining feeling surface and maybe even awkward. It was true; being enclosed in the lab does feel different than being together outside, in the "living lab." It seemed so still in there, quiet and yet loudly monotonous with the help of the ventilator hood's constant humming. After pointing out different objects and items of interest, Jessie shows me a cabinet of theirs.

J: All of the drawers are mostly just supplies. We have the traps and markers drawers. There's stuff here that researchers use for specific kinds of gardens, like community gardens versus farms. Some of this stuff is just older things that we do not really access. We have the hood, but we don't use it. Over there are our lab coats and goggles, required but not really necessary. My favorite things in here are the camera scope and this cabinet, these drawers.

Jessie slides open one drawer of a tall tabletop cabinet, with drawers that look just tall enough to hold a short stack of four or five magazines but wide enough to store a yardstick. The drawer is full of insect bodies organized in some fashion. To me, it looked like a line grid of bug bodies grouped by size from large to small, likely by genus. Their bodies were held in place with pins pushed into white foam. The bodies, pins, and foam were neatly stored in boxes with clear tops. The boxes and bodies and pins and foam and clear tops were all tucked away in the thin wide

shadow of the tabletop cabinet drawer until Jessie proudly shares the collection for viewing.

Drawer after drawer, I am shown the various collections of insects. Jessie is talking and saying many things very quickly, but I can't make out the speedy stream of her words. They are blurred together in the background of the moment, like the constant humming of the lab hood ventilator. My thoughts could only follow the rows and rows of dead insects, held midair by a sharp needle, as motionless as the lab first felt when I stepped inside. Insects who were once living their little insect lives, now labeled by family, genus, species, and the date and location of its capture. My focus returns to the sounds of Jessie's words.

J: Yah, these ones are mostly my collections, but some of these aren't. Some collections belong to other researchers who work out of this lab. I have spent years gathering all of these various specimens. I don't enjoy it-killing the bugs. But I have to. I need references for my research. We all have to. I'm not proud of it, but . . .

Jessie stops there. The energy of their excitement in sharing the collections quickly shifted from full-throttle to a slow, sad silence that drifted off into nothingness. Words shooting out one after the other ended in a lack of words with nothing more to say. I wondered what it was that changed Jessie's energy from pride to shame. And then it was clear:

J: I have never really shown these to anyone who doesn't already study insects. It feels kind of funny showing you a bunch of dead bugs in drawers. I'm not proud of it.

Me, an outsider, looking inside drawers of pinned insects became a reflection for Jessie. It created a moment where Jessie seemed to imagine me looking in at them

at their work, at their collections of bee bodies. Did the process of doing this kind of research over several years keep Jessie within a boxed perspective or their own? Did my presence remind Jessie of their affinity for insects, perhaps one of their motivations for doing the research in the first place? Jessie slid the drawer back inside its cubby, returning the box into its shadowy slot and the quiet of the room returned. Mmmmmm. Mmmmmm. The humming of the vent lulled us back to normalcy and cradled the cloud of guilt that slowly floated away.



Image 19. Native bees in a box.

CHAPTER 3

BEE/RESEARCHER RELATIONS AND THE TROUBLE WITH TAKING BEE LIVES



Image 20. Live bumble bee samples in the brooding room.

Death surrounds me.

Every day that I'm with bioscientists who study Native bee pollinators, I'm surrounded by Native bees who have been killed in the name of science:

dead bees in the refrigerator.

dead bees in the freezer.

dead bees being experimented on the lab tables and countertops.

dead bee parts being analyzed in assays.

bee bodies being ground up in preparation for dna extraction in homogenizers.

bees harvested in fields and on farms.

bee parts in pipettes.

gassed bees.

frozen bees.

pinned bees.

bees on display.
bees under microscopes.
pinned bees being photographed.
bees who are suffocated with cyanide.
bees in ethanol filled tubes like the ones on my lab desk,
randomly left there—
forgotten bees.



Image 21. Forgotten bees, left by the previous researcher assigned to this lab desk, in tubes of ethanol and pinned in a small box.

After the initial shock of so many bee deaths in the name of scientific research, it would take approximately four months for my body to refuse to suppress the trauma of witnessing violence-in-action from my bioscience colleagues.

Partial Connections

Of note was a particular day where a small group of researchers and I set out to visit Native plants where Native bee nests had been sighted in the previous week's survey. It was an overcast day, and there was a light drizzle. We were late to start. While most of the group was hopeful that we would encounter bees visiting flowers, pessimism prevailed because of the poor weather conditions. Together, we found a

small cluster of pencil cholla/*Cylindropuntia ramosissima*. *Diadasia* cactus bees were visiting the Cholla's yellow flowers, whose petals had tinges of orange and peach tones. We could feel the bees' hesitation as we approached the flower clusters—the heavy buzzing suddenly quieted to a whisper, then silence. Danger was afoot, and they knew it. During this observation, a captured bee would be placed into clear plastic tubes for observation. Any bee stored in the tube was kept for experimentation or “exploratory” inquiries; the others were released.



Image 22. A *Diadasia* bee visiting the Cholla plant is captured while gathering pollen for her brood.

A Native *Diadasia* bee whose body was packed full of pollen, indicating that she was hurrying to feed her brood before her short life above ground, came to a sudden end when she was captured and placed into a tube. I observed her, along with the others in the group, and could see and feel the intensity of her despair—her body told mine of her fears and desperation to feed her young ones below the soil surface.

My body collapsed and fell to the ground. I could not restrain my body from doing what it needed to do.

*my body pushed out moans. i sobbed. the land soaked up my tears
on what appeared to be a dry patch beneath an open hole in the
cloud-filled sky where blue shined through.*

To my surprise, my colleagues came to meet me there, on the ground, and together we cried. They softly cried with me, our arms interlocked. For a moment, we allowed the sorrow of killing in the name of science to hold us together. In the cries shared with the land, bees, and all beings in that place, an acknowledgment that there are better ways of learning and knowing was shared. For a brief moment, no researchers were acting on the researched. I cried out for the lives and bodies of my ancestors and relatives. The researchers with me were momentarily humble beings who cared about Native bodies and lives, or at least one.

Springtime is full of blooms. In the deserts of Southern California, springtime brings flowers. Very low precipitation levels underpin the presence of limited blooms compared to environments that receive more significant rainfall. On rare occasions, the typically multi-shaded earth-toned deserts of California explode into colorful blankets of orange and yellow flowers, pink, purple, and white flowers with shades of green in between. The color can reach the desert horizon beyond the limits of the human eye. These tremendously stunning occurrences are colloquially known as a super bloom. A super bloom is a spring season in which desert blooms far exceed usual spring bloom expectancies.

In years before a super bloom, pollinators must survive intense heat waves below and above ground and ongoing disturbances such as military training blasts, urban sprawl, ill-informed visitors, destructive tourists, and residents. They must find ways to feed and nourish their nesting brood with just enough water and pollen. The brood must survive below ground until they emerge from the soils to pollinate what few flowers may be in bloom that year. Only the pollinated flowers produce seed. The seeds that are produced by the convergence of pollinators and flower relations co-create seed. Seeds fall to the ground or are taken by wind or animal relatives/friends, and they gather in soils. Year after year, patiently waiting for heavy rainfall among their unseen soil seed banks, seeds lie dormant, living/waiting as non-germinated beings as/with Native desert land/seed. They wait as wombs of life, trusting in that which they are unable to see—the sky.

One unusual season of heavy rainfall is all that is needed to co-create a California desert super bloom: an explosion of flowers—beings of power, beauty, resistance, determination, and ancestral wisdom embodied. Yet, receiving that one season of heavy rainfall in the dry California desert is difficult, rare indeed. Years before this one, all of the necessary work was done. Pollinators lived their fullest, pollinating the flowers that they could find in their few weeks above ground. Year after year, flowers and pollinators converged to create seeds. Seeds lie patiently in their beds for twenty years. Finally, the rain fell, and it fell hard that year, hard enough to give the lands full of patient seed the amount of water they knew would come, the water they awaited, the water that prompted them to emerge as plants and

flowers. Flowers rose and blossomed across Native land, transforming living deserts into oceans of flowering life to the awe of people near and far.

A super bloom brings many admirers, not the least of whom are bioscientists and journalists. I happened to be working alongside bioscientists who were studying the organismal impacts of pesticides to Native desert bumblebees when they were contacted by leading science journalists who wanted to report on their studies while in the contexts of the super bloom. On one day of filming and interviewing, a chase ensued—three cars full of bioscientists, with their nets and tubes, chasing flowers and bees.



Image 23. 2017 a rare spring super bloom, Anza Borrego, CA.

Journalists with their cameras and boom-mics, and an anthropologist (me) with my notebook, pen, and cell phone camera, headed out to Anza Borrego. The scientists were hoping to capture bees visiting flowers, while the journalists were

hoping to catch the scientists in action. I planned to engage and observe all.

Following lengthy car rides and two nights in the desert, shared meals, and extensive planning, the teams did not capture who/what they desired. A miscommunication? Scientists wanted to study pollination among the super bloom, but the journalists wanted to capture a particular type of pollination—buzz pollination. Buzz pollination requires a particular bee and a particular plant, a plant with hanging flowers. There are no hanging flowers in Anza Borrego. After frantic hours of calls, we chased Manzanita to the tops of mountains where the super bloom did not exist, but hanging flowers did.

Manzanita wood strikes the human eye with its red bark. Some Indigenous communities might use Manzanita in some of their small hunting tools but more so, I know Manzanita as being admired for their beauty.. Manzanita pops out small soft bell-shaped flowers that attract their Native bumble relations who use their body muscles to produce movement that shakes the flower, landing the pollen on their fine hairs. The Manzanita blooming at the top of the mountain gifted the teams what they sought—Native buzz pollinators visiting Native Manzanita.

As the principal investigator and their team harvested and observed the bumbles, the journalists filmed and interviewed them along the way. it gave time for me to sit alone with Manzanita and bumbles. A visiting scholar from Spain who was also spending time with the principal investigator to conduct the pesticide and insecticide research on Native bumblebees decided to join me in my solitude. She was sure to express pride in her ongoing Spanish imperialist worldview, creating spaces of

conflict and violence between us all while Native bumbles were being captured nearby.

We sat together amid Manzanilla and bumbles. She said, “I didn’t know Indian’s still existed! I thought we killed them all, you know, a long time ago.” she said with great surprise. “have you heard of Junipero Serra?” she said. “Yes,” I replied. “I know who Junipero Serra is. This is California, and for some reason, the public school system here seems to think Junipero Serra is a very important person, and they teach us about him to a great extent. Native Peoples are very aware of who their colonizers are.”

“Oh, you know him! Yes!” she said with great excitement and pride, “Junipero Serra is from where I’m from, Mallorca! He is still very revered where I’m from. My people are very proud imperialists. Many people still say, ‘We are the greatest imperialists of all time! We dominated the world, and we will dominate again!’ Our people are very proud of our imperialization and colonization, especially of here, the New World. I think people at home would be shocked to learn there are still Indians existing! Truthfully! Tell me, do you like the missions?”

Coloniality filled the spaces between us, between each Manzanita and pink bloom. The sense of the ever-present violence lingered so heavily that the buzz of the bumbles surrounding us slowed to a steady slither, barely noticeable. With great hesitation for fear of justifying the inquiry, I replied, “No. I do not.” She continued, “He killed a lot of Indian People, no? I mean, I know he did, but don’t you find the

missions beautiful, at the very least? They are architecturally beautiful, no?” Heavy silence still.



Image 24. A view of the colonial space and place filled with silence and violence between us.

It so happened that I only weeks prior participated in Native community action against the sainthood of Junipero Serra held at the Mission on Ohlone land in Fremont, California. All I could think of was the collective pain that we as Indigenous Peoples felt when we gathered together there in that church.

I was a graduate student who needed to be there with the bee-science team for the sake of this research, caringly held between Manzanita while our bodies were penetrated with one science scholar's passion for colonialism. I was compelled to

Speak truth to transnational-institutional scientific power by placing my research at risk. To her shock, I relieved the silence when I stated, “I have participated in the ‘No Sainthood for Serra’ movement initiated by Native Peoples because of the genocide caused by his command to Native peoples and Lands. Because of the violence and genocide required for the missions to be built and the violence they continue to evoke today, they must be demolished. The ancestors whose graves are beneath need to be relieved of any more of this violence. How many hundreds of years must they suffer? So, no. The missions are not beautiful; they are colonial violence, and they must come down.”

This time, it was she who made the silence linger heavily between the space, and not by my trembling and angered body, the red Manzanita bark with pink blooms, or the buzzing bumbles. Together we sat, allowing the incomprehension to fester. The discomfort squeezed out what air was left between us, and the buzz of Native bumbles visiting the blooms never quite returned to sounds that we could hear.

Anthropological Bee Researcher In-Training

The lab manager, I, and another researcher in training finished our tour of the “dirty” lab, which simply means it is a careful space, but not a sterile space; the sterile lab is a molecular lab. The sterile lab is where scientists run DNA assays and conduct sterile experiments. Next, the lab manager trained our small team on identification practices.



Image 25. The blooming Manzanita who brought the moment to bear.

LM: For the bees, we collected [in the “field”], we are going to look at their DNA and genomics. They were not flash-frozen since we were in the field. We will look at their genomes. We will do comparative work and look at their circadian clock genes. These [Native] bees nest in the ground, so it would make some sense that they’d need to have the know-how as to when to go forage since they can’t see or navigate without lights.

We moved about the lab space until we stopped at a collection of pinned bees. The fellow researcher in training asked,

What do you do to [the bees] after you catch them? Do you just put the pin in?”

LM: No, we don’t pin them while they’re alive. We, we have to make sure they’re dead first. Right now, we already have their guts removed.

I ask how the guts are removed. Meanwhile, the bodies are being pinned.

LM: We reach into the anal area and pull out their guts with forceps. It’s easier to do with males. With females, it’s harder since she has a stinger. We

don't put the entire body in solution because, well, with over 600 bees collected, that would be a lot of money. It's more cost-effective and easier to transport with just the guts in stabilizing solution. We dust them off with compressed air while they're in the plastic tub. Well, first, after we have caught them, each bee is put in a tube. We spray them with compressed air until they spin around become stunned so that they're pretty incapacitated. Then we just pull out their guts and put them into ethanol.

The silence between us filled the room and weighed heavily on all three of us, and particularly the Lab Manager.

LM: It seems pretty harsh—but it's what we have to do. It seems pretty harsh.

Not even the loud and constant humming of the incubator could drown out the silence. The problematic and uncomfortable realities of the collection and pinning processes lingered in our bodies—six human eyes catching sight of each other where words could not capture the troubled feelings growing within.

LM: We pin them when they're dead. You could put them in the freezer; they go to sleep in there and don't ever wake up. Then you can pin them, and they will stay museum quality.

Welcome to a world of sterile lab guts and museum quality bee bodies pinned for displays and identification. Indeed, my research practice took a turn into a world that I soon hoped to disrupt with a view toward re-imagining research practices and knowledge production with bees.

NIF001

This semi-biographical story follows one queen bumblebee named “NIF001” through her life in the laboratory:

Despite many odds, NIF001 lived in the lab for over five months until completing her entire life cycle with her colony. Having been the recipients of

laboratory experiments and short lives in cages, her kin were flash-frozen, with their bodies stored in a -80 freezer. NIF001 grew from pupae to adulthood and eventually found a home in the colony box to which she was transferred during her fourth month. Her enduring life in the lab was an incredible feat that far exceeded the expectations of those conducting the experiments on her and her kin. Her “long” life, living beyond eight weeks, was no accident. NIF001 and her researcher connected through care—her researcher cared for her, and NIF001 cared for her “babies.” NIF001’s researcher fostered the relationship through frequent check-ups on NIF001’s nutritional health (“is she eating?”) and careful attention to NIF001’s environment (“She’s messy! I need to clean her cage”). Their relationship, while unique to this lab—NIF001’s home—signifies not only the difficulties that some researchers have with the un/ethical practices of their research but the possibilities for relation-building through care.

NIF001 was one of the hundreds of bees who were the objects of experiments and observations in a more extensive study to understand how agricultural intensifications impact Native bee health. Declines of Native bees and honeybees are of genuine concern due to their high impact on environmental sustainability. Agriculturalists are especially concerned with Native bee declines as their crops hinge on many laborers, many of which are Native pollinators. NIF001 is a bumblebee whose species remains anonymous to protect the identities of her and her researchers. The question of why the declines are occurring is of great importance to many bee scientists. Specifically, the study cares about how agricultural practices of pesticide

use, availability of bee food (flowers) and nutritional opportunities, and climate change impact Native bees. Many groups of bees were included in the study, including ones caught in their given environment and others who were purchased from a corporation that breeds them. Some aspects of the study examined impacts on bee populations, while others examined how particular agricultural intensifications might impact individuals. The goals of this research project were to develop more environmentally sustainable practices for rearing Native bees through laboratory experiments and manipulations of bee individuals and to propose actions that would restore Native bee habitat near/in agricultural crops in collaboration with the needs of agriculturalists.

NIF001's primary "job" was to have her body manipulated in an experiment that tested potentially new lab rearing practices. NIF001 was among those who successfully mated, overwintered in her cage with a makeshift nest of grass, hay, or sticks, survived simulated overwintering conditions in the refrigerator, and emerged with no mold or decay. Ultimately, NIF001 produced a colony that their assigned researcher(s) came to care for in future experiments.

"Somebody! Help! She's escaped!" I am seated at my desk adjacent to the sterile lab, and through three doors, there is a "dirty" lab. In the sterile lab, I hear an exclamation of excitable worry with a hint of nervous laughter. Those of us in the lab immediately ran over to the researcher to assist. One person hands the researcher a net. "Don't rile her up! How'd she get out?" the researcher asks as we gather around a room reserved for hopeful colonies where the lights are red—red lights serve as a

deterrent to bee sensitivities while white lights prompt bees to take flight. “Somebody have a net?” Immediately, the Queen is captured. “How’d you do that?” the researcher asks the Queen. “How’d you get out?” NIF001 is captured and returned to her cage. “Wait, there’s another one! Grab her!” A second bee is spotted on the netted screen dividing the colony room from the “dirty” lab, and they are also captured. The researcher says, “Oh, this one’s a boy bee,” as he is placed between the sole of her shoe and the ground, squashed to his death.

“I have to decide when to kill the bees. Most of them will have to die anyway, at some point. I ask myself, which ones do I need to kill today? When do they need to be killed? I think I’ll need to kill some of these ones.” The researcher points to a group of bees in cages, “Because they’re already eight weeks old.” She continues, “I needed to kill 001.” She pauses as if to search for a reason as to why 001 is still alive. The researcher continues after the silence prompted her to admit, “I guess I just didn’t want to”—a second pause lingered before the dependent clause— “because she had babies.” After the escapees were recaptured or, in the case of the “boy” bee, killed, the larvae “babies” who had emerged and were now eight weeks old were pulled so that their heads could be measured with calipers. Each end of each larva is slightly “squished” with forceps. The end that doesn’t squish is the head-end. Larvae heads are measured because that’s the only portion of their forming bodies that have skeletonized, while the rest of the body may vary based on how much food each larva consumed. The larvae are placed into the freezer.

Meanwhile, other cages are labeled, and each cage is given a four-millimeter “glob” of a particular brand of pollen nectar believed to be mold resistant, which requires fewer cage cleanings. Proudly, the researcher returns to the colony room, where NIF001 has now been transferred with “her babies” to a full-size colony case. “I was really worried about her, that she hadn’t found the nectar because the honey pots were dry. Oh! There she goes!” NIF001 finds the pollen ball that is formed as a honey pot. “Good girl! You found it!” the researcher says to NIF001. A second researcher joins our conversation and observation of NIF001’s colony. “Now I see some glistening in their honey pots. That’s good. I was afraid I’d be the one to kill Queen001. She’s the special one who holds a place in (researcher one’s) heart. I mean, look how long she’s lived!” Researchers 1 and 2 both happily proclaimed that NIF001 and her workers had found their nectar reservoir to those present in the lab. Gleeful smiles consumed the researchers’ faces while NIF001 and her colony consumed their nectar.

Research Processes Recalibrated: Possibilities in scientific research

Here, I juxtapose the internal workings of a bee research lab with bee research methodologies and processes as taught to me, and a select group of Native persons who are working on tribal pollinator projects led by a team of USDA research scientists to demonstrate how better ethics are possible while respecting bees as agents with lives (Tribal Pesticide Program Council 2019).

Imagine a space where an intertribal gathering of folks who care for Native land converge with bioscientists to share space for a week of work with bees. I could

not have imagined that the space was real, but it is/was. Pollinator researchers organized with tribal communities to share ways of studying Native bees using sovereign research and the agricultural richness of tribal farms. While there was no space for many traditional practices, space was made for listening to our diverse/common ways of participating in Euro-American sciences and how we might diversely be able to shift the research practices to approaches that could work alongside Indigenous practices and ways of knowing and learning.



Images 26 and 27. Select Native participants chose to lethally capture and observe Native bees for taxonomic identification during/at our inter-tribal pollinator gathering with bioscientists.

During a week-long gathering solely for tribal science practice and learning, researchers discussed, for example, ways that non-lethal studies of bees might be

practiced. One example was practiced in the field. We set out to observe Native bees in a field in two vans full of Native people and white bioscientists, driving two hours to a designated area where the researchers had obtained permits for harvesting and studying Native pollinators.

In each of our backpacks were blocks of dry ice and in our hands were bee nets. Together we set out along a hillside to see if we might observe and identify bees. I was the first and only person to net a bumblebee, which apparently was a rare sighting in this particular area, given that bumbles do not pollinate the plants in the five-mile radius. Immediately, I pulled open the backpack to reveal the ice. A scientist gently placed the bee into the bag with the ice and zipped shut the backpack. Six minutes, timed precisely. We unzipped the backpack and bag only to see that the bee was immobile but alert. We had one minute to observe the bee before she'd fly off again.

It was a demonstration of careful consideration of tribal concerns for killing bee-relatives and consideration of methodological practices that might open re/new/ed ways of learning. Non-lethal approaches were a focus in our discussions, and the researchers, throughout our week together, were careful to not “over-harvest” bees for the sake of the project.



Images 28 and 29. Non-lethal observations: A Bumblebee after being temporarily placed on ice, and the second a drone who was netted and temporarily handled by hand.

While participating in the weeklong workshop, I am reminded of Sisseton-Wahpeton Oyate anthropologist Kim TallBear's reference to the paradoxical conditions of the development and gathering-up of bureaucratic knowledges as they ride up against the possibilities that often are suspended:

Exercising agency in any scientific research process requires training, institution building, and practices that take one off the land and into the university, the conference room, the state agency, and other non-Indigenous spaces. Ironically, building bureaucracies and becoming an expert in non-Indigenous scientific fields is one to protect the very ways of knowing that community members may no longer engage in because their energies are taken up elsewhere. (2013, 22)

What possibilities might emerge from a week-long intensive workshop where Indigenous folks and tribal representatives are trained in bioscientific research practices? While the programming was carefully constructed to attend to the diverse ways of Indigenous engagement, practice, and ethics, relation-based practices that anchor Indigenous knowledges and knowledge production were not affirmed or centered in the training and discussions. The possibilities that the programming holds

are not lost or disregarded. However, there is much space for decolonial bioethics and discussions of the implications of pollinator sciences on/with Indigenous pollinator-persons.

For example, tensions that flow through Indigenous knowledge, sovereignty, and (tribal/governmental) land management systems are necessary sources in place/relation knowledges that centrally involve the very beings one might hope to understand and support through research. I have since reached out to the program organizers in hopes of ongoing collaborations and possible development of future programs that begin at and are reimagined through a different sort of research lens—an Indigenous and multi-disciplinary lens that recognizes all beings, more-than-(but including)-humans, as pertinent members of immaterial communities. One Principal Investigator explained status quo research with bees this way, “The scope of the lab and our methods are like the scope of a lens—you can be outside [the lab, in the “field”] and lean ‘organismally’ from the bee, out and up. Or, in the lab, you can start at the bee and look down and in.” The PI prompts me to consider directionality in ways that begin at and with one’s more-than-human collaborators. How might radical care in research transform methodology? What happens when love and research in science make contact?

Thinking with Love and Flesh

Native bodies hold reopened wounds where colonial legacies continually aim to embed themselves. Yet, reaching beyond origins and power dynamics, Indigenous ways of knowing and learning across practices has the power to heal colonial wounds.

I appreciate and learn a form of accessible language about the possibilities for relational creations between bodies, touch, love, and knowing from Chicana scholar, Gloria Anzaldúa, who refers to healing as “theory in the flesh”— theory that emerges from the body and out of necessity, where the lived and contradictory realities among the borderlands of more-than-(but including)-human bodies and lives dwells (Moraga and Anzaldúa 2015). The moments shared above are more than ethnographic depictions—they are moments of real Indigenous bodies and lives whose immaterialities continue to undergo colonial exploration among their/our lands as objects of curiosity and classification. Such embodied experiences form pieces of colonial relations where Euro-American sciences/scientists continue to define and manage Indigenous bodies (not only human) rather than to engage with them/us as beings who think/feel/act in their/our own right.

I pause and consider how moments of mutual incomprehension, partial connection, and shared insights might lean not only toward decolonizing work but toward healing work but toward the seeding, growing, and shaping of new possibilities for scientific engagement across origins and practices. Anzaldúa states, “Touching is an act of making love, and if political touching is not made with love, no connections, no linkings happen” (Moraga and Anzaldúa 2015, xxviii). Anzaldúa provokes a critical point, which I attempt to think with alongside the ethnographic relationalities experienced with my bioscience friends and colleagues in their labs. Her assertion here is that with acts of love, existing bodies/beings and their relationships with each other experience a sort of healing that does not rid them of

their pasts but that does create collaborative futures—”linkings.” Connections are the spaces between where new possibilities are formed, and love in practice is the kindling.

Land, Love, and Labs

How might touch, as described by Anzaldúa, provide a mode of research practice that seeks to create connections and relations that meaningfully attend to the immateriality and materiality of beings? In this reading of Anzaldúa, feminist Stacy Alaimo echoes a similar sentiment when she states, “Crucial ethical and political possibilities emerge from this literal ‘contact zone’ between human corporeality and more than human nature” (Alaimo, Hekman, and Hekman 2008, 238). Are not research labs, practices, and protocols filled with “contact zones”? The labs in which I worked are active with researchers who handle their subjects, regularly feed them, and observe their subjects’ intimate behaviors as a Queen keeps the pollen and wax ball holding her eggs warm. Possibilities for meaningful connection and relation making may indeed be plausible and fostered in the contact zones of research.

Anti-human exceptionalism has become increasingly discussed in the Euro-American academe, where human-animal relations are affirmed as crucial to human health and where all things human are held in multispecies contexts and relationships (Tsing 2012) but where humans are still central (Philo and Wilbert 2004). Many have learned from Donna Haraway’s discussions of the messiness of human-animal relations is articulated by pushing against speciesism (Haraway 2007). Where Tsing, Philo and Wilbert, and Haraway, to name only a few academics who do multi-species

work do not go is to human/more-than-human eco-sexual relations (TallBear 2011), or, what I experience and uplift—*eco-sensual*⁷.

However, as Anishinaabe/Métis/Norwegian ecologist Melissa K. Nelson affirms, “The profundity of human-animal relations—and thus, human-nature relations—is finally getting some thoughtful attention, yet Indigenous oral literature has always featured such multispecies and trans-human interactions” (2017, 238). On Indigenous erotica—where “nature,” “sex,” sexuality, the body, and Indigeneity overlap—Nelson writes,

[. . .] we must question and shed the conditioned beliefs that say we are more intelligent than, different from, or better than our animal nature and other natural beings (i.e., human exceptionalism). Our bodies are filled with intelligences that are faster than and beyond the intelligence of our cognitive brains. Reawakening these intelligences and our intuitive and Native capacities reconnect us to the natural world in ways that can engender reciprocal coexistence. (2017, 255)

Intelligent bodies are bodies capable of but not limited to communications, processes, awareness, learning, remembering, sensing, thinking, and sharing. I briefly consider how these intelligences have (in many communities) been lost (but not erased).

Dr. Kim TallBear teaches the co-creation of new decolonial sexual relations and their importance given the vast modes of entitlements to human and more-than-human bodies-as-property in settler US and Canada (TallBear 2018). In this vein, I ask what happens when touching (and in this case, “touching” via research practices) made with love is allowed to exist and afforded space in research? In labs? To imagine such possibilities, I discuss two distinct but connected understandings: 1)

⁷ See Chapter 4 for ethnographically and methodologically in-depth engagement with *eco-sensuality*.

technological bodies and 2) love—the sort that might be useful to those who engage various kinds of sciences and technologies. First, I discuss the technological body and then speculate on the sort of love proposed through touch in research practices.

I have come to understand and experience possibilities where deep and meaningful relations with beyond-human persons are possible. Ethnographic moments with bees and bioscientists prompt consideration of partial connections that lean toward the seeding, growing, and shaping new possibilities for scientific engagements with Indigenous Land-bodied beings. Feeling and sensing with Indigenous Queer/Feminist politics and approaches to land and love, stimulates a practice that simultaneously fosters better land-relations in research and co-creates Indigenous futurities.

Some might understand love with the land as an erotic relationship. Nelson describes in *Critically Sovereign*, a collection of essays, erotic partnerships (in an emotionally charged/heightened holistic arousal of connection) among Indigenous persons who are human and with their more-than-human loves. Here, I turn to Nelson because I trust that science, like many other societal arenas, has something(s) to learn from Indigenous Peoples. In particular, I discuss relation-making practices and possibilities in research.

Indigenous and many non-Indigenous peoples are by now (intimately) familiar with colonization processes through which land-bodied beings and humans have been subject to vast colonial violences. In the violences of colonization, their/our bodies have been impacted by what Opaskwayak Cree Nation educational

scholar Alex Wilson and Marie Laing, a queer Kanyen'kehá:ka writer and sexual studies scholar, call epistemicide—the killing of knowledge systems:

An accurate descriptor of the sustained effort to sever Indigenous Peoples from traditional education and traditional knowledges [. . .] Many who have learned about this history describe these activities as genocidal. Similarly, colonization, by displacing or removing Indigenous peoples from our traditional lands and waters, has cut our ties to critical sources of our traditional knowledges. I, along with many of my peers, recognize this as epistemicide. (Wilson and Laing 2018, 133).

Arguably, then, Indigenous Peoples have not only been displaced from Land-bodied beings, relatives, and communities, but they/we have also been (even partially) displaced from their/our bodies and expected to operate within the frames of hegemonic decrees. How might Indigenous persons who have been displaced from one's body return home, thereby (re)igniting their ancient-embodied knowledges? First, I turn my attention to the body as technology and then expand on possibilities for (re)igniting them—where “(re)” serves as a signifier of the temporal/corporeal that links Indigenous beings with Land, each other, and their/our futurities (Baldy 2018; Goeman 2013).

I start at the center of possibility—recognizing Indigenous bodies as technologies with immense tunings to each other, which creates possibilities for (re)membering and (re)newing, where ancient/present/future are always intertwined and in motion. Such possibilities emerge from acts of recognition in which we see each other and ourselves as already and always in technological bodies capable of knowledges that reach far beyond the brain-centric cognition of Euro-philosophies and psychologies such as those of Descartes (Descartes 1984). Anzaldúa, in contrast,

articulates how the technological body moves, learns, and communicates from/with a brown body. She states,

For me, *esta hoy* is the body. I have to inhabit the body, discover its sensitivity and intelligence. When all your antenna quiver and your body becomes a lightning rod, a radio receiver, a seismograph detecting and recording ground movement, when your body responds, every part of you moves in synchronicity. All responses to the world take place within our bodies. Our bodies are tuning forks receiving impressions, which in turn activate other responses. (Anzaldúa 2009, 292)

In recognizing one's body as technology that can become attuned, that might be activated toward internal/external responses, one begins to understand the vast ways in which Indigenous beings are highly capable of practices that astutely listen, learn, and communicate with Land. While the path toward (re)igniting such capacities already and always held within their/our bodies may seem mysterious, one tried and true method is through the careful and intimate (re)connection with the land. Here, I suggest (re)connections that may appear to some as utilitarian; however, many folks have (re)ignited their Land/Body intelligences via original foods, where foods have offered themselves as guides to their/our existing knowledges (Calvo and Esquibel 2016; Drake, Alvitre, and The Chia Cafe Collective 2018; Nelson 2008). Indigenous foods can become a bridge between beings—one's whole self, Land, and beyond. With food as an example, I now shift into how body intelligences are reawakened. Bodily intelligences are (re)awakened with and by the land. In his book, *Sovereignty, Land, and Water: Building Tribal Environmental and Cultural Programs on the Cahuilla and Twenty-Nine Palms Reservations*, Cahuilla Band of Mission Indians Historian and scholar Anthony Madrigal's states,

Native stories and songs depict the interplay of humans with the natural world and the cosmos. Stories teach that the lines between humans, animals, and forces of nature are fluid as they interact with each other. In the Native view of the world, all things are related. These relationships are constantly intertwining to create reality. Humans acquire knowledge from various planes of the universe, which in turn promotes understanding of what goes on in the world we live in. (2008, 16)

Some Indigenous scholars discuss such knowledge systems as Land literacies (Goodyear-Ka'opua 2013) and Land-based pedagogies (Smith et al. 2018). It no mystery to Indigenous Peoples that we hold Land/body relations; the challenge, however, may emerge as recognizing oneself as a technological being already and always equipped with the tools needed to awaken our Land/body intelligences—intelligences lying in wait ready to soar through the surfaces of our bodies and beyond.

(Re)igniting Indigenous Land/body intelligences is a way toward co-creating Indigenous futurities. It is not a way of the past; rather, it is present and already future building. Wilson and Laing state,

Reconnecting to land is critical for moving forward and trying to undo the legacies and ongoing impacts of colonization and land-based education is, at its core, an anti-oppressive form of education. Reclaiming or restating our relationship to our lands and waters is a starting point, and then nurturing that as an ongoing relationship reinforces the fact that we have the right to be there. It also reignites the continuity of energy that has existed for hundreds of thousands of years, and that makes us human. It is part of our cosmology. I think once you get on the land (and literally, you do not have to drive hundreds of miles—you can just walk outside or look at the sky), you ignite that energy. (2018, 133–134)

If (re)connections with Land help awaken Indigenous bodily intelligences, our knowledges to listen, learn, and communicate from/with Land are givens. These knowledges, like most knowledges, is not quickly downloaded as if one were a man-

made computer with a thumb drive. As Madrigal states, it takes time to develop knowledges with/from the land. The time referred to here is concretely described by Wilson and Laing as requiring at least two actions: 1) ignite the energy by actually spending time with Land, and 2) create meaningful and ongoing relationships with the Land.

Where/when might space for intuitions and capacities be created in research practices? As Nelson reminds readers, “Reawakening these [bodily] intelligences and our intuitive and capacities reconnect us to the natural world in ways that can engender reciprocal coexistence” (Nelson 2017, 255). I argue that it is possible for research practices to be one aspect of an ongoing relationship with Land. What shifts and possibilities emerge if research starts at two connected and inseparable points—that which Nelson states to be “reciprocal coexistence,” along with Wilson and Liang’s assertion that that reciprocation is to be “nurtured” through relation-making. Practices that attend to both points hold the possibility for immaterial research that embodies mutuality with the land.

As technological beings whose tools are multiple, sensorial, intuitive, creative, and affective, Indigenous beings hold vast im/material intelligences that can be communicated with others. In a sphere of research and research practices, I return to Stacy Alaimo’s “contact zone” and Anzaldúa’s “touch,” where one might reach beyond the status quo practices in research.

On love, for example, I consider a form of love where all things are multi- and non-linear, where love emerges from the depths of one’s body and radiates out as a

positive, energetic force field shared with and felt by those around them. This energetic force field—called love—materializes within the body, the meaning behind what I experience and describe is Indigenous forms of *eco-sensual*, as acts of care that form through tenderness, compassion, and dignity. To ground this work, I consider the two sorts of beings present, for example, in a bee research lab that many might readily agree are indeed material and living beings—bees and humans.

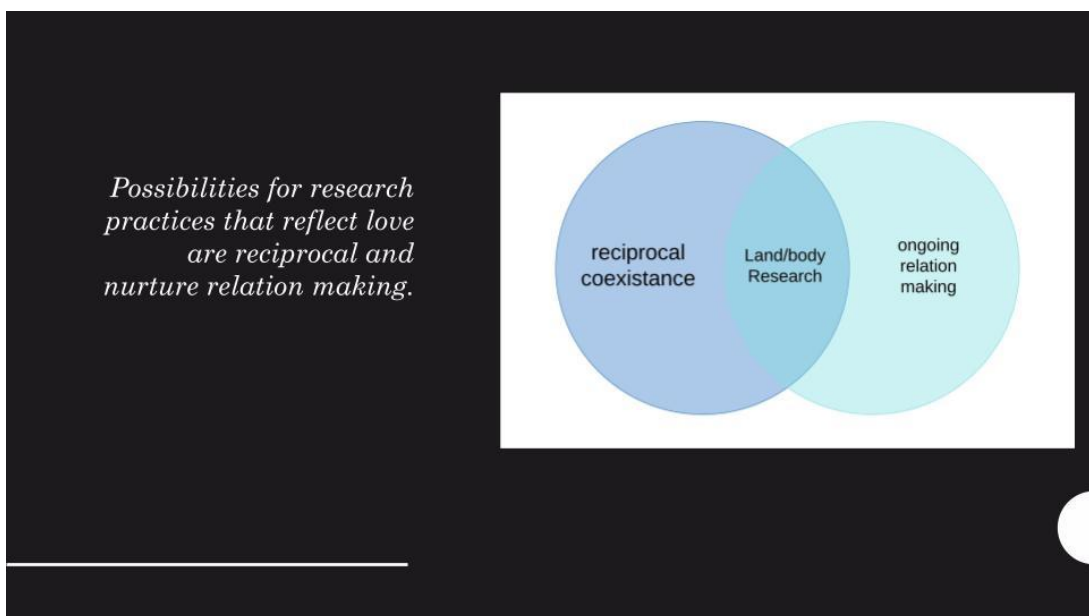


Image 30. Possibilities for research practices that reflect love are reciprocal and nurture relation making.

A research lab holds hundreds if not thousands of bees in its dirty and sterile labs, colony rooms, freezers, refrigerators, display cases, the researcher’s personal collections, in tubes, incubators, and even ones randomly left and forgotten in boxes on desks and storage shelves. Here, in some of the ethnographic spaces where I worked, bees who are kept alive for a period of time are often prevented from

relational care of each other, as they may be separated into individual containers for the sake of the experiment.

Bees who are kept together in shared boxes, however, can demonstrate relational care within the colony. For example, many bees create a cemetery of sorts, where their dead are removed or set aside. This act of care might be considered of benefit to their living kin but may also express some act of dignity for their dead who have passed. Bees might also show acts of care by upkeeping the nest or by foraging for their kin.

How might acceptance and the honoring of possibility for relations among and between bee-beings, through the manifestation of love as described above, shift research practices and deliverables? There are multiple lineages of possible relation makings in the lab when, for example, each of the two sorts of beings here described—bees and humans—begin at this sort of love. The configurations for the possibility of care and relation making are expansive.

More on Love and Research Practices

I am concerned with research practices: what about research practices where bioscientists hope to make meaningful environmental impacts toward more sustainable futures? Love, I argue, encompasses the possibility for transformation and healing in research. Scientific research *of* more-than-human beings centers on humans. Scientific research with more-than-humans centers on interdependence and mutuality *with* the land. With good heart, or love, as a foundational modality,

bioscientific research practices can be a part of one's ongoing relation-building with Indigenous Land.

Despite colonized land with colonized bodies, Indigenous Peoples continue to ignite and determine their/our sovereignties. In my ongoing training with elders and in community, I learn that one's body is a place from where love can exude, an experiential practice of shared healing.



Image 31. Of vs. With research practices.

In some TwoSpirit communities, as Opaskwayak Cree Nation education scholar Alex Wilson has named (2008), it is understood that being TwoSpirit, one (re)joins the circle of Indigenous TwoSpirit Peoples by “coming in.” Wilson describes the process of “coming in” as “an empowered identity that integrates their sexuality, culture, gender and all other aspects of who they understand and know themselves to be” (2008, 197). “Coming in” is akin to coming home to one’s TwoSpirit community, but mostly (as I have been taught) to themselves. Chicana education scholar Karleen Pendleton Jiménez (2010) succinctly states, “Ultimately

(re)learning about the land may be a process of “coming home” (page). Thus, home is an embodiment of many in community as one being, and Land-relations hold the power to bring one home to themselves.

As “home,” one’s body and being have undergone healing processes, and in my own experience, is a process that is with intimate and ongoing relations with Land. They have done much work to become a place of healing with and for others with whom they are in relation. When one has not done the work of becoming “home,” there is space where healing has yet to happen, leaving voids that are susceptible to the exuding of harm upon themselves and/or others—even in efforts of “good”—rather than loving acts of care.

Body/Land

*coming home to myself—
home? how does one inhabit themselves?
not only out-of-body?
the teacher is Land.
Land-loves can see/p
deep into my wounds
where oceans of abandonment
and abuse wrestle inside.
Land, when you become intimate
—like a love who caresses all of your scars—
finds a way in and opens you up
revealing ancient truths who
are clamoring within, anxious to breathe again.
Land is the guide
and mirror.
a reflection of myself whom
i never hoped to meet.
it’s easier that way. i survived that way.
i buried them away
and let someone else exist in their place—
exposing only my pieces who were
strong enough for*

*us
both.
more of living in body—
going home—
coming in—
is my journey through/to
myself with Land.*

How might works of love hold the immense possibility for transformation and healing in all things, including research, specifically with more-than-human beings? To better understand the potentiality of research with love, I magnify the void where healing work has yet to occur—the space where harm is made possible. Those who seek home outside of themselves are often left with disappointment.

One might argue that searching for home outside of oneself—in place—is a settler logic that often materializes as “settling down” or becoming exceedingly attached to place. There may be a tendency to overemphasize a coming home outside of oneself—on stolen Indigenous land. These tendencies take shape as claims over bodies and beings—settler logics enacted through ownership and property, and even by way of subtler attachments.

Possibilities for Bee-Human Expressions of Love

Anzaldúa prompts me to consider love as the kindling for connection—meaningful relation making. Ethnographically, the love that emerged between me and the bees I encountered and my fellow lab-mates rose to the surface in moments of partial connection. Yes, colonial practices and mutual incomprehension blur openings for healing, but the openings may not necessarily be erased.

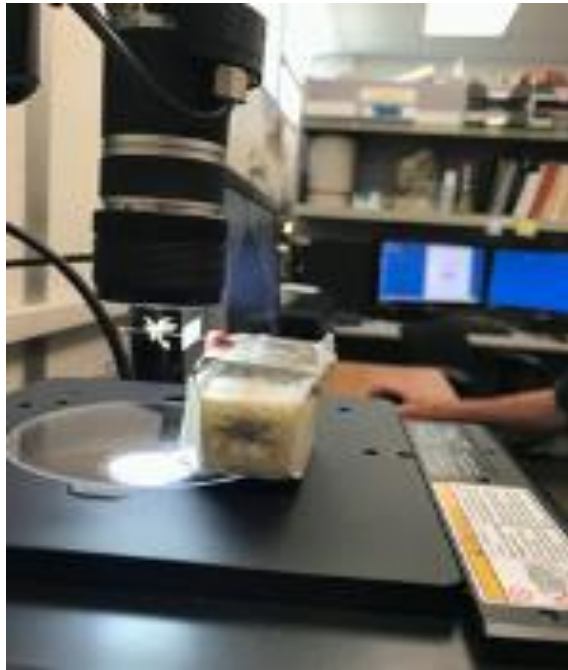


Image 32. Select Native participants chose to lethally capture and observe Native bees for taxonomic identification during/at our inter-tribal pollinator gathering with bioscientists.



Image 33. Select Native participants chose to lethally capture and observe Native bees for taxonomic identification during/at our inter-tribal pollinator gathering with bioscientists.



Image 34. Select Native participants chose to lethally capture and observe Native bees for taxonomic identification during/at our inter-tribal pollinator gathering with bioscientists.

CHAPTER 4

LAND AND ETHNOGRAPHIC PRACTICES:

(RE)MAKING TOWARD HEALING

While place-making is a productive concept for many scholars, I consider land relations and research through Indigenous (re)making by narrating embodied and experiential ethnographic approaches. Through (re)making, one (re)imagines ethnography and ethnographic practices with Indigenous land and Indigenous land practices that contribute to decolonial healing and Indigenous survivance.

Considering the wounds among multiple bodies, not only humans, for which large-scale settler-colonial agricultural plantations in Hawai'i and the Sonoran Desert are responsible, this work discusses possibilities for (re)making toward healing with the land. Song, poetry, and story are agents that make such engagements with many more-than-(but including)-human collaborators translatable. They ask how an understanding of ethnography in the contexts of Indigenous science and technology studies that cares about environmental research might shift how methodologies are formed and data are shaped. And it asks how ethnographic practitioners might better affirm the plights, journeys, cycles, relations, and encounters that more-than-human beings experience, remember, hold, and live. This is one contribution among many that attend to the variety of ways in which ethnographic texts are formed and understood in Indigenous research practices that challenge Euro-Western genres and structures of knowledge production and how/with whom such knowledges and practices are co-created.

This chapter narrates an embodied and experiential approach to collaborative research, one that (re)imagines ethnography and ethnographic practices, is rooted in place and place-making and works to foster healing and Indigenous survivance⁸. Scholars increasingly address place as a living and ongoing engagement with land that far exceeds notions of mere locality. Following Tonawanda Band of Seneca scholar Mishuana Goeman, who (re)mapped geographies through Indigenous storytelling as a means to lift up and reaffirm Indigenous Peoples, places, and place-making (Goeman 2013), this work attempts to (re)make ethnographic practices with place. By engaging with maíz methodologies (Rodríguez, 2014) and land-centered literacies (Goodyear-Ka'ōpua 2013), this intervention departs from a Euro-American understanding of place-making and instead thinks through Indigenous (re)making practices with land in academic scholarship.

Reflecting on ethnographic experiences with occupied Indigenous Tongva and Cahuilla lands—which include but are not limited to all land-bodied beings—and in consideration of the lands where some of my own Indigenous ancestor's bodies are tied up with large-scale settler-colonial agricultural plantations in Hawai'i and the Sonoran Desert of so-called Arizona, I discuss possibilities for (re)making land with ethnographic practices, toward healing colonial wounds. These engagements are understood as conditions and possibilities co-constituted in relation to others, where overlapping values and ongoing critical engagements with one's collaborators are

⁸ See Gerald Vizenor (Anishinaabe), *Survivance: Narratives of Native Presence* (Vizenor 2008).

sites for new knowledge formations (TallBear 2013, 2014). This work, therefore, contributes to a growing body of Indigenous scholarship that purposively thinks with more-than-human⁹ beings and disrupts ongoing settler colonial projects that seek to consume not only human bodies and lives but also more-than-human beings and their bodies and lives. Specifically, I offer embodied modes of Indigenous ethnographic practices as they were/are co-created while working, thinking, and listening with the land. It is an attempt at imagining how (re)making may allow ethnographic practitioners¹⁰ to access and give rise to healing processes in their research practices.

Ethnographers aim to situate their research projects in place and build their ethnographic engagements with those places. Evoking a sense of place and constructing regions are common tropes; however, engagements with place as central to the analysis, methodological approach, and overall narrative are less common (Tuck, McKenzie, and McCoy 2014). Some engage place as spatially and temporally multi-dimensional and materially concrete (Agnew 2011) and as social, where more-than-human communities co-produce meaning and where identities are formed through relational responsibilities (Massey 1995, 2004). Others describe place as a process, where power and place are co-produced (Haraway 1997), and where place is

⁹ (Whatmore 2006).

¹⁰ There are Indigenous scholars who consider our/their work as cultural production. It is for this reason that I borrow from Kānaka Maōli scholar Noelani Goodyear-Ka'ōpua the term 'practitioner' to designate those whose cultural production work takes the form of (ethnographic) research (Goodyear-Ka'ōpua 2016). And I build on 'practitioner' to include the processes and products of the practitioner's work as 'ethnographic practice' which is, in this context, also cultural production.

a site for undoing Eurocentric forms of analysis (Escobar 2001). Beyond place, engaging with land as active and living in its own right is similarly rare.

A growing body of Indigenous and non-Indigenous scholarship approaches place as living land that is co-constitutive with (embodied and unembodied) lives, meanings, and histories (Watts 2013) and as storied where Indigenous Peoples forge the place of their relationship and, therefore, are obligated to it far beyond the scope of a project (Goodyear-Ka'ōpua 2016). Kanaka Geographer Katrina-Ann R. Kapā'AnaokalāOkeola NāKoa Oliveira demonstrates the importance of place names as a way to evoke power and meaning that ka pae 'āina Hawai'i (the Hawaiian archipelago) land holds through environmental kinship (Oliveira 2009), and how ancestral places are interlinked with Kanaka geographies of place (Oliveira 2014). Therefore, this work builds on scholarly works that intervene in anthropological and geographical post-humanist ethnographic research. Specifically, I hold the privilege of building on the work of Métis anthropologist Zoe Todd (Todd 2014, 2016b), feminist political ecologist Juanita Sundberg (Sundberg 2014), Anishinaabe and Haudenosaunee scholar Vanessa Watts (2013), to name only a few in this growing body of work.

Indigenous STS

Within the emerging field of Indigenous science and technology studies and with the Indigenous Science, Technology, and Society (Indigenous STS) Lab created by Dr. Kim TallBear at the University of Alberta, Faculty of Native Studies, I draw on my training in environmental and socio-cultural anthropology, sustainability and

regenerative studies, and with Native and Indigenous studies and feminisms literature. I also draw on the training undertaken as a student of (urban and rural) Indigenous farmers and seed savers and Indigenous elder/teachers—auntie/teachers and uncle/teachers who have taken me under their strong wings and taught me foodways and land practices (among many teachings and ways) with their lands and with their ancestors. I bring together Indigenous studies and critical environmental scholarship as a means of articulating the interconnectedness and inseparability of Indigenous Peoples and land—they/we are one and the same. Indeed, “Somos gente de maíz sagrado” (“We are the people of sacred maíz;” Rodríguez 2014, 3). Without attentiveness to more-than-human beings in environmental research backed by land-based action, decolonization is just a word with no meaning. Thus, I discuss a selection of guiding practices by which I strive to work as an ethnographic practitioner who acts responsibly in relation to more-than-(but including)-human beings¹¹.

(Re)making and Land

In this chapter, I discuss (re)making through Indigenous epistemes and practices as a form of relational action that simultaneously responds to settler colonialism and its displacement of Indigenous Peoples while learning with land as

¹¹ To be clear, this article is written as one contribution toward work that seeks to ‘denaturalize power within settler societies and ground knowledge production in decolonization’ (Morgensen 2012, 805). This article does not seek to flatten Indigenous decolonization efforts by providing any sort of model for Indigenous research, rather to engage with expansive Indigenous teachings and practices so as to share a selection of components that make up one scholar’s methodological approaches in their ethnographic practice.

self-determined being(s) with whom one is in relation. Linda Tuhiwai Smith's seminal work *Decolonizing Methodologies: Research and Indigenous Peoples* forged a path for Indigenous projects that would reclaim, rename, and revitalize (2012, 144–164). Likewise, Mishuana Goeman's 2013 book, *Mark My Words: Native Women Mapping our Nations* (2013), demonstrates Indigenous (re)mapping work, where Goeman asserts that in using “(re),” seeks to avoid slipping into some form of, “recover” or a seeming return of the past to the present” (4). Following Cutcha Risling Baldy's work in her article, “Coyote's not a Metaphor: On Decolonizing, (Re)Claiming and (Re)Naming” (2015), I engage “(re)” as a signal of how Indigenous Peoples are participating in a (re)vitalization that builds a future with the past and shows how these epistemological foundations speak to a lasting legacy, that is both ancient and modern in their discourse that challenges settler colonialism” (4an English prefix that simultaneously means ‘again,’ ‘anew,’ and ‘back,’ which here emphasizes an Indigenous present and ongoing resurgence efforts. (Re) also links to ancient and thriving practices while continuously forging in/from/toward Indigenous futurities.

As Eve Tuck and Rubén A. Gaztambide-Fernández demonstrate, unlike settler futurities, Indigenous futurities “does not foreclose the inhabitation of Indigenous land by non-Indigenous peoples, but does foreclose settler colonialism and settler epistemologies” (2013, 80). Noelani Goodyear-Ka'ōpua, following the 2015 protector action at/for Mauna Kea, explains that settler futurity is “short-sighted and exploitative” and is “blind [to] the inextricable connections between human and

planetary health” (2017, 185). Goodyear-Ka‘ōpua quotes Bryan Kamaoli Kuwada’s blog post, “We Live in the Future. Come Join Us,” where he states, “We are trying to get people back to the right timescale so that they can understand how they are connected and what is to come[...] we are operating on geological and genealogical time [. . .] The future is a realm we have inhabited for thousands of years” (Kuwada, qtd. in Goodyear-Ka‘ōpua 2017, 184).

As is often discussed in Indigenous scholarship, land can be understood to include place, territory, home, and all the relationships that make up such understandings/practices (Goeman 2008). In this discussion, land is composed of such understandings/practices, but it also expands to include all earth-bodied beings—such as water, insects, rocks, stones, soils, minerals, plants, winds, animals, air. Here, land may also include relations with beings whose bodies are unseen, intangible, felt, and/or sensed but who are also entwined and/or bound up with specific lands. Land is, therefore, understood as a system of social relations and ethical practices that uphold a framework for decolonial critique (Wildcat et al. 2014). As Eve Tuck and K. Wayne Yang (2012) suggest, for work to be decolonial, it must “interrupt” and “unsettle” settler colonialism and move toward the “the repatriation of Indigenous land and life” because “decolonization is not a metonym for social justice” (4, 21). This body of work attempts to heed the call made by Tuck and Yang to “destabilize, un-balance, and repatriate the very terms and assumptions of some of the most radical efforts to (re)imagines human power relations” (28). To do so, I consider the relationships

forged between ethnographic practitioners and land where, together, they may be (re)made through Indigenous episteme and practices.

Research with Heart

When coupled with action-based obligations, conscious awareness of and engagement with Indigenous relations are generative of research with a good heart. Indigenous research rooted in these properties may co-create cultural practice, healing, and/or decolonization work. Indigenous research is also fraught with the dangers of exploiting their/our communities, elder-knowledge, and ancestral ways of knowing. Those of us who have chosen to foster academic endeavors hold the privilege of doing Indigenous research and, thus, have obligations that extend beyond the academy. Straddling worlds where obligations do not necessarily align and often conflict is a challenge not easily navigated.

Therefore, it is essential to identify who benefits from the work and honestly consider one's intentions and possible mis/alignments with the Indigenous communities and lands upon which they work/live. Carefully constructing the ethnographic engagements and reconsidering one's own research proposals aid in generating such identifications, then asking oneself, "Am I the one to do this work in this particular place?" Inquiries such as these are common teachings relative to many (diverse) Indigenous practices and with those who work hard at not reproducing colonial violence in their work. For example, in "Reproducing the Ropes of Resistance: Hawaiian Studies Methodologies," Noelani Goodyear-Ka'opua states, "Any research project requires that we take the time to establish or nurture the

appropriate relationships and to be affirmed that "yes, indeed, I am the one who is supposed to undertake this inquiry" (2015, 15).

Research that does not carefully consider this imperative question risks reproducing colonial violence. One asks, "In which places is it appropriate for me to do this work, and have I been invited to work here/there?" Human communities do not only extend invitations and welcomes. The land itself provides answers to those who ask permission and patiently await the response. Such invitations are similar to how Anishinaabeg thinker Robin Kimmerer explains that a plant that is respected may or may not offer itself as a gift for harvest (Kimmerer 2013, 178) and how Leanne Betasamosake Simpson (2011) describes deer refusing to offer themselves as food until particular protocols are upheld by those who seek to eat deer meat. So too, the land responds to ones who move with a good heart, listen deeply, and who seek out the land's invitation, permission, and refusals.

In turn, one must be prepared to accept the answer even when, and perhaps particularly when, the land says no, not this time, and/or when the land changes its mind or decides one's visit is complete and asks the individual to take their leave. Geographers and Anthropologists, for example, have long gone from place to place for their research and without permission from Indigenous Peoples. An Indigenous research endeavor attends to such colonial violences and is considerate of those with whom and where the work is to be carried out.

It may be appropriate for ethnographic practitioners, for example, to seek initial and ongoing consultation(s). Any given recipe of consultation(s), which varies

across communities, may include consultation(s) with one's elders and teachers, consultation(s) with one's ancestors and/or ancestors of the lands upon which one stands, discussions with trusted community members, and with land directly. Taking time to sit with what is taught/shared with the practitioner and shifting through what is gifted to them, alongside one's own internal guide, is part of the consultation process(es). Within the consultation processes, the body is used as a communicative technology. This step includes a connection with the land that follows protocols of exchange. Here, in addition to protocol exchanges, one shows up and learns through heartfelt listening. Vine Deloria Jr. describes embodied communicative technologies with Land this way:

The special human ability is to communicate with other forms of life, learn from them all and act as a focal point for things they wish to express. In any sacred location, therefore, humans become the instrument by which all creation is able to interact [. . .]. (Deloria 1991, 28)

A Euro-Western concept of work, or in this case ethnographic practice, may flatten ethnographic practices into data collection and analysis. While this sort of practice is necessary for particular agendas and is indeed a part of research, not all ethnographic practices are made the same, nor do they consistently share the same goals. In particular, when one seeks to practice a decolonizing methodology that is engaged in works of healing (Smith 2012, 13), the processes and outcomes may challenge existing ethnographic/research parameters. Inasmuch as the environment is not separable from other spheres of life, work and life cannot be severed from each other. As such, an ethnographic practice shifts away from a research 'project' and may become one that emphasizes relation making as its primary achievements.

*the unwavering string
that connects an
Indigenous being
to their ancestral land
is indestructible and infinite.
it goes where you go.
—Nana-episteme¹²*

Engaging with the anthropological method of participant observation, I move my body across space, through time, and between/with places. In so doing, and following Nana-episteme, first, my indigeneity travels with me as do many of my ancestors; second, I am actively working to (re)make my relations with the land, ancestors, and peoples upon which I am working/living; third, my connections with my ancestors are being (re)made by researching collective Indigenous resurgence with/for our relatives—healing work—and doing it in a good way. Here, healing is not asserted as a metaphor but as real, accessible, and necessary for Indigenous beings and is only one part of many efforts toward our repatriations. How I have been taught to live with deep respect for Indigenous lands not my own remains intact. Daily practices of respectful living acknowledgments rooted/practiced in Indigenous land and life repatriations, and gratitude, bestowed upon all beings, seen and unseen, felt and sensed, are embedded parts of my lifework—they do not get suspended and put on hold while I “do research.”

On (Re)Making Toward Healing

Leaning in toward the conditions of living/working with Indigenous lands from which I do not descend, I consider (re)making toward healing not as a symbolic

¹² Teachings demonstrated by my Father’s mother, my Nana/, as I understand them.

connotation, but as real, accessible, and necessary for Indigenous beings, bodies, and lives. Generating modes of research that (re)make toward healing is impossible for some because they have more work to do. Yet, I implore all researchers, ethnographic and beyond, to consider Risling Baldy's incisive assertion in her article, "Why we Gather: traditional gathering in Native Northwest California and the Future of Cultural Sovereignty":

The policy or research should explicitly acknowledge the Indigenous cultures and peoples of the area and their continued interaction with biota, landscape, wetlands, or environment. Any research or policy that involves land throughout the Americas should be written in a way that first acknowledges the Indigenous peoples of that land space. This language should be clear, concise, and fully supportive of the continued presence of Native peoples in the area. Even research or policies that do not specifically attempt "Indigenous"-based projects should fully acknowledge a continued Indigenous presence on, in, and with the land. Even research or policies that do not specifically attempt "Indigenous"-based projects should fully acknowledge and take reconciliatory measures for continued Indigenous presence on, in, and with Land. The language used to provide this type of support can have significant consequences and influence federal policy to protect Indigenous rights (2013, 8).

The healing discussed here is only one part of many efforts toward Indigenous land and life repatriations. (Re)making toward healing work recognizes Indigenous land as a site of damage and a site where healing processes are made accessible (Tuck 2009). Goeman reminds one of the possibilities for renewed relations even amidst settler colonial occupation and violences when she writes,

I do not take the phrase "relationship to the land" as a given, unchanging, and naturalized part of Native American identities, especially as capitalism and colonization have produced new ways of experiencing time and space[. . .] The stories that connect Native people to the land and form their relationships to the land and one another are much older than colonial governments. (Goeman, 2013, 28)

Indeed, new and shifting ways of Indigenous relations with land have emerged and are weaved together with stories as old as the land from which they come. It is within this tension—where Indigenous relations with land are rooted in ancestral places and yet shifting at the same time—that (re)making is shaped.

Being raised in South-East Los Angeles on occupied Native Tongva land, there was never a time where I was not aware that I was not where I (specifically) belonged. My father and his mother were my first teachers in Indigenous land relations. My father taught me the importance of growing our own food and ways of building relationships with plant medicines and food, even on a small square of dirt. My Nana taught me the meaning of connectedness to lands both near and far—a never-ending string threaded through me, my ancestors, the lands where we are, and the lands where we are from. She would sit on the small patch of soil outside her humble barrio home. She cried in prayer for all of them—the lands and ancestors—apologizing for not being with them at home and how she both anticipated and promised a complete and permanent return, rejoining the family and their/our lands. Her cries/prayers did not dismiss what she was doing “now” in the present. Instead, she shared stories of the medicines and food plants that she grew, foods that she made for our family that day, such as tortillas and daily family occurrences. She would describe the close friends that she held in her life and their shared struggles and joys. In my Nana’s cries/prayers, she reflected her ability to (re)make relations with lands not her own while connecting them with embodied practices, ancestors, and homelands alike. One string, uncut, with no ending.

Building on Nana-episteme, I consider the ancestral traumas and histories tied up in the lands where my ancestors toiled their labors—where my Bisayan ancestors worked as sakada¹³ on Kānaka Maoli land and where my ancestors hailing from Sonora lived and worked daily in a labor camp in the borderlands of Arizona, on the very lands where they and their ancestors had long roamed. Indigenous bodies are often displaced in colonial contexts and the need for (re)making rises to the surface as a personal and collective necessity.

*The land will call on you
again and again.
When you do
land-care work,
it works on you.
—Elder-episteme¹⁴*

I recall one of the many openings in my journey toward understanding (re)making. It is Cahuilla land and a caring circle of Indigenous and non-Indigenous women and men to whom I am forever indebted. About a decade ago, I happened to come under the guidance of this circle of teachers where we would care for the land by organizing our efforts around a particular plant or tree or patch of land where there might be a community of plants who offered themselves ready for harvest. Agave is a time-tested community favorite, where there is an annual harvest and roast each year hosted by the teachers and the Malki Museum on the Morongo Indian Reservation in

¹³ For more insights on sakada (imported labourers) taken to Hawai'i from the Philippines during the early 1900's, please see *Building Filipino Hawai'i*, by Roderick N. Labrador (Labrador 2015), and 'Colonial Amnesia: Rethinking Filipino 'American' Settler Empowerment in the US Colony of Hawai'i,' by Dean Itsuji Saranillio (Saranillio 2008).

¹⁴ Elder teaching as I have come to understand it.

Banning, California. The agave harvest is done with traditional hardwood digging sticks to uproot the plant, and any of her offspring pups that may be disturbed in the process are always replanted to safeguard their continuance.

At times, the collective is invited to care for and harvest neighboring tribal lands and communities. We would harvest Piñon from Native Pinyon pine trees¹⁵ that defy settler-state geo-borders as they grow in Southern California on Serrano territory through northern Baja on Kumeyaay, Kiliwa, Paipai, and Cocopá land (Ramirez and Small 2018). Between annual harvest times, we'd visit the trees, sing songs, and clean up the brush surrounding them. During harvest times an invited group of folks would camp out for a night or two where we'd share meals, songs, and stories. Weavers might also work on their baskets. After the Piñon harvest, we would roast the cones in large pit-fire pots and process the seeds. Small amounts of tree sap would also be harvested to make "pine pitch sap," which serves as a good source for wound care and can be processed into a water-tight adhesive for baskets.

In my experiences, these land-caring efforts, through a traditional foods initiative—Preserving our Heritage, founded by Tongva Elder Barbara Drake—were never just about harvesting, though harvesting was central to the collective efforts since the processed foods would be set aside for elders and community members who were, themselves, no longer able to harvest. The plants and trees not only remember the collective nights spent camping together, sharing stories and singing songs, and

¹⁵ Primarily, *Pinus quadrifolia*, but the collective has also cared for *Pinus monophylla*, among many other plants and trees (Ramirez & Small 2018).

processing their fruits with sweat and laughter, but they are also in need of these relations. One trusts this to be true because the plants and trees call upon the community to come back repeatedly. The plants and trees may call upon the collective in various ways, such via the fruits of their labors or by a demonstration of dullness and a dry appearance. And in response to their calls, the collective responds in obligation to the land. Like Elder Barbara Drake once told me, as we cared for a community of trees, “when they thrive, we all stay alive” (Barbara Drake, personal communication, n.d.). The lands call on those with whom they are in relation not only because they need our care but also because the land knows that we need what is gifted to us in return.

Their/our collective work pays careful attention to Native plants who offer themselves as healthy traditional foods and medicines while communicating the importance of cultural practices that encourage relation-making with Mother Earth. As a collective, their/our work does more than provide practical methods of processing plants—it protects and restores the land. At the same time, the land protects and restores them/us individually and collectively. In these shared land-caring efforts with this community of Indigenous and non-Indigenous teachers, my understanding of (re)making began to form. I experienced firsthand the potent medicine that Indigenous land gives when one does the work that is asked of them—even when the one doing the work is not Indigenous to that place—and the value in (re)making relations with such lands across common community divides.

To be clear, (re)making with the land is more than connectedness—it is political praxis (Goodyear-Ka’opua 2013, 36). It is not only human bodies and lives that are taken up in settler colonial projects that divide, enslave, and kill, but also the bodies and lives of our more-than-human relatives. The conditions for the displacement and removal of Indigenous more-than-(but including)-human bodies and lives are entangled with each other. As Zoe Todd (2016a) asserts in her formative work, “An Indigenous Feminist’s take on the Ontological Turn,” ontology is just another word for colonialism.”

An Indigenous thought is not just about social relations and philosophical anecdotes, as many an ethnography would suggest [...] Indigenous epistemologies and ontologies represents legal orders [...] Indigenous peoples, throughout the world, are fighting for recognition - fighting to assert their laws, philosophies, and stories on their own terms. [. . .] This relational approach means that my reciprocal duties to others guide every aspect of how I position myself and my work. This relationality informs the ethics that drive how I live up to my duties to humans, animals, land, water, climate, and every other aspect of the world(s) I inhabit. (19)

Ongoing colonial legacies and practices of a settler colonial state are embedded in the land, including our bodies. Thus, (re)making with the land is a form of action that does more than allow access to healing—it is a response to settler colonialism and environmental degradation, as it works toward the repatriation of Indigenous land with Indigenous peoples/beings of the land.

With each agave and every Piñon pinecone picked, while Indigenous to different lands, I moved closer to my ancestors because I consciously worked to do things in a good way with the lands upon which I stood, helping me become a more grateful and humble student of the Earth and the Indigenous ancestors of lands not my

own. Cahuilla and Serrano lands taught me how to be a better listener, and my teachers were/are the guides. What could I, a diasporic Indigenous person, offer of myself to lands not my own? I came to recognize the importance of healing with lands not only because they need practical care (such as brush-removal and songs) but because they too have experienced the traumas that are tied up with them.

As much as my ancestors struggled as exploited workers in labor camps, the land-bodies where they toiled their labors were also exploited as plantations and are, thus, also in need of healing. Inter-tribal/collective/community-based land-care taught me the necessity of (re)making relations with lands and across communities and origins. The importance of land care where one is situated promotes personal and community-based healing, but then, too, more-than-human bodies need healing from colonial wounds. Because of land-bodied wounds and the responsibility that I, as an ethnographic practitioner hold, next attempt to re-imagine how ethnographic practices might co-create healing-with-land.

Methodological Engagements

What methods and practices have guided me in forming and nurturing these healing relationships? In seeking to re-imagine ethnographic practices as ones that might co-create healing with land, I direct my attention to maíz teachings as discussed by Mexican American Studies scholar Roberto Cintli Rodríguez. Engaging with and learning from elder epistemologies, Rodríguez presents the connective tissues that make up the resilience of maíz culture and how it continues to thrive in the lives of Indigenous Peoples from Mexico and Central America but who live in the United

States. With a conscious pen, Rodríguez formulates the guiding protocols of his Indigenous research using maíz methodologies (Rodríguez 2014, 11). Maíz methodologies emphasize the commitments held in relationships that emerge through one's work and how those relationships are to be honored. Thus, the commitments of maíz methodologies reach beyond the research processes themselves, extending across time and space. Maíz methodologies inform my ethnographic practices in that they provide me with insight as to how to gauge myself, not as "the authorial expert" as my anthropological training has emphasized, but as a heartfelt listener and student of land, and ancestors and peoples of the land upon which I work/move/live.

I look to the overarching framework of maíz methodologies through what is commonly known as Aztec/Mexica pedagogy¹⁶, which continues to hold essential teachings for the broader understanding of meaning-making and relation-building and, consequently, ethnographic practice more-than-human beings. Rather than treating the data with Euro-Western theories and ideas, maíz methodologies privileges oral traditions rooted in Nahuatl cultures of schooling referred to by Mexica peoples as *calmecacs* (Rodríguez 2014, 12). Calmecacs¹⁷ are teachings that include

¹⁶ Ongoing and thriving but ancient Aztec/Mexica practices of teaching, academics, theories, methods, practices, and understandings. These teachings stem from Nāhuatlācah, or Nahuatl speakers and their descendants.

¹⁷ It is important to remain mindful of those who would have had access to education, in particular those who may have been excluded such as women and the poorest members of society (McDonough 2016, 57). Calmecacs, though largely taught to those of the wealthy, also includes students from families who emphasized intense training and discipline (León-Portilla 1974; Crum 1991). Cuicani (composers and singers of songs/poems) could be performed by any person who was dedicated to the work. Still, cuicame is a version of the Nahuatl noble language tecpilahtolli, while the common language is macehualahtolli; however, tecpilahtolli is also used by the broader communities (such as songs) (León-Portilla 2014, 51).

astronomy, dramatic arts, music and dance, philosophy and religion, poetry, rhetoric and public speaking, Aztec writing, and the history of the Aztec nation (Crum 1991). Calmecacs include the teachings of in xochitl, in cuicatl (the flower, the song), where lands are sites of learning and meaning-making¹⁸ (Florescano 1999; Rodríguez 2014). Their/our ancient practices of research and studying conveyed through art, oral stories, and writings such as songs and poetry continue to animate Indigenous research and methodological formations. Thus, I look to in xochitl, in cuicatl (the flower, the song) as Indigenous episteme/practices and seek to intentionally perpetuate them as an ethnographic practitioner.

Instructions and Protocols

As cultural production, this engagement is not an analysis of any song/poem and should not be misconstrued. Instead, the intention is to discuss ancient Aztec/Mexica ways of learning and living with Indigenous land and to continue such practices through Indigenous research that is cultural production. To be clear, I do not assume to hold a position that seeks to analyze the songs—rather, I am a student of them. Not unlike one who practices Danza Azteca (Aztec Dance), I learn with the songs and do my best to embody the teachings along the way. Similarly, these engagements are, for me, a form of prayer for harmony among the worlds in which I move and those with which I am called to engage.

¹⁸ Also see scholar of Nahuatl cultures, Miguel León-Portilla who describes in xochitl, in cuicatl as truth and symbolism in poetry and art (León-Portilla 1990).

Specifically, I seek to contribute to ongoing engagements that learn with ancestral teachings as living documents toward our continued survival. In this contribution, one among many, I hope to add to the continuing movement toward the decolonization and repatriation of land and Indigenous resurgence through the honoring of protocols and relation-building practices. This engagement with song is a form of storytelling where stories are not only reminders of their/our responsibilities but include instructions. I, therefore, discuss some of the instructions told by in *xochitl*, in *cuicatl* (as I have received them) relative to practices that have guided my research and are a reminder that relations cannot be divorced from obligations. *Ninoyolnonotza, campa niccuiz yectli auiaxochitl? Ac nictlahtlaniz? Manozo yehuatl nictlatlani in quetzalhuitziltzin, in chalchiuhhuitzitzicatzin. Manozo ye nictlatlani in zacuanpapalotl. Ca yehuantin in machizo mati campa cueponi in yectli ahuiac xochitl.—Cuicapeuhcayotl*” (as cited in Leon-Portilla 1974).

I discussed with my heart, ‘Where will I take beautiful fragrant flowers? Who will I ask?’ I wish to ask the beloved hummingbird, precious as quetzal plumes, the beloved hummingbird, precious as jade. I wish to ask the butterfly, precious as the yellow feathered *zucuan* bird. Because they have knowledge, they know where the beautiful fragrant flowers blossom. — *Cuicapeuhcayotl* (Root/Origin of Songs)

How might an ethnographic practitioner who engages land-bodied beings with their bodily senses/sensibilities become generative of the deeply embodied experiences that feed and exceed ethnographic methodologies? How could I have, for example, listened better to the agave mother who gifted herself as food and firewood while ensuring the ongoing survival of their offspring? And what of the lands upon which the agave-mother thrives—*Cahuilla* land, for example—what might I grasp

with a better understanding of how I, an Indigenous, diasporic person, impact the state of being of the lands themselves? As an ethnographic practitioner, I work to listen intently with my senses/sensibilities to, for example, an agave-mother preparing to transition away from their blooming state. Each plant and earth-bodied being has something to teach. It is up to the practitioner to do the listening. Thus, I engage with *xochitl*, in *cuicatl* episteme's more-than-methodologies as one possibility for doing methodologies better¹⁹.

In *Cantares Mexicanos*, Miguel León-Portilla documented Nahuatl poems (León-Portilla 2011) The second volume of the work opens with *Cuicapeuhcayotl* (The Roots/Origin of Song), where León-Portilla finds that the song is “lo único verdadero en la tierra” or “the only truth in the land” (Leon-Portilla 1974, 380).²⁰ As *Cuicapeuhcayotl* is “The Root/Origin of Song,” I ground this engagement of in *xochitl*, in *cuicatl* (the flower, the song) episteme with the teachings of *Cuicapeuhcayotl* as Indigenous praxis. In this engagement with *Cuicapeuhcayotl*, one is taught at least four additional elements necessary for learning with more-than-humans. The song begins with *ninoyolnonotza*, a reflexive state of mind and heart, where *notza* (to reflect/think) and *no* (mind) are combined with *yol* of *yollotl*

¹⁹ It must be noted that the Nahuatl translations described, while researched by me, have also been discussed in consultation with a community friend/teacher of Nahuatl/macehualtlahtolli— Cuitlahuac A. Martinez—to whom I am deeply grateful for their generous knowledge shares and ongoing language revitalization efforts on occupied Tongva territory in Los Angeles, California.

²⁰ Maestro Miguel León-Portilla's extensive work is appreciated and respected and I rely primarily on his expertise, in addition to supplementary texts, with regard to translation. Still, I acknowledge the various challenges to select portions of Maestro León-Portilla's work. See ‘The Pre-Columbian Past as a Project’ by Sanchez-Prado for one description of (select) critiques (2005).

(heart/soul): “I discussed with my heart” (Farias 2013). In this sense, one who practices in *xochitl*, in *cuicatl* episteme does so not only in mind-centered reflexivity in a heartfelt manner as they sit with themselves, pondering what they have been taught. Second is *tlahtlani*—the act of seeking or asking. *Tlahtlani* is made with humbleness, as is depicted in the ask of the song, framed in *manozo* (a wish) (Bierhorst 1985). Finally, embodied action is taught by applying the auxiliary verbs “*nemi*” and “*mani*” (“to live,” “to go about”). *Cuicapeuhcayotl* here teaches that embodiment is central to the process of meaning-making. Bodies are capable of communicating to each other without the use of words—as has been shown by in *xochitl*, in *cuicatl*—and across worlds. Such practices are expansive and lead one to attune their senses to and relation-making with land and beyond.

At the center of relation-building and meaning-making is the understanding that all matter holds a body and a life, and yet, that lives *z* in a material form as understood by many humans. The tension that life is both material and (im)material constitutes *la cosmovisión Indígena*. It is what grounds communication with, and awareness of matter as beings from and in multiple worlds, not only our human lived realities. Thus, in *xochitl*, in *cuicatl* episteme is more than a symbolic poem—here, it is Indigenous values actualized through embodied practices and actions rooted on Earth, in and with the land.

Maíz methodologies, then, remind me as an ethnographic practitioner who is Indigenous and who works with Indigenous lands and peoples that my commitments are not to building the Euro-American academy but to those with whom I am in

relation and to whom I hold an obligation—my elders and teachers, their ancestors and ancestral territories, my ancestral communities, lands, peoples, and the Indigenous lands upon which I work/live/learn. They also teach me that ethnographic practitioners who work with more-than-human beings toward the decolonization of Indigenous land, including all of our bodies, need research to begin at an Indigenous episteme.

Human bodies and the bodies of more-than-human beings are technologies that are capable of communication through their interlinked environments. The technological body serves as a pathway for engagement, relation-building, and meaning-making. One may learn teachings with more-than-(but including)-humans through the senses of the body, including but not limited to caqui (hearing), itta (seeing), huelic (tasting), ahuiac (smelling), and through an implicit feeling that might occur during these processes²¹ (Farias 2013, 23). In these ways, I have come to understand that Cuicapeuhcayotl holds, among multiple teachings, an Indigenous praxis that centers beings, material (on Earth) and otherwise (bodies not only materialized on Earth), and pathways for building relations with each other.

It is through action, through practicing aloha 'āina, that we produce ourselves in relation to and as a part of 'āina.

– Noelani Goodyear-Ka'opua (2013, 33)

²¹ Feeling, not only by touch, but that which is channeled through the body affectively is also a key teaching but is not as simply translated to the English language. Cuī, here in some phrases, is translated as intimating 'feeling' but cui (also) translates in English as 'to take'; one translation bases the understanding of 'feeling' on the placement of the term in relation to the phrase(s) as a whole (Farias 2013). Cui can be held with modes expression of feelings such as cuīcahōca (song-weeping), cuīcailhuizōlli (song-marvel), cuiloa (painting) and cuīca (to sing; to sing of birds), for example (Bierhorst 1985).

Many Indigenous Peoples' ways of knowing, and thus their/our identities, are rooted in place. Yet, as an Indigenous person raised away from my ancestral lands, I have sought a vocabulary for how Indigenous Peoples may appropriately engage in place-making toward healing ourselves and the Earth, all the while being unable to live among our original ancestral homelands but only with the ancestral lands of Indigenous peoples with whom one is not a member. Through the gift of generosity, Kānaka Maoli scholar Noelani Goodyear-Ka'opua invited me as a guest student from the continental US to the island of O'ahu, where I could participate in Kānaka-based grassroots efforts centered on community restorative food and land justices.

Primarily, I worked alongside Kānaka and non-Kānaka folks in community farming projects inside Kalihi Valley, a valley that continues to hold my dear Bisayan family today. There, I worked for three seasons on Kānaka land with Kānaka and non-Kānaka teachers, where Kānaka pedagogies were consistently taught along the way. From the opening circle in the morning to the closing circle in the afternoon, loving care with the land was practiced and affirmed in every aspect of the work. The experiences held in this work came to shape an understanding and awareness of the possibilities of (re)making one's relations with land and the healing potentials.

In reflecting on my experiences with Kānaka Maoli land, I confess that the central teaching conveyed during the three seasons was to learn what it means to cultivate aloha'āina and practice land-centered literacies (Goodyear-Ka'opua 2013). Aloha'āina, as taught to me as a non-Kānaka person, is a conscious practice of action in which one cares for and builds meaningful and caring relations with more-than-

human relatives such as land and water, insects and rocks, wind and plants. This body of practice was cultivated as I sat on the dirt while light rain heated by the sun's warmth sprinkled my hair like speckles of glitter and dotted my exposed arms and legs. As I dug my hands into the soil preparing it for garden plantings, a teacher said to me, "*Malama*, that plant real good; it will be happier that way, and so will you." The more I would *malama* (deep and caring ways/practices/to truly care for/to protect) the land, actively caring for and working with the plants and soils, the closer I moved toward an embodied comprehension of aloha'āina consciousness.

In her book, *The Seeds We Planted*, Noelani Goodyear-Ka'ōpua couples aloha'āina with land-centered literacies (2013). Her concise but profound articulation of aloha'āina practices explains how "non-human" beings communicate and our responsibilities in participating in the conversation when she states:

[. . .]thinking about aloha'āina as an unbounded set of communicative practices reminds us that we are constituted by our actions as much as by our genealogy. Aloha'āina centers the cultivation and protection of the relationship of Kānaka to all elements of our natural world. If healthy relationships entail communication, then the practice of aloha'āina must include facility in multiple languages, human and non-human. Pedagogies in aloha'āina recognize that humans do not have a monopoly on language. They also encourage people to recognize and discover patterns, transmissions of information, attempts to commune, and acknowledgments of kinship from our nonhuman relatives. They require and affirm multiple ways of knowing. (35)

Here, I learn from aloha'āina that ancestral lineage is not only what constitutes our relations with land—our actions also cultivate those relations. Furthermore, language is not only held by humans. Communicating across worlds is not only possible; it is part of what makes up relation-building practices. Thus,

communication and transmissions of information across worlds are made possible through action.

Aloha'āina includes land-centered literacies, which is a framework that creates space for non-Kanaka folks such as myself. Land-centered literacies are rooted in one's intimate connections with and knowledge of the land (Goodyear-Ka'opua 2013, 36). By enlarging the category to include settlers who would take on the work and responsibilities that the category affords, larger systemic changes are made possible (Goodyear-Ka'opua 2013, 35). Thus space is created for those who are not Indigenous to Kanaka land; however, the responsibility lies with the non-Kanaka individual to take action and to build intimate relations with the land via Kanaka protocols, teachings, and practices.

In this sense, land-centered literacies are not only a pedagogical framework but a pathway for individuals to build deep, caring relationships with lands that are not their own. It is often assumed that Indigenous practices are limited to those from within their own cultural and community affiliations, and more often than not, this assumption proves correct. However, in some instances, Indigenous teachers may find it necessary to create broader inclusivity. These measures may reach beyond human communities and instead center the needs of our more-than-human relatives. I take comfort in land-centered literacies where, through aloha'āina, one can (re)make relationships with lands not their own toward healing wounds contained within (our) colonized bodies.

Relation Making

In some instances, Indigenous leaders may find that an inclusive approach is appropriate when, for example, the land is weeping or under extreme threat. (It cannot be emphasized enough that these sorts of collective initiatives are typically initiated and led by Indigenous leaders, teachers, and elders with accompanying protocols). Such an observation is shown in recent events at the Standing Rock camp against the Dakota Access Pipeline. Indigenous leaders chose to create space for “allies and people from all walks of life standing in solidarity to halt the Dakota Access Pipeline (Standing Rock Sioux Tribal Council 2017). Indigenous and non-Indigenous scholars later co-created knowledge from across disciplines and institutions as they produced and circulated the “Standing Rock Syllabus” (NYC Stands with Standing Rock Collective 2016). I have also experienced similar approaches as taught to me by elders and teachers who have come together, toward specific efforts, as an Indigenous and non-Indigenous collective. In large part, these sorts of collective initiatives are led by Indigenous women, where, together, they co-create systems of practice centered in relationality with each other and Indigenous land. These Indigenous women lead the collective as action-based caretakers and protectors of and with the land. Together, the collective centers the needs of a broader community—one that is attentive to land as an active and living member of it.

I imagine an ethnographic practice where one communicates with more-than-human beings with the help of their body as technology and accepts their responsibilities. Within this agreement and how it was formed, a transformative

ethnographic practice toward healing is made possible. This sort of practice, which is cultural production, requires deep listening²²—a sort of listening that can be described as a felt connection, an alignment of understanding and intimate awareness and is a critical component of Indigenous episteme/practices as they have been taught to me. It may manifest as mutual respect and exchange of love, compassion, humor, pain, and memory between beings and across worlds. The practitioner's body serves as a technological instrument for communication and service. In following Indigenous protocols, an ethnographic practice may emerge in ways that move beyond everyday investigative research and take shape as a cultural practice.

Indigenous Peoples not only grapple with colonial wounds that are held in their/our histories, in and with their/our ancestors, and in their/our bodies, they/we also may choose to co-create relations and worlds where such wounds are made largely insignificant. Indigenous thinkers are diverse thinkers. Many have made sense of things and heal through multiple platforms such as art and fashion, food and farming, herbalism and bodywork, and many writing genres, for example. In this chapter, I have attempted to (re)imagines how ethnographic practitioners may allow access and give rise to healing and our continued survivance amidst ongoing settler colonial occupation. Here, (re)making is meant to serve as a methodological framework that does not emphasize the traumas. Rather, through methodological/political-praxis, one might make relations with more-than-(but

²² See 'Introduction—Indigenous Studies: An appeal for methodological promiscuity,' by Chris Anderson and Jean M. O'Brien, in *Sources and Methods in Indigenous Studies* (2016).

including) human peoples and among lands where colonial wounds are tied up. In so doing, it is hoped that (re)making may serve as a tool for healing and as a transformative process for ethnographic practitioners and their communities.

CHAPTER 5

CONCLUSION

Alongside the interplay of material conditions at the interface of Indigenous land, lives, and bodies, US agricultural systems, sciences and settler colonialism have been at the forefront of this work. I have grounded ethnographic stories that entangle bees, plants, sciences, multi-media, politics, Indigenous lifeways, art, and poetry. I have also unpacked Indigenous lifeways and healing with Land, which translates as ethical and Indigenous methodological practice. I have also discussed how Indigenous cultural practitioners who do research, including thinkers and practitioners who are not necessarily housed within academic institutions, are needed for significant shifts in settler colonial agricultural systems.

Furthermore, I provide my readers with foundational approaches to the research through literature reviews, foundational theories, and grounding methodologies by discussing how the research interfaces with anthropology, Native and Indigenous studies, feminist studies of science and technology (STS), settler colonial studies, and critical environmental scholarship speculate on ethnography as healing as a modality of decolonizing/Indigenizing processes. Building on feminist Indigenous approaches to inquiries rooted in caring about making Indigenous lives better, this speculative provocation works to develop modalities of healing Indigenous lives and bodies through ethnography. Based on reflections from ethnographic fieldwork notes from participant observations and ancestral histories with Mojave and Sonoran Deserts, I offered an intervention toward decolonizing

ethnographic research objects and speculated on following a decolonial embodied ethnographic practice.



Image 35. Native Diadasia bee emerged from their ground nest, Joshua Tree, CA²³.

The discussion of Native and Indigenous lives and bodies, which includes Land-bodied beings such as bees, and US agricultural technoscience began by presenting connections between methods, analysis, data, and care. My interventions opened with the question, “What worlds are co-created in non-humanizing moves of ‘non-human’ beings in the ongoing work of human-centric conventional agricultural science and technologies?” I emphasized the Indigenous Land relations that emerge

²³ A Native Diadasia bee emerged from their ground nest just outside the back porch of my research residence. I have had the privilege and honor to be their neighbor, admirer, and student for five consecutive years of continuous lineage from the first of whom I met, a graciously welcoming 2016 pollen harvesting brood parent and plan to continue to show up for them henceforth. So-Called Joshua Tree, California, is settler occupied Cahuilla/Serrano territory and is now, together with this brood of Native Cactus Bees, the place that I call home.

when one collects and analyzes data. I was thinking about my actions, potential missteps, and practices as a researcher in a colonial-driven field (Anthropology) who is situated in a settler-colonial and often harmful, if not violently exploitative, institution (academia). Looking to the work of Dr. Renya Ramirez and Dr. Nancy N. Chen, I learned that place, relations, data, and community create possibilities for mutual (corporal) aid and care. Such acts of care and aid may be termed “radical” because they are 1) uncommon, 2) decentered, 3) invisible, 4) difficult to do because of overwhelming institutional barriers, and 5) laboriously demanding on those who often take on more work or are expected to labor more than others due to lack of privilege.

By sharing only a few of my experiences with persons who have taught me ways in which mutual (corporal) aid and care can be created and shared—specifically, Dr. Nancy N. Chen, Dr. Kim TallBear, Dr. Noelani Goodyear-Ka’ōpua and Dr. Audra Mitchell—I draw on what I learned as one person among their larger community of co-thinkers, graduate student colleagues/friends. As a rising scholar, their lived actions in creating with me a community of care, aid, and uplifting relationships shined a light on the limits of the academy’s ongoing histories of exploitation while demonstrating the simultaneously expansive worlds of good relations.

I next moved into decolonizing and Indigenizing methodological approaches that theoretically anchored my work among feminist studies of science, technology, and society (feminist STS) while distinguishing my interventions from feminist STS

scholarship. I thought through (im)material spaces, places, and times that are always interconnected, thereby signaling the many lived realities that humans and more-than-humans co-create. In that research approach, relations and community are unbounded, and the researcher is responsible for moving beyond status quo institutional concerns and practices.

I have often experienced anthropologists say that anthropological research “follows the person or follows the thing.” In chapter 3, I followed the person — a bumblebee numbered by her researchers as NIF001. The saying “follow the person or follow the thing” indicates settler-colonial anthropological projects because it is likely that a bee would be categorized as “a thing,” an object. In large part, the scientist researchers categorized NIF001 as a thing (perhaps made obvious by their “name”). Of course, as discussed in this chapter, scientific possibilities are already present because of the *relationships* between the bees and the researchers with whom I worked, who unknowingly challenged the thing/person binary.

Based on my experiences with NIF001’s researchers, they unapologetically practiced a feminist science. And in everyday lab-life, folks showed their researched bees great care to the extent that appeared to be possible given the research objectives, protocols, and deliverables. My colleague/friend scientists often spoke to the bees with loving words, as one might with a relative or home canine or feline companion. My friend/colleagues handled and talked about their researched bees affectionately and tenderly. Furthermore, most of those with whom I had the privilege of working showed affective apprehensiveness and sometimes melancholically

expressive body/oral language about the bees having to undergo their scientific research. They showed care for the bees who were in their labs and those who were not; they showed compassion in routine lab procedures, discussions, lab meetings, and while following protocols that required corporally invasive and deadly measures. My colleague/friend scientists are creating points of possibilities where science can be practiced beyond a white feminist science and in anti-colonial ways, both of which are feasible in their labs.

Research that is housed in the academic institution is filled with colonial barriers and boundaries, making decolonizing and Indigenizing research practices and protocols seem near impossible, and they sometimes are. With Indigenous songs, poems, and teachings from my (academic) elders, aunties, and uncles, I was gifted with methodological practices that co-create places and spaces for decolonizing and Indigenizing research. At the heart of what is discussed in chapter 4 is this: lineage is not necessary to practice good relations; corporal care and embodied actions also cultivate good relations with Indigenous Land. In other words, social/scientists have opportunities to rethink their objectives and re-create their research protocols by aligning their work through caring and considerate relations with Indigenous Peoples and Land and by following the protocols of the Peoples whose Land they are on. However, the responsibility lies with the researchers to take action and build intimate relations with the land via local Indigenous protocols, teachings, and practices.

At the center of the research are bee/Land/science(tist) relations. I have come to ask how do scientists who are interested and deeply invested (temporally,

physically, economically, intellectually) in environmental biodiversity, and thus concerned with stable bee and overall insect populations, negotiate the paradoxical condition that sits between desiring biodiversity and the physical act of piercing the body of an insect so iconic as a bee pollinator?

More significant insights are needed into the highly complex and deeply embedded condition of (ranging and varied) Euro-American anthropocentric ideologies, not just in science but also for scientists who are sincerely concerned about human impacts on non-humans. For that reason, I am inspired to consider further projects that account for scientists' daily and routine practices in Euro-American sciences in hopes of learning more about the complexities and conditions that they confront and negotiate as individuals. A third theme is the concept of bio-futures and the scientists' perceptions of bio-futures; specifically, I would be interested in learning more about how this set of entomologists negotiate their actions today for a different "tomorrow."

Practicing Academix ²⁴

Doing work that cares with and for beings who may be/have been embodied and/or unembodied (and the spaces between) within the academy is often challenged as fraught categories. As an Indigenous scholar who seeks to do work that simultaneously confronts settler colonial projects and contributes to Indigenous

²⁴ Portions of this chapter were previously published in Hernández K, Rubis JM, Theriault N, et al. *The Creatures Collective: Manifestings. Environment and Planning E: Nature and Space*. July 2020. doi:10.1177/2514848620938316

resurgence efforts, I cannot practice the work that I am called to do without collaborations that transcend time and space, defies academic walls and capitalist titles of credentialed power, and disrupts human-centric notions of who and what matters when. The work I am called to do inherently requires I think and work with un/embodied ancestors and communities of beings. They are magnificent teachers and provide much-needed guidance in my lifework (Hernández et al. 2020, 11-13).

Methodologically speaking, I needed a framework that permitted me to name how I aim to practice ethnographic engagements—ones that prioritize decolonizing and Indigenizing efforts and that embrace standpoints and practices that defy settler colonial values. I needed a framework that named my engagements with lifework collaborators and co-laborers, yet likely unseen and unheard by many as un/embodied and ancient beings. *Academix* emerged out of my I-STS work and is an attempt to name such practices.

The “x” in academix is framework and practice that is learned from Queer Chicana communities who utilize the “x” at the end of the identifier to serve as a disruption to gender binaries rooted in the English and Spanish languages, imperialist languages forced upon many of us who are Indigenous to “América.” The “x” is often an indicator of one’s queerness and/or gender identity/ies as being beyond binary. While not made explicit, academix, as I seek to practice it, is rooted in Indigenous Queer Feminist praxis and therefore holds an “x.” Thus, Indigenous Queer Feminist praxis makes academix possible, where academix serves as a framework for thinking, a potential naming of a more-than-methodological opening—not a solution. The

intention here is to consider an entry point, such as academix, that disrupts binaries. In this way, academix as a methodological practice reminds me of who I am, where and who I am from, whose land I am on and benefit from, and with whom my commitments lie. Academix serves as an opening to the expansiveness needed to think and work with beings who are less disciplinarily-assigned and more purpose-aligned.

In her article, “Decomposition as Life Politics: Soils, Selva, and Small Farmers under the Gun of the US–Colombia War on Drugs,” anthropologist Kristina Lyons describes the “cultivation of counterlife and death” as a place full of life, where living goes on even amid death. In thinking with the decompositional temporalities and materialities of hojarasca (at times translated as little layers), Lyons describes relational and overlapping vulnerabilities that defy nature/culture, nonhuman/human binaries, such as decomposing into a sense of shared precariousness (Lyons, 2016). Lyons’ work helps me consider life “after academia.” I am inspired to think of the academy in this way partly in thanks to a colleague who recently graduated with their Ph.D. in anthropology and who simply stated, “The academy is dead.” Despite (or perhaps because of) their decade-long dedication to a “dead” institution, such an assertion meant to me that the academy’s tendency to lean toward and its general outdated attention to itself kills seeds where lifework energies may have sprouted. Yet, it remains a site of counterlife where lives continue among dead and dying ways. In other words, in life “after academia,” new forms of living may begin to take shape within decomposing academic practices. It is hoped that

academix is one such seed of emerging life-forms, taking root and sprouting among the decomposition of an “after academia,” where growth and collaboration across broad-ranging communities are fostered.

Alterlives and Academix

In this century, scholars are documenting necropolitical landscapes rendered by neoliberal politics and policies of suffering, violence, and destruction. Some of these authors and their works include Achille Mbembe’s *Necropolitics* (2003, 2019), Andrea M. Lopez’s *Necropolitics in the “Compassionate” City: Care/Brutality in San Francisco* (2020), and Francisco Ferrándiz, together with Antonius C. G. M. Robben’s, *Necropolitics: Mass Graves and Exhumations in the Age of Human Rights* (2017). Such landscapes are unsustainable. Precarious living has been for centuries legacy of settler-colonial occupation and policies aimed at Indigenous and Native communities.

By contrast, Indigenous Science, Technology, and Society (I-STIS) emerges out of Native and Indigenous Studies scholarship and imagines and co-creates multi-worlds of healing and thriving by questioning political and scientific philosophies and practices of humanness, personhood, and citizenship at the expense of Indigenous human/more-than-human bodies and lives. Indigenous Peoples have long documented, remembered, foreseen, fought, and experience(d) how their bodies and lives are treated as beyond expendable—as a threatening barrier to settler colonialism itself. Scholarship by Indigenous researchers who disrupt settler-colonialism’s ongoing environmental violences and who’s work that I plan to further engage in my

future work include but are not limited to Max Liberon's "Pollution is Colonialism" (2021), Michelle Murphy (2017), and Kristen Bos (forthcoming).

Following Eve Tuck's "Suspending Damage" (2009), this work has uplifted and animated possibilities and futures even while facing settler-colonial harm. I seek to learn more from "Afterlife and Decolonial Chemical Relations," where Michelle Murphy engages with the concept of *alterlife*, a research practice that looks not to damage but to decolonial futures where

alterlife names life already altered, which is also life open to alteration. It indexes collectivities of life recomposed by the molecular productions of capitalism in our own pasts and the pasts of our ancestors, as well as into the future. It is a figure of life entangled within community, ecological, colonial, racial, gendered, military, and infrastructural histories that have profoundly shaped the susceptibilities and potentials of future life. (2017, 497)

As I begin to think about academic work, and specifically I-STS, that emerges out of a "dead" institution, Murphy's *alterlife*, indeed speaks to the methodological considerations that have been posed here in this work. As was activated throughout this dissertation, practitioners are altered as they do research and so too are their more-than-human co-creators, thus it is on the researcher to consider and decide what sort of alterations they plan to create.

Research holds the capacity for healing, and Murphy's *alterlife* moves beyond counterlife by recognizing that a "dead" institution is (re)altered, in this case by I-STS practitioners' methodologies and practices who actively co-create alterlives toward Indigenous sovereignty and self-determination. Folks who practice *academix* co-create and practice *more-than-research* because both *alterlife* and *academix* disrupt linear, binary, (white)human-centric, (settler)colonial (academic) ideologies and

practices. More-than-research meets and co-creates alterlives/alterworlds with an academix praxis, thus there are no “seeds emerging from the decomposition of an after academia”— there is, was, and always will be (academic)life already altered and realtered.

My practices that strive to co-create good relations and healing that are beyond the confines of research include engaging with I-STS communities and scholarship, which helps me to think on ways of engaging with science and technology fields in support of my ancestral Lands and relations, the communities and worlds I inhabit, and all Indigenous Beings. An academix framework provides an approach accessible to scholars who seek to work in profoundly collaborative and mutually caring ways.

Academix in practice acknowledges that each co-thinker brings an essential and valid contribution to the work and that, when doing so, tensions may rise to the surface. Holding tensions and working with them builds and reconfigures the work at hand and does vital work on the collaborators toward realtering lives and worlds. Folks who decide to engage an academix framework appreciate and acknowledge that collaborators, co-creators, teachers, and community are not necessarily human nor tangible. Furthermore, those practicing academix hold dear that not engaging with beings and things seen, unseen, and sensed may pose a great disservice to the collective and their work(s), and thus risk reproducing violent settler-colonial tendencies and desires without leaning in to the generative beauty of alter-academic worlds. I hope that starting at an academix framework is a helpful opening that

creates more equitable ways of doing decolonizing research that honors Indigenous Peoples, Land, Beings, practices and scholarship, and is a source of care to those who choose to learn and create together.

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